

EMERGENCY RESPONSE/SAFETY PLAN

Prepared for:

MB23 Fuel Cell & CO2 Recovery Platform

Located at:

Fuel Cell Energy
539 Technology Park Drive

Torrington, CT 06790

Owned by:

Fuel Cell Energy, Inc.

Plan Prepared by:

FuelCell Energy, Inc.

3 Great Pasture Road Danbury, CT 06813

October 2024

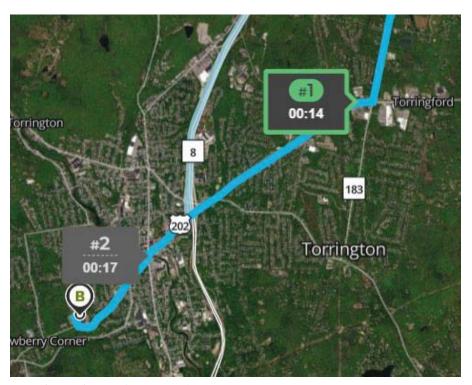
A current copy of this Plan is to remain in an accessible location onsite at all times – please also see the Torrington Integrated Contingency Plan (PPP-052) for additional information.

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Emergency	Make Initial Notification to:	
Fire / Explosion	9-1-1 or	
Flammable/Hazardous Material Release	3 -1-1 or	
Medical Emergency	EH&S Hotline at 203-205-2442	
Threat / Violence		
Severe Weather	Coordinate with FuelCell Energy EH&S 203-205-2442	

Nearest Emergency Room to site

Charlotte Hungerford Hospital 540 Litchfield St.
Torrington, CT 06790



Head north. Go for 0.2 mi.

Continue on Technology Park Dr. Go for 0.7 mi.

Turn right onto Torringford St (CT-183). Go for 2.0 mi.

Turn right onto E Main St (US-202) toward Torrington. Go for 2.5 mi.

Turn left onto Main St (US-202 W). Go for 0.04 mi.

Turn right onto Litchfield St (US-202) toward Hospital. Go for 0.3 mi.

Keep right onto Litchfield St toward Hospital. Go for 0.7 mi.

Turn right. Go for 0.2 mi.

Turn right.

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1 INTRODUCTION

The Torrington Fuel Cell & CO2 Recovery Project is a SureSource 1500 fuel cell power plant (MB23) whose equipment is wholly owned by Fuel Cell Energy, LLC on it's existing property Manufacturing Facility property, located in Torrington, CT. The fuel cell plant will be operated by FuelCell Energy, Inc. The power generated from the facility will be exported to the local electric grid or used to power manufacturing operations. The net generating capacity of the power plant is 1.4 MW, nominal. In addition, a Carbon Dioxide Recovery Unit (CO2 Recovery) is integrated with the existing SureSource 1500 which will function to extract and purify approximately ten tons per day of CO2 from the anode exhaust stream of MB23 and store up to one hundred tons of liquid CO2 which can be used or sold. The primary purpose of this facility is to demonstrate the capability of the CO2 recovery product and provide quantities of product to perspective customers for evaluation and testing prior to purchase of new systems.

The components of the CO2 recovery product include both the base power plant, which in this case is an existing SureSource 1500 which has been operating at site for multiple years, in addition to five new major systems: the Anode Exhaust Recovery Skid, the Vacuum Pressure Swing Absorption Unit, the CO2 Liquefaction Skid, the Recovered Water Treatment skid and the CO2 Storage System. In addition to these major systems, there are several additional components including a chilled water (glycol) system, multiple compressors, a CO2 product buffer system, a tail gas buffer tank, and a platform mounted dry cooling system.

1.1 General

FCE SureSource fuel cell plants are designed and operated as unmanned power generation facilities. The control system for the plant is designed for the system to "fail safe" in the event of a process upset. For any event or upset condition that has a potential safety consequence, the plant control system initiates an emergency shutdown ("ESD") sequence that isolates the external fuel source from the plant and trips the fuel cell inverters off the grid. The same goes for the additional CO2 Recovery Equipment.

The equipment Emergency Shut Down event isolates the natural gas fuel supply from the plant through the use of dual fast-acting, spring-loaded block valves located at the plant fuel gas supply connection. An ESD event also triggers automatic isolation of the fuel desulfurizer vessels and initiates the purging of the downstream fuel train components through the module using the onsite supply of inert nitrogen gas. Purging the residual fuel train contents out through the module results in the fuel being oxidized to innocuous end products. An ESD event also results in the fuel cell module(s) and inverter(s) being disconnected from the electric utility grid. Process upset or equipment operation malfunctions that can only cause equipment damage but no possible safety consequences can result in the fuel cell plant switching off the electric grid while remaining operational (islanding) so as to allow time for the electric grid or the fuel cell plant to stabilize, prior to resynchronizing with the grid. During any of these types of events, operators at FCE's 24/7/365-manned Global Monitoring and Control Center ("GMCC"), will immediately assess the operational condition of the plant and take appropriate actions to

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stabilize or recover the plant to operational status, whichever is appropriate for the situation. If any on-site response is appropriate for the situation, the GMCC operator will contact appropriate personnel, be they an FCE field service technician, or in the very unlikely event of a developing emergency response situation, local emergency response personnel.

Following, in Table 1, is an outline description of the fuel cell plant and other site equipment included in this project.

Table 1: Plant Descriptions

Plant Model: SureSource 1500

Each SureSource 1500 plant consists of one (1) C1400 direct fuel cell module, a Mechanical Balance-of-Plant (MBOP – skids 1-3), and an Electrical Balance of Plant (EBOP – power conditioning unit (PCU)/inverter w/ chiller, transformer & utility interconnection switchgear).

Number of Fuel Cell Plants:1

Fuel Cell Power Output: 1.4 MW, nominal

Installation Location: Outdoors

Fuel type: Pipeline Natural Gas

Regulated utility supply pressure: 20 psig to fuel cell plant

Plant reduced operating pressure: <15psig

Plant Output Voltage: 480 VAC/3 Phase/60 Hz

EBOP Manufacturer: Rockwell

EBOP Transformer Type / Dielectric Fluid: Dry Type

Nitrogen Supply: Liquid microbulk tank (~250 gal. liquid capacity)

Additional / Appurtenant Equipment

Load Following / Islanding Capability: Load Leveler (1.4 MW, air cooled)

Step-up Transformer: 480V / 4.8KV (Oil filled)

Anode Exhaust Recovery Skid

Vacuum Pressure Swing Absorption Unit

CO2 Liquefaction Skid, including TPI Skid (Ammonia Refrigeration Skid)

Recovered Water Treatment skid

CO2 Storage System

Equipment not described above is not covered by this plan.

