



Doosan Fuel Cell America, Inc.
195 Governor's Highway
South Windsor, CT 06074
T - 860 727 2200

November 30, 2016

Responses to PE 1262-(11/16/16 Notice) Interrogatories

RE: PETITION NO. 1262 – Doosan Fuel Cell America, Inc. petition for a declaratory ruling That No Certificate of Environmental Compatibility and Public Need Is Required for the construction, maintenance, and operation of 1380-kilowatt customer-side combined heat and power fuel cell facility to be Located at the Borough of Naugatuck Waste Water Treatment Plant, 500 Cherry Street Extension, Naugatuck, Connecticut.

Please see the attached responses to the interrogatories with exhibits to the questions posed by the Connecticut Siting Council on 11/16/16 for PE 1262.

Address additional questions to:

Walter Bonola
195 Governor's Highway
South Windsor, CT 06074
(860) 727-2010
Walter.Bonola@doosan.com

Sincerely,
Doosan Fuel Cell America, Inc.

A handwritten signature in black ink, appearing to read "Dawn Mahoney". The signature is fluid and cursive, with the first name "Dawn" and last name "Mahoney" clearly distinguishable.

Dawn Mahoney, Esq.
General Counsel
Doosan Fuel Cell America, Inc.

VIA ELECTRONIC MAIL

November 16, 2016

Dawn Mahoney, Esq.
General Counsel
Doosan Fuel Cell America Inc.
195 Governor's Highway
South Windsor, CT 06074

RE: PETITION NO. 1262 - Doosan Fuel Cell America, Inc. petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the construction, maintenance, and operation of 1380-kilowatt customer-side combined heat and power fuel cell facility to be located at the Borough of Naugatuck Waste Water Treatment Plant, 500 Cherry Street Extension, Naugatuck, Connecticut.

Dear Attorney Mahoney:

The Connecticut Siting Council (Council) requests your responses to the enclosed questions no later than November 30, 2016. To help expedite the Council's review, please file individual responses as soon as they are available.

Please forward an original and 15 copies to this office, as well as send a copy via electronic mail. In accordance with the State Solid Waste Management Plan and in accordance with Section 16-50j-12 of the Regulations of Connecticut State Agencies the Council is requesting that all filings be submitted on recyclable paper, primarily regular weight white office paper. Please avoid using heavy stock paper, colored paper, and metal or plastic binders and separators. Fewer copies of bulk material may be provided as appropriate.

Yours very truly,

Melanie Bachman
Acting Executive Director

MB/MP

c: Council Members

Petition No. 1262
Doosan Fuel Cell America, Inc.
500 Cherry Street Extension
Naugatuck, CT
Interrogatories

1. In Doosan Fuel Cell America, Inc.'s (Doosan) Petition received on October 25, 2016, in the heading of the filing, Doosan notes that the proposed site is located at 500 Cherry Street. Is the correct address 500 Cherry Street Extension?
R1. Yes the location of the proposed site is 500 Cherry Street Extension.
2. Confirm that notice was provided via certified mail to recipients including the host property owner, abutters, and state and local officials. Provide certified mail receipts.
R2. Notice was provided and the mail receipts are attached in Naugatuck-1 Mail Receipts
3. Provide a detailed site plan that includes but is not limited to location and dimensions of the fuel cells, cooling modules, concrete pads, fence design and bollards (if applicable), utility connections, nearby utility building, and retaining wall.
R3. Please see attached Naugatuck-2 Site Plan.
4. What is the projected service life of the proposed fuel cells?
R4. The product has a 20 year life with a projected 10-year overhaul.
5. Would the proposed project be surrounded by a fence? If a chain link fence is being proposed, provide the height of the fence and mesh size. Has Doosan considered the installation of an anti-climb fence design? Would bollards be used to protect the fuel cell facility from being accidentally struck by vehicles?
R5. The facility is fenced and secured. Bollards will be used to protect the Fuel Cells from vehicles as shown in attached Naugatuck-2 Site Plan. The entire site is fenced and the facility is considered secured therefore anti-climb fence design is not required.
6. Is the 20-foot high concrete retaining wall noted on pages one and five of the Petition existing or proposed? If the retaining wall is existing, would there be any modifications or additions to the existing concrete retaining wall to accommodate the proposed fuel cell facility? Explain.
R6. The retaining wall is existing and there will be no modifications made to the wall.
7. Is the project located outside of the 100-year and 500-year flood zones? If no, would the proposed fuel cells and cooling module(s) be elevated as a flood mitigation measure, e.g. one foot above the 100-year flood elevation? Provide a Federal Emergency Management Agency flood zone map.
R7. Please see attached Naugatuck-3 Flood Zone Map. The fuel cell facility will not be located in zone X of the flood area. The area has a 0.2% annual chance of flood.
8. What is the zoning designation of the subject property? What are the surrounding land uses for areas abutting the site?