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2 EMERGENCY RESPONSE / SAFETY – PLANS

Employers are required by the Occupational Safety and Health Administration ("OSHA") Standard at 29 CFR 1910.38 to have a written Emergency Action Plan ("EAP") for workplaces. The EAP can serve to fulfill the requirements of an Emergency Response Plan when the plan for emergency response activities is to evacuate the premises and to allow professional emergency responders to perform the required emergency response activities. Due to the nature of FCE DFC power plants being unmanned, remotely operated, and fail-safe in operational philosophy and control, it is the practice and policy of FCE to instruct workers, through a workplace EAP, to evacuate the premises in emergency situations and to summon professional emergency responders to perform required emergency response activities.

NFPA 853 requires the preparation of a written Fire Prevention and Emergency Plan for fuel cell installations. The Fire Prevention and Emergency Plan is to be prepared in accordance with the requirements of Section 8.2 of NFPA 853 and is to include descriptions of fire prevention procedures, inspections, housekeeping practices, flammable material storage, control of ignition sources, procedures for fire protection equipment impairment, fire emergency plans and other information.

The OSHA standards for General Industry (Part 1910) and Construction (Part 1926) at Title 29 of the Code of Federal Regulations require that employers comply with a host of health and safety standards. Such requirements are outlined in employer safety programs and policies. Summary statements of corporate health and safety policies are often prepared for employee quick reference on an individual plant or project-specific basis.

Copies of the Emergency Action Plan, Fire Prevention & Emergency Plan and Plant/Project Safety Plan for the site follow.

2.1 Emergency Action Plan

Following is the Emergency Action Plan (EAP) for the subject plant.

Emergency Action Plan

Site Name: MB23 Fuel Cell & CO2 Recovery Platform

Site Address: 539 Technology Park Drive
Torrington, CT 06790

Plant Operator & Owner: FuelCell Energy, Inc.

3 Great Pasture Road Danbury, CT 06810

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A. Emergency Plan Coordinator & Other Contacts

Emergency Plan Coordinator –

EH&S Hotline Number: 203-205-2442

Name: Global Monitoring and Control Center (GMCC)

Company: FuelCell Energy, Inc. (FCE)

Description: 24 hour / 365 day Plant Monitoring

Telephone No: (800) 326-3052

Additional Contact information -

<u>Site Operator Contacts</u>: (NOTE: private telephone numbers may be redacted from public report to protect privacy)

Name: Leah Burns

Co./Dept./Title: FCE Manager, Environmental Health & Safety

Telephone No: (475) 296-4544 (FCE cell)

Email: lburns@fce.com

Name: Rob Fournier

Co./Dept./Title: FCE / VP Engineering Telephone No: (203) 825-6071 (FCE)

Name: Omar Morales

Co./Dept./Title: FCE, Project Manager
Telephone No: (203) 825-6489 (FCE)
Email: omorales@fce.com

Name: Vincent Avellino

Co.Dept./Title: FCE, Construction Manager

Telephone No: (860) 201-0807

Email: <u>vavellino.consultant@fce.com</u>

Name: Natalia Juneau

Co. /Dept: FCE, Senior Project Engineer

Telephone No: (203) 825-6067

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Site Utility Contacts:

Company: Connecticut Natural Gas

Name/Dept /Title: Gas Leaks or Emergency 24-hr contact

Telephone No: (866) 924-5325 (24-hour)

Company: Eversource (electricity)

Name/Dept /Title: Eversource Customer Care Phone Support Number - Emergency

Telephone No: (800) 286-2000 (24 hour)

Company: Metropolitan District Commission (water, sewer, storm drain)

Name/Dept /Title: MDC Service Center (answering service during non-business hours)

Telephone No: (860) 278-7850

Company: Airgas (Nitrogen)

Name/Dept /Title: Mike Gieralt / Bulk Gas Manager/Southern New England

Telephone No: (203) 258-2616 (cell)

(800) 242-0105 (24/7 Technical Service and Bulk Deliveries)

<u>Private Residences/Establishments requesting notification of emergency response incidents (per formal request):</u>

Neighboring Resident or	Neighbor	Contact Information –
Establishment Name	Street Address	Phone and/or email
none		

B. Preferred Means of Reporting Emergencies

GMCC is to contact local Emergency Responders in accordance with this Plan, if required, or when requested to do so by on-site personnel.

Emergency	Make Initial Notification to:
Fire / Explosion	(860) 757-4000 (verified 11/25/14 - mab)
Flammable/Hazardous Material Release	
Medical Emergency	(for calls originating from other than on-site)
Threat / Violence	9-1-1 (for calls originating on-site only)

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Severe Weather	Coordinate with FuelCell Energy GMCC (800) 326-3052
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GMCC is to then contact a FCE Field Service Management representative and then make any additional utility / owner / community resident contacts as directed to by FCE F.S. Management representative.

C. <u>Emergency Action Plan Elements</u>

• Emergency Escape Procedures and Routes

Emergency escape routes, exits and rally areas are depicted in the Plant Layout drawing provided in Appendix A.

Upon discovery of the need for an evacuation (either self-initiated or in response to an evacuation call), all personnel on site shall immediately proceed to the nearest safe site exit and then proceed immediately to the designated rally area. Non-FCE contractors and guests shall be escorted by their host FCE employee to the nearest safe exit. The standard lock combination is known by operating /maintenance personnel for any exits that may be secured at times when the plant is occupied.

In the course of evacuation, a call shall immediately be placed to GMCC with a request/instruction for the second GMCC operator to immediately call local Emergency Responders (See Emergency Action Plan, Section B) to initiate action by the local emergency response organization(s). The caller is to stay on the line and provide all information requested, including name, location and nature of emergency and additional contact information, as may be requested.

With the exception of small 'incidental' spills (as defined by OSHA and per FCE employee training), FCE employees are not to perform chemical spill response activities. Emergency or private spill response contractors are to be retained for the cleanup of non-incidental spills.

All releases of ANY material are to be reported to the FCE EHS department as soon as possible.

Procedures for Employees who Remain to Operate Critical Operations Before Escape

All employees are expected to proceed immediately to the designated primary or backup rally location during any call for site evacuation.

• Employee Accountability Procedures after Evacuation

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The Trinity site is a normally unmanned site; however, one or several FCE, owner or visiting personnel may be present on site at any time to perform operating, maintenance or other tasks. Per established site work/visitation procedure, all FCE and other personnel present on-site will be known by both the senior FCE Field Service employee present at the site as well as by the off-site GMCC operator. Upon the implementation of an evacuation, cell phone contact is to be established immediately with GMCC to update or confirm the list of on-site personnel. Accounting of all on-site personnel is to then be made at the rally area, or backup rally area, wherever the situation dictates that assembly occur.

Rescue and Medical Duties

FCE employees are not routinely provided with rescue or in-depth medical training, and as such are not required or expected to perform rescue or medical duties. FCE employees are NOT to reenter the site following an evacuation prior to an 'all-clear' call being made from the professional first responder person in charge.

Alarm System

During commissioning activities, emergency-use horns are available around the site for signaling an evacuation. Three consecutive blares of the horn would indicate an immediate evacuation. Audible alarms established for ammonia skid for CO2 Recovery would also trigger an evacuation and are to be set 5 dB above max ambient in the plant segment local to the Liquefaction skid.

During normal operations, FuelCell Energy plants are normally unmanned sites, with only a small number of workers present on site at any given time. Typically one, sometimes two, and on rare occasions more than two workers are present on site when work is being performed. When multiple workers are on site, they will typically be working together.

The employee alarm system to be used at the site during standard operating is direct voice communication. The OSHA standard for employee alarm systems at 29 CFR 1910.165 allows the use of direct voice communication as an acceptable procedure for sounding an alarm system for workplaces of 10 or fewer employees, provided all employees can hear the alarm.

Upon discovery of a situation requiring evacuation, the discovering employee shall directly communicate the evacuation requirement to his/her fellow employees. Any non-employee guests on-site will be escorted by their host employee to the nearest clear exit at that time. It is envisioned that all employees present on site at any time will be capable of hearing a call for evacuation under foreseeable circumstances.

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Training

All employees and contractors working at, and visitors to, FCE fuel cell power plants are to be trained in the elements, policies and procedures of this Emergency Action Plan prior to, or at the time of their first visit, as well as following the requirements under *Section E. Special Training*. All persons present at FCE plant sites are expected to comply with all elements of this plan in emergency situations.

D. Emergency ShutDown (ESD) Procedures

ESD Pushbuttons located throughout the site can be used to shut down the operation of site equipment.

Note that some Mechanical Balance of Plant electrical devices are also UPS (uninterruptable power supply) fed, so some low voltage equipment may temporarily remain energized even after engaging an ESD pushbutton. Note also that a hot DFC module may contain hazardous voltage, even when not operating.

Fuel Cell Plant Electrical Balance of Plant switchgear, PCU and transformer equipment will remain energized even after depressing one of these ESD pushbuttons. Note also that some Mechanical Balance of Plant electrical devices are also UPS (uninterruptable power supply) fed, so some low voltage equipment may temporarily remain energized even after engaging an ESD pushbutton. Note also that a hot DFC module may contain hazardous voltage, even when not operating.

Standard ESTOP buttons, plus additional ESTOP button to specifically stop all operation of AERS and TPI equipment located within ~50 feet of the CO2 Liquefaction skid and accessible from beyond the plant fence line.

The locations of the plant ESD pushbuttons are depicted in the drawings in Appendix A.

E. Special Training

FuelCell Energy personnel who work at fuel cell plants receive Hazcomm training in the chemical hazards that are present on site. Operating personnel also receive training in other occupational safety and health (OSHA) standards, as appropriate for the tasks to which they are assigned.

Definitions are as followed:

• "FCE Employees" are defined as individuals directly employed by FuelCell Energy, Inc. to perform a service on-site

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- "Contractors" are defined as individuals contracted to perform on-site work on FuelCell Energy, Inc.'s behalf
- "Vendors" are defined as individuals who supply parts or materials and may need to visit on-site
- "Visitors" are defined as individuals who do not perform work or supply parts or materials

Training requirements can be seen in the table below.

FCE Employees	Contractors	Vendors	Visitors (Guided Tours Only)	Training
Х	Х	Х	Х	Verbal Safety Brief (Site Orientation)
Х	Х			CO2 Recovery (Carbon Monoxide Awareness)
Х	Х			Hydrogen Awareness
Х	Х			Ammonia Safety Awareness
Х	Х			Cryogenic Liquid Awareness

F. Personnel Accounting Following Evacuation

In order to be accounted for, all personnel present on site at the time of an evacuation are to proceed to the designated rally area, depicted on the drawing in Appendix A.. Contact will be made with EH&S and the ranking supervisor on site will determine if all personnel are accounted for or if any personnel are missing. The results of the accounting determination will be reported to the professional first responder in charge of the emergency response.

G. Rescue And Medical Duties

All rescue and medical duties required at any FCE fuel cell plant will be performed by professional emergency response personnel.

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2.2 Fire Prevention & Emergency Plan

Following is the Fire Prevention & Emergency Plan for the subject plant. As only the first phase of the plant has been constructed to date, this Fire Prevention & Emergency Plan will be updated as necessary to appropriately reflect specific site conditions and limitations, as FCE becomes aware and construction and commissioning activities is completed.

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Fire Emergency Plan

Purpose:

This document provides information specific to FuelCell Energy's Direct FuelCell (DFC) power plant, as described in the Plant Description section earlier in this Plan (Table 1). The document has been prepared in accordance with the requirements of Section 8.2 of NFPA 853-2010.

A. Response to Fire or Other Emergency Condition

Overview of fire hazards present

Natural gas (odorized) at a nominal pressure of 20 psig is supplied to the fuel cell power plant gas meter via an underground pipe from a connection in the street. The aboveground gas meter and manual shutoff valves that supply the fuel cell are located at the southwest corner of the site, accessible to emergency response personnel. The piping runs underground from the shutoff valve/metering station to the interior of the plant enclosure where it emerges above grade and connects to the plant. The fuel cell plant immediately reduces the fuel gas pressure to less than 15 psig and directs the gas flow to the plant desulfurization equipment.

Natural gas is de-odorized by flowing through the two desulfurizer vessels of the fuel cell power plant. The desulfurizer vessels are each equipped with a safety pressure relief valve (PRV), sized for both a failed pressure reducing valve and a fire exposure condition. The PRVs discharge to a vent termination approximately 25' above grade over the desulfurizer vessels. Any flow through a PRV is immediately detected by an in-line flow sensor, which in turn immediately initiates a plant ESD. De-odorized fuel flows through the fuel cell power plant equipment, including the fuel humidifier and the preconverter and then into the fuel cell modules. The air heater also operates on an intermittent basis on de-odorized fuel. All fuel gas is confined within code complying process piping and vessels. All fuel sample valve taps are small bore and "double blocked" by virtue of tethered caps.

The fuel cell power plant operates at high internal temperatures. Temperatures inside the insulated fuel cell module are approximately 1200°F and the fuel fired air heater also operates at temperatures of up to 1200°F. The fuel humidifier and connecting pipes also operate at high temperature. Insulation or guards are provided to maintain external skin surfaces at safe temperatures.

The ERG energy recovery generator reduces the pipeline gas pressure from a maximum of 740 psig down to 130 psig and in so doing powers a turbine that drives the generator. The ERG system processes a substantial flow of flammable gas at high pressures. The ERG system is located in a separate secured building inside

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the fence-secured site. The building and contents are constructed in accordance with hazardous area electrical codes and is equipped with heat and flammable gas leak detectors. Only operators that are certified as properly and adequately trained by the Northeast Gas Association (NGA) are allowed to enter the ERG area of the plant.

Ancillary pieces of electrical equipment are provided with or are appurtenant to the fuel cell power plant. Some electrical equipment operate at high current and/or medium voltage (>500V) and therefore generate appreciable heat. All electrical equipment are designed to applicable codes, including provisions for adequate heat dissipation.

The Anode Exhaust Recovery Skid (AERS) has a potential flammability risk due to the presence of hydrogen (H2) (~10%). FCE has therefore designed the system to minimize the risk of exposure. All the high temperature piping containing this gas are located well above areas where accidental personnel exposure would occur. The gas is initially cooled to a target temperature and then the carbon monoxide (CO) levels are reduced through a water gas shift reaction which occurs in a vessel designed for that purpose, reducing the CO from 10% to less than 1%, while increasing the H2 content and CO2 content of the gas. Detectors are located around the skid to detect any small leakage of process gas and the control system is designed to terminate operation in the case that unsafe levels of leakage are detected. Additionally, local indications will be available indicating if any gas detectors have been triggered.

Notifications and coordination

Upon discovery of a fire or other emergency condition, or acknowledgement of a fire alarm associated with the fuel cell power plant, the discovering or acknowledging person shall make notifications to the appropriate persons as outlined in the site Emergency Action Plan.

An on-site discovering person who is trained in the operation and maintenance of the fuel cell power plant and who has evacuated the site for an emergency situation shall remain stationed in proximity to the site and accessible to emergency responders through the emergency response time frame in order to assist and support responders with technical expertise as they may request or require.

An on-site discovering person who is a representative of the plant/facility owner shall remain on-site through the emergency response time frame to assist and support responders with plant/facility owner information and resources, including access to required resources and traffic control as emergency responders may request or require.

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Plant security

Public access to the fuel cell equipment is restricted by control access gates and 10-foot fence enclosure surrounding the site. The enclosure is equipped with personnel and equipment doors or gates for necessary access. All doors/gates are kept locked when facility personnel are not present. Select doors/gates, as depicted in the drawing in Appendix A, are equipped with Local Fire Department specified and keyed Knox Locks, daisy-chained to the operator-provided combination lock. The daisy-chained locks provide the necessary security, while at the same time they also provide the means for required access by both owner- and operator-authorized personnel as well as Emergency Response personnel.

Evacuation and restriction of non-response personnel

Upon discovery of a fire or other emergency condition associated with the fuel cell power plant, the plant area shall be immediately evacuated of all non-response personnel to a minimum distance of 100 feet to the Primary or Secondary evacuation area on the Torrington site. Qualified plant operating personnel and EH&S shall identify themselves to Emergency Response personnel and remain nearby and available to assist in response activity support, as necessary. Notifications of nearby residents as required by the Emergency Responses Person in Charge, shall be undertaken as directed, per the EAP.

Operator activities

On-site personnel:

- ➤ Upon discovery of a fire or other plant emergency condition with the plant still running, while immediately evacuating the area of self and others, depress any Emergency ShutDown (ESD) pushbutton, if it is safe to do so. ESD buttons are situated at several locations around the plant as indicated in Appendix A, and as can be identified by their red mushroom caps and labeling, as depicted in photos later in this plan.
- ➤ Upon discovery of a fire or other emergency condition with a plant that has experienced an Emergency ShutDown (ESD), immediately evacuate others and self.
- ➤ Contact EH&S to contact local Emergency Responders as appropriate. As an emergency situation, advise GMCC to make other required notifications to management personnel, owner, and others, per Emergency Action Plan.
- Remain on-site at a safe distance to assist and support responding personnel, including providing plant access, restricting access of non-responding personnel, or controlling traffic.

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Remote GMCC (Global Technology Assistance Center) operators:

- Upon advisement or acknowledgement of a fire-related Emergency Shutdown or knowledge of other emergency condition, make Emergency Responder and all other required notifications as described in Emergency Action Plan.
- ➤ If not already present, dispatch field service personnel to the site to assist and support response personnel with fuel cell technical expertise.

B. Fire Extinguishment / Emergency Plant Shutdown

• Fire water application concerns

FIRE WATER SHALL NOT BE APPLIED TO COMPONENTS OF THE FUEL CELL POWER PLANT AT ANY TIME. Certain fuel cell components may remain electrically energized with either alternating current or direct current voltage even after a system shutdown via one of the Emergency ShutDown (ESD) pushbutton switches.

Appropriate extinguishing media

Only fire extinguishing medias appropriate for live electrical equipment shall be applied to fuel cell power plant components. Only listed fire extinguishers for Class A:B:C type fires are provided inside the plant enclosed area.

Upon Emergency ShutDown (ESD) of the fuel cell power plant, all fuel supplies to the plant are automatically shut off via two in-line fast-acting spring-loaded isolation valves.

Following an ESD, **ELECTRICAL ISOLATION IS <u>NOT</u> ASSURED**. Substantial AC and/or DC voltages may still remain for significant durations following an Emergency ShutDown event.

FOLLOWING AN ESD SOME NATURAL GAS WILL REMAIN ISOLATED WITHIN THE FUEL DESULFURIZER VESSELS, however, these vessels are protected from overpressurization by pressure safety valves sized for fire exposure conditions. Following an ESD, nitrogen gas supplied from an on-site liquid source will flow through the fuel cell plant equipment. As with the desulfurizers, the nitrogen source supply is protected against overpressurization by a safety relief valve provided by the gas supplier.

A Plant Layout drawing is provided in Appendix A.

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Other Emergencies

Ammonia release – The TPI system has approximately 500 pounds of ammonia contained within a closed loop system with detectors located throughout the system hardware. In the event of a release or you smell ammonia while in the vicinity of the equipment, press local ESDs (if safe to do so) and evacuate the area immediately. Travel crosswind to the nearest muster point. Alert FCE's emergency responders and EH&S as soon as possible.

Hazardous material spills – Hazardous materials that may be temporarily present onsite other than natural gas are typically solids, and usually only in small quantities. Trained hazardous material operations and response personnel are on-site for any operations or maintenance activities that involve the handling of bulk or containerized hazardous materials. Small quantities of water treatment chemicals are contained in the water treatment (Skid 1) enclosure.

Equipment oil – There are transformers on site that contain dielectric oil as well as oils for blowers and other ancillary equipment. The transformers use FR3 seed oil based dielectric fluid and are Factory Mutual rated as containing *less-flammable transformer oil*. Equipment containing oil is inspected monthly are part of Spill Prevention, Control and Countermeasure Plan developed specifically for the site.

Personnel injuries – For injuries requiring medical attention, the injured party or his/her companion shall seek appropriate medical attention for the injured. For serious injuries, call EHS or GMCC to summon local Emergency Responders per the Emergency Action Plan. For less serious injuries that require medical attention the injured shall obtain medical treatment at the nearest emergency medical care facility. All injuries, incidents and near misses shall be reported to FCE EHS.

C. Plan Validation

The executable elements of this Fire Emergency Plan consist of the manual activation of an Emergency ShutDown upon discovery, evacuation of the power plant area and notifications.

ESD buttons are all hard-wired in a fail-safe circuit. All fuel cell operating personnel are trained and regularly re-trained in a complete suite of safety programs.

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Fire Prevention Plan

A. Egress

A Plant Layout drawing is provided in Appendix A. The plant emergency egress paths are depicted on the drawing.

B. Emergency Alarms and ShutDowns

The fuel cell power plant is provided with Emergency ShutDown (ESD) pushbuttons. ESD pushbuttons have red mushroom caps and are clearly labeled. ESD pushbutton locations are indicated on the drawing in Appendix A. Photos of typical ESD pushbuttons are shown in Figure 1. Depressing an ESD pushbutton will immediately shut down fuel flow to the power plant as well as shut down all of the mechanical balance of plant equipment. HOWEVER, THE ESD DOES NOT OPEN THE ELECTRICAL GRID TIE BREAKER, SO ELECTRICAL BALANCE OF PLANT COMPONENTS WILL REMAIN ENERGIZED. ADDITIONALLY, UNINTERRUPTABLE POWER SUPPLIES (UPS) WILL PROVIDE POWER TO A NUMBER OF MECHANICAL BALANCE OF PLANT COMPONENTS AND THE FUEL CELL MODULE WILL RETAIN SIGNIFICANT DC VOLTAGE POTENTIAL ENERGY IF OPERATING OR HOT PRIOR TO THE ESD.

The following types of automatic acting emergency sensors are provided with the fuel cell power plant:

- Combustible gas detectors
- UV/IR Flame detectors
- Smoke detectors

The following types of automatic acting emergency sensors are provided with the CO2 Recovery Equipment:

- Combustible gas detectors
- UV/IR Flame Detectors
- CO Monitors

In addition process flows, temperatures, pressures and voltages are continuously monitored for deviations from expected values. Process sensors are used to verify proper operation of the process and will quickly sense and shutdown the process upon severe deviations, such as would occur in the case of excessive seismic activity. Emergency sensors have either supervisory signals or are wired to alarm on sensor failure such that the plant will ESD on the loss of any one of these devices. Emergency

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sensors are calibrated in accordance with an established schedule as described in the maintenance manual.

Sensor detection of flame, MBOP smoke, or presence of excessive combustible gas concentration (45% of Lower Explosive Limit [LEL]) will result in an Emergency ShutDown (ESD) of the fuel cell plant. In the case of combustible gases, detection of a concentration of approximately 25% LEL will result in a high LEL warning alarm. EBOP smoke detectors provide an alarm function only as other performance shutdowns protect the equipment in case of actual fire.



Tie Breaker Switchgear (Site Electrical Disconnect)







Skid 2, Main Process Skid Control Panel

Figure 1: Typical Emergency ShutDown (ESD) Pushbuttons

Fuel cell plant operating personnel are provided with portable gas detectors for use in operating and maintenance tasks including surveillance for gas leaks should such be necessary.

C. Fire prevention

The fire prevention strategy for the fuel cell power plant consists of the following Plan elements:

Housekeeping

The area around the fuel cell power plant shall be kept orderly and free of combustible and flammable materials, including combustible and flammable liquids, flammable gases and combustible and flammable solid materials. Trash shall not be allowed to accumulate. The water treatment system container shall not be used for general material storage.

Storage and Handling of flammables/combustibles

WITHIN THE PLANT ENCLOSURE WITHOUT PRIOR WRITTEN PERMISSION FROM THE LOCAL AUTHORITY HAVING JURISTICTION. Transient flammables and combustibles may include gases, small containers of flammable liquids such as solvents, trash and virgin and spent consumables used in the fuel cell process. These materials are to always be stored in packaging appropriate for their material properties and retained on site for as short of a duration as feasible. Flammable and combustible materials are to be kept separated from sources of ignition, fuel piping and processing equipment and electrical equipment and shall be protected from weather. Appropriate packaging materials for consumable materials are as follows:

- Catalysts, virgin or spent closed/sealed steel drums
- Desulfurizer media, virgin manufacturer's original packaging
- Desulfurizer media, spent closed/sealed steel drums

• Flammable/combustible materials and potential ignition sources

The following are flammable/combustible materials *potentially* present at the fuel cell power plant:

- Natural gas (present in piping and desulfurizer vessels only no on-site storage)
- Turbine lubrication oil
- > Electrical equipment
- Plastics
- Insulation jacketing
- Desulfurizer media (activated carbon)
- ➤ MBOP and EBOP Transformer oil (FR3 "less flammable" transformer oil)

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- 50% aqueous solution Propylene Glycol EBOP chiller coolant and heat transfer medium; VPSA Skid/AERS Skid
- Misc. new and used filter elements, PPE, packaging, etc.
- Granular nickel based catalyst (DOT Div. 4.2, PG II/III; transient storage only, never long-term)

Natural gas piping within the plant security fencing is identified with yellow "Natural Gas" pipe markers, complying with ANSI A13.1 requirements.

The following are potential ignition sources present at the fuel cell power plant:

- Heat from process
- Electrical equipment
- Catalysts
- Hot work
- Unauthorized Smoking or open flame
- Internal combustion equipment/vehicles

The fuel cell power plant design and procedures established to operate and maintain the plant have been formalized to minimize any potential for fire.

- ➤ The entire plant has been designed to and complies with the provisions of the ANSI/CSA safety code FC-1 (2004).
- ➤ The plant is equipped with automatic safety sensors to safely shut down the process in cases of leaking fuel or fire (Section B.)
- ➤ All fuel is pipeline supplied with minimal fuel holdup within the process.
- Desulfurizer vessels have been provided with pressure safety relief valves sized for fire emergencies.
- ➤ All of the plant piping has been designed in accordance with ASME B31.3 standard for process piping code. Piping is marked in accordance with ANSI A13.1.
- Areas of potential hazardous (classified) atmospheres have been identified and sources of potential ignition have been removed and any electrical equipment within complies with the area classification designation.
- ➤ Electrical equipment is designed to and complies with the provisions of UL1741.
- Smoking is NOT allowed within the fuel cell plant area.
- ➤ Hot Work within the fuel cell plant area is by Permit only, with potential sources of flammable materials removed from the area of potential ignition when hot work is conducted. Hot Work Permits are to be issued by the plant operator. Additionally, any hot work conducted under the supervision of FuelCell Energy will also be permitted under the FCE Hot Work Permit program.

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Portable Fire Extinguisher

Sufficient type A:B:C portable fire extinguishers (20 lb. minimum), depicted in the drawing in Appendix A, are installed at the plant such that the travel distance to nearest extinguisher does not exceed 50 feet. Portable fire extinguishers required for specific maintenance procedures are brought to site by service personnel as special equipment for that procedure.

Inspections of plant area and fire prevention equipment

All inspections and maintenance of fuel cell components and systems are to be performed in accordance with the latest revision of the plant maintenance manual. Operating personnel also conduct an informal "walk around" inspection every time they visit the plant site. As the plant operates remotely without the presence of operators, the walk around inspection is simply to check for any out of the ordinary situations or accumulated materials. FuelCell Energy operators log any negative findings into a Computerized Maintenance Management System (CMMS) database. Sensors are calibrated or replaced in accordance with an established maintenance schedule based on equipment manufacturer's instructions; with work orders scheduled and records maintained by the database.

If, during an operator site visit or walkaround inspection a fuel leak is discovered, an immediate evaluation and disposition shall be undertaken. For sizeable leaks, an immediate plant shutdown may be necessary, while leaks of a very minor nature may be able to be addressed by such remedies as flange bolt retorquing or other measures. FCE operators are equipped with portable fuel gas (LEL) meters to assist in the evaluation of leak severity. Any discovered leak and its corrective measures shall be recorded in the CMMS database.

UV/IR flame detectors, combustible gas (LEL) sensors and smoke detector automatic sensors shall be tested, calibrated, maintained and/or replaced at the frequency provided in the DFC3000B3 plant maintenance manual. A summary of these requirements is provided below:

Automatic Sensor	Frequency	Maintenance Action
Skid 1 Smoke Detectors	18 mos.	Test & replace if required
EBOP Smoke Detectors	18 mos.	Test & replace if required
Combustible Gas Detectors	6 mos.	Clean, test & calibrate, if req'd.
UV/IR Flame Detector	18 mos.	Clean & Test

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• Fire protection system/equipment impairment

Unintended impairment of any fire protection sensor system will automatically ESD the plant. Manual short-term sensor impairment for the purpose of on-site maintenance occurs only at times when maintenance personnel are on-site and vigilant for signs of fire or potential fire. As a policy, extended system impairment is not permitted with rare exceptions and only when alternative monitoring methods can be implemented by remote monitoring and for as short of a duration as possible.

Incident investigation and reporting

Any fire-related incident shall be immediately reported to the Local Fire Department as "lead investigator." Plant owner representatives as well as FuelCell Energy qualified personnel will be called upon to assist the Department in the site and technical aspects of the investigation. Such incidents will also be investigated by the fuel cell operator/manufacturer (FCE) as required by the manufacturer's Certifying Agency. Results/conclusions of the investigation will be reported to the plant owner. External reporting to other agencies will be as directed by the responding Department commanders and as required by regulation, as established at the time of incident.

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2.3 Plant/Project Safety Plan

Following is the Safety Plan for the subject plant. This Safety Plan will be updated as necessary to appropriately reflect specific site conditions and limitations, as FCE becomes aware and as construction progresses.

Safety Plan

FCE will address site security and personnel safety as the highest priority to ensure a safe and healthy work environment. Minimum safety requirements and policies have been identified and will be provided and enforced on all levels and for all organizations performing work at the facility during both the construction and operation phases of the project.

In addition, all contractors and subcontractors will be required to provide, adhere to, enforce, and report on their own safety policies and practices. Such policies, procedures and/or handbook will be provided to FCE prior to contract execution for FCE's review and consideration. Personnel will ensure that appropriate PPE is worn at all times to include the following:

- Safety Toe Shoes
- Hard Hat
- Hi-Vis Vest or Clothing
- Pants
- Safety Glasses
- Additional PPE necessary for specific work tasks (i.e. faceshield or cryogenic gloves)

Personal monitors are required to be worn while on the pad during normal plant operation due to presence of hydrogen and carbon monoxide. 4-Gas monitors are available for use and monitor LEL, H2S, CO, and O2 levels. Each individual must have their own personal monitor while working alone or can pair up via a "busy system" if working together in close proximity. Training requirements under Section E. Special Training must be met prior to working onsite.

A. Site Supervision

FCE, or their prime construction subcontractor, will provide a construction/safety manager to be present while any work is being performed on site at any time. FCE Project Management representatives and EHS professionals will perform additional on-site review and inspections to further enforce all safety policies and practices.

Further, contractors and subcontractors will be required to have their own safety supervisor on site at all times when work is being performed. The safety supervisor is

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responsible for their personnel's adherence to all required and prudent safety policies and practices. The supervisor is to be responsible for:

- Enforcing safety policies and practices,
- Providing safety orientation for any new personnel onsite,
- Daily safety "toolbox" meetings covering daily activities and associated risks, by trade,
- Recording the daily safety meetings,
- Weekly safety status meetings and discussion topics,
- Performing and reporting on weekly safety audits,
- Maintaining a daily personnel attendance log (for personnel accounting),
- Site walks with FCE's safety and construction managers on request, and
- Monthly formal reports including labor hours worked, incidents (including near misses, recordable events, and reportable events) along with a detailed description of corrective actions, audit results, and a summary of any site walks that occurred during that period.

At any time, FCE or subcontractor's safety or construction management personnel can enforce a stop work directive to correct any safety infractions.

B. FCE Safety Program Policies

Construction contractor and plant operator shall plan and conduct all work to safeguard persons and property from injury and will direct performance of work in compliance with reasonable safety and work practices and with applicable federal, state and local laws, rules, and regulations including but not limited to "Occupational Safety and Health Standards" promulgated by the U.S. Department of Labor. Work in areas adjacent to electrically energized equipment and/or operating natural gas equipment shall be performed in accordance with said practices, laws, rules, and regulations.

At the beginning of each work shift FuelCell Energy site supervision will complete a Job Safety Analysis (JSA) form for work that does not have previously established written procedures that consider hazards and mitigation controls. In the event that the scope of work changes, or new hazards are identified after the beginning of work, a new JSA will be developed. The JSA will include but not be limited to:

- Identification of the principal steps involved and the sequence of work activities.
- List of machinery/equipment to be used in conducting the work activities.
- An analysis of each principal step for its potential hazard.

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- Risk mitigations or each hazard.
- A list of inspection requirements for work training including hazard communication.
- Required permits.
- Emergency contacts.

An analysis of all JSA's will be provided to affected employees at the daily toolbox safety meetings, weekly general safety meetings, or special meetings by a supervisor/foreman or the site safety representative.

As part of FCE's continuing efforts to provide a safe and healthy workplace, it is required that all work activities be performed in accordance with all applicable regulatory requirements. While impossible to foresee all potential circumstances, the below list of Environmental, Health and Safety requirements constitutes the minimum basic elements to be followed during both the construction and operation phases of the fuel cell power plant project.

- SIGN IN: All individuals must sign in/out at the office each day that they are on site.
- INCIDENT, ILLNESS & INJURY: All incidents and injuries occurring on the premises shall be reported immediately to the Construction Manager in charge of the work being performed, or during operation phase of plant, to the FCE EHS department as soon as possible.
- CHEMICAL RELEASE OR SPILL: Any release of chemicals on site, regardless of volume, must be immediately reported to the Construction Manager, or during operation phase of plant, to the FCE EHS department as soon as possible.
- COMPRESSED GAS MANAGEMENT: The management and use of compressed gas is to be performed in accordance with OSHA standard 29 CFR 1910.101 "Compressed Gasses, General Requirements."
- CONFINED SPACES: All work in "confined spaces" is to be managed in accordance with OSHA standard 29 CFR 1910.146.
- CRANE HOIST & SLING SAFETY: The operation of cranes and hoists is to be performed in accordance with OSHA standard 29 CFR 1910.179; and the use of slings is to be in accordance with OSHA standard 29 CFR 1910.184.
- ELECTRICAL SAFETY: All work involving electricity is to be performed in accordance with OSHA standards 29 CFR 1910 Subpart S, "Electrical Safety"; 1910.269 "Electric Power Generation, Transmission & Distribution; and NFPA 70E-2004 "Electrical Safety In The Workplace" as applicable.
- EYE PROTECTION: During all times that ANY work is being performed anywhere on the facility, all personnel at the facility must be wearing eye protection.
- FALL PROTECTION: All work performed at heights of six feet or greater must be provided with at least one form of fall protection that will either prevent a fall from

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occurring, or properly arrest a person's fall once the event has occurred. However, platforms, or other surfaces designed primarily for walking, shall be provided with an approved guardrail system when they are either; >4' above the adjacent floor or ground level, or, above dangerous equipment (conveyor belts, chemical baths, exposed rebar, etc...) regardless of height. In all cases, work at height must be performed in accordance with OSHA standards 29 CFR 1910.23, 132, and 503.

- HAND & PORTABLE POWER TOOL SAFETY: Hand and portable power tools are to be used in accordance with OSHA standard 29 CFR 1910 Subpart P.
- HAZARD COMMUNICATION; RIGHT to KNOW: 29 CFR OSHA standard 29 CFR 1910.1200: Employees shall not be exposed to Hazardous Chemicals without first receiving training on the associated physical and health hazards and the measures needed to protect the employee from these hazards.
 - FCE utilizes green on white Target Organ Labels identifying the Name and the Physical & Health hazards of a material; these labels shall be used for all containers not otherwise adequately labeled by the manufacturer.
 - ➤ Hazardous materials brought on site shall be labeled and a Safety Data Sheet (SDS) supplied to the Environmental Health and Safety (EHS) Department prior to working with the chemical.
 - > An SDS station detailing all chemicals currently onsite is available for review.
- HAZARDOUS MATERIALS: FCE EHS is to be notified in advance of all hazardous materials to be brought on site. Storage, use and off-site transportation of these materials shall be performed in accordance with applicable requirements of the Connecticut General Statutes, the Regulations of Connecticut State Agencies and Titles 29 (OSHA), 40 (EPA), 49 (DOT) of the Code of Federal Regulations.
- HOT WORK PERMIT SYSTEM: A formal "Hot Work Permit" program is used as part of FCE's overall Fire Prevention Program. Hot work is any operation that introduces a potential ignition source, which in the presence of combustible or flammable materials can result in a fire. HOT WORK includes, but is not limited to, operations such as brazing, cutting, grinding, soldering, torching, and welding. The use of a Hot Work Permit is required for all hot work operations outside of designated hot work areas. Hot work can be performed without a permit only in areas specifically designated and posted as a "Hot Work" area.
- LADDER SAFETY: The use of ladders is to be done in compliance with the following OSHA standards:
 - > 29 CFR 1910.25 PORTABLE WOOD LADDERS
 - > 29 CFR 1910.26 PORTABLE METAL LADDERS
 - > 29 CFR 1910.27 FIXED LADDERS

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- > 29 CFR 1910.29 MANUALLY PROPELLED MOBILE LADDER STANDS & SCAFFOLDS
- LOCKOUT TAGOUT PROGRAM: All servicing and maintenance of equipment is to be performed in accordance with the requirements of OSHA standard 29 CFR 1910.147 or 269 as applicable. These standards require locking out all potential energy sources prior to the performance of work.
- PERSONAL PROTECTIVE EQUIPMENT: In accordance with OSHA standard 29 CFR 1910.132-138 and Subpart I, work is to be performed using all necessary PPE. Hazard Assessments and Training in the use of required PPE are to be performed and documented prior to performance of work. PPE shall be removed before leaving the work area and disposed of according to waste management procedures to ensure that contaminants are not spread to personnel, through the facility(s), and/or to the environment.
- POWERED INDUSTRIAL TRUCKS: Forklifts and other industrial lift trucks are to be operated only by personnel trained in accordance with OSHA standard 29 CFR 1910.178.
- POWERED PERSONAL LIFT TRUCKS: Powered personal lift trucks are to be operated only by personnel trained in accordance with OSHA standard 29 CFR 1910.67 and 29 CFR 1926.453.
- SAFETY DEVICES: Equipment safety devices are not to be removed, bypassed or otherwise modified without review and approval by FCE EHS Dept.
- SCAFFOLDING: All use of scaffolding shall be in accordance with the following OSHA standards:
 - 29 CFR 1910.28 "Safety Requirements for Scaffolding"
 - > 29 CFR 1910.29 "Manually Propelled Mobile Ladder Stands & Scaffolds"

STORMWATER POLLUTION PREVENTION: In accordance with the Connecticut Department of Environmental Protection (CTDEEP) "General Permit for the Discharge of Stormwater Associated with Industrial Activity"; activities which will directly or indirectly release hazardous or non-hazardous materials into the storm water system are not permitted and site activities are covered under Torrington's General Permit.

 WASTE MANAGEMENT: FCE is to be notified in advance of all waste to be generated. Under state and federal rules, FCE, as the site operator, is the "Generator" of all waste generated/created on site(s). As such, FCE is responsible for the proper Management, Storage, Transportation and Disposal of all wastes generated at site. This is to be done in accordance with all applicable requirements of the Connecticut General Statutes, the Regulations of Connecticut

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- State Agencies and Titles 29 (OSHA), 40 (EPA) and 49 (DOT) of the Code of Federal Regulations.
- WORKING ALONE: Working alone can introduce additional hazards not necessarily present during the course of performing work with other personnel. The biggest risk in working alone is during the occurrence of an incapacitating injury to the lone employee; a lack of timely medical attention could exacerbate the injury leading to greater harm. To prevent this, tasks must be assessed for hazards before assigning the employee(s) to perform them alone. If hazards do exist, either periodic monitoring, assignment of additional personnel, or rescheduling of the work must be done. Further, it is important that task limitations be clear in order that new hazards are not introduced during any work performed alone. Employees performing work alone shall always contact GMCC by cell phone upon entering the facility site and upon leaving.
- GENERAL DUTY CLAUSE: The General Duty Clause of the Occupational Safety
 and Health Act requires that employers provide a place of employment that is free
 of recognized health or safety hazards to employees. It is FCE policy to provide
 such a workplace. Employees are encouraged to discuss any known or perceived
 health or safety issues or concerns with FCE management or EHS associates.

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3 SITE SECURITY & ACCESS

Public access to the site is restricted by means of access gates as well as a 10-foot high fenced in enclosure. The enclosure is equipped with personnel and equipment doors or gates for necessary access. All access door/gates are kept locked when facility personnel are not present. Select access door/gates, as depicted in the drawing in Appendix A, are equipped with Local Fire Department specified and keyed Knox Locks, daisy-chained to the operator-provided combination lock. The daisy-chained locks provide the necessary security, while at the same time they also provide the means for required access by both authorized owner and operator personnel as well as by Emergency Response personnel.

All FCE power plants are remotely monitored 24 hours per day, 7 days per week, year round by FCE's GMCC operations center. Any tampering or unauthorized manipulation of fuel cell components or components associated with the CO2 Recovery Equipment that would result in any significant performance change for the plant will be immediately detected by the GMCC operator and/or result in an Emergency ShutDown of the plant, restoring the plant to a safe condition. All FCE fuel cell power plants are designed for "fail-safe" operation, where all foreseeable process deviations have been considered and the consequences minimized, through a hazard and operability (hazop) analysis.

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4 EMERGENCY RESPONDER / LOCAL COMMUNITY COORDINATION & NOTIFICATION SYSTEM

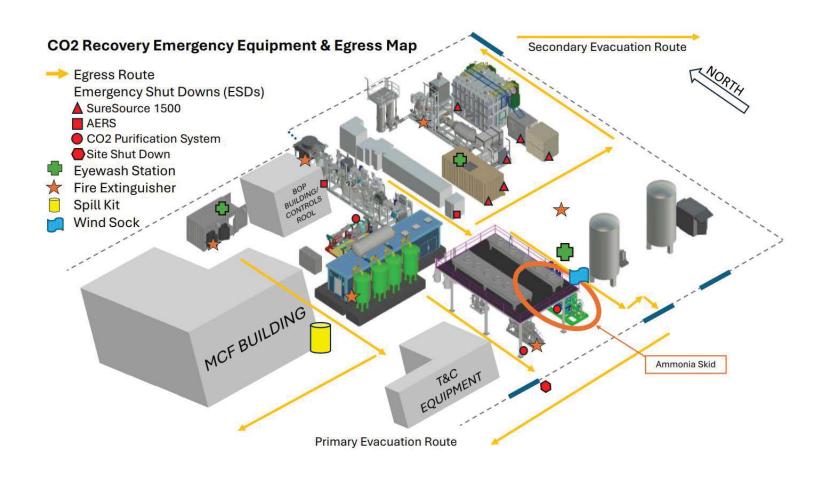
FCE will coordinate with local emergency response departments to familiarize personnel with the operations and equipment installed at the site. Either prior to or at this time, a compilation of Safety Data Sheets for chemicals used on the site can be provided to the Fire Department. It is not anticipated that any chemical quantities on-site will exceed Emergency Planning and Community Right-to-know Act (EPCRA) notification or reporting thresholds at any time, so therefore Tier II notifications and reporting will not be required.

During the construction phase, prior to a scheduled delivery of any piece of major equipment, the police department will be notified and contracted to manage and, as required, control local traffic. Prior to connecting or making natural gas available at the facility, FCE will coordinate with the local fire department, provide training regarding the facility equipment and facility safety features, tour Department personnel and provide description of how the plant facility will respond should a fire, smoke, or volatile gas release occur.

FuelCell Energy will record the names and contact information of those local residents that request to be informed of any actual emergency response situation that may develop at the subject power plant which may affect them. The names and contact information of the local residents will be incorporated into the Emergency Action Plan in the table provided for notification in an emergency response situation that could potentially affect these residents. Responsibility for making such notifications will be the on-site manager during the construction phase of the project, and GMCC during the operation phase of the project.

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Appendix A Plant Layout



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