- R8. The zoning designation is X and the surrounding land is also part of the waste water treatment plant.
9. **Provide a decommission plan, including the fuel cell facility infrastructure removal plans and site restoration plans.**
- R9. The decommissioning plan is as follows:
- 1 – Isolate, lock out and disconnect all piping for cooling module at the Power module. Remove gas piping to the unit. Disconnect nitrogen purge system at power module.
 - 2 – Disconnect all electrical conductors and conduit at the unit to include electrical power, ACM power, nitrogen pressure switch, RMS power and RMS ethernet. Shore power to be maintained to the unit to maintain temperature as needed.
 - 3 – Contractor will work in concert with Doosan Service Dept. personnel during decommissioning and shutdown.
 - 4 – Contractor to supply rigging labor and equipment including crane service sufficient to safely lift unit and place on Doosan supplied flatbed truck. Contractor to supply labor to install travel tarp (Doosan supplied) on unit prior to being transported.
 - 5 – Return facility to original condition with the exception of the concrete pads
10. **What is the distance and direction from the proposed fuel cell facility to the nearest wetland?**
- R10. The closest wetland is 750 yards from the proposed site.
11. **What is the distance and direction from the proposed fuel cell facility to the nearest residence?**
- R11. The nearest residence is North West from the proposed site and is located 450 yards from the site.
12. **Is the fuel cell facility located within an Aquifer Protection Area as designated by the Connecticut Department of Energy and Environmental Protection (DEEP)?**
- R12. Please find attached Naugatuck-4 Aquifer Protection Area Map which highlights that the location of the fuel cell is not located in an APA.
13. **Is the fuel cell facility located within any environmentally sensitive areas such as DEEP Natural Diversity Database (NDDB) Area, flood zones, wetlands, Connecticut Critical Habitat Area, etc.?**
- R13. No, the location of the fuel cell is not in any environmentally sensitive areas.
14. **How many trees six inches diameter or greater would be removed to construct the proposed fuel cell facility, if any?**
- R14. No trees are required to be removed for the install of the facility.
15. **What is the closest distance from the proposed fuel cell facility location to the Naugatuck River?**
- R15. The river is 250 yards from the proposed site location.
16. **Would any waste heat from the fuel cells be used for the building's internal use such as to provide or supplement domestic heating and/or hot water?**
- R16. No, Naugatuck has no heat recovery at the proposed site.
17. **Would the fuel facility only consume water during the initial commissioning start-up or every time the unit cycles on? How much water is used for a start-up? Would the fuel cell run on mostly a 24/7 basis as a baseload facility and thus have infrequent start-ups?**
- R17. The fuel cell unit operates in water balance below 86°F. The initial fill requires 350 gallons of water. The amount of make-up water above 86°F increases linearly from 0 gpm to 1 gpm at 110°F.
18. **Would the fuel cell facility provide backup power in the event of a power outage? If yes, would the fuel cell first shut down and then automatically “black start” to restore power, or would it continue running seamlessly despite the loss of grid power (i.e. provide uninterruptible power)? Please explain.**
- R18. No, the facility will not provide backup power in the event of a power outage.
19. **Would any surplus power be sold to the grid? What percentage of the building's energy usage would be provided by the proposed facility under normal conditions?**
- R19. No, surplus power will not be sold to the grid.

20. Please provide an Emergency Response Plan for the proposed facility in accordance with Public Act 11-101, An Act Adopting Certain Safety Recommendations of the Thomas Commission.

R20. Please see attached Naugatuck-5 Emergency Response Plan.

21. Please identify media to be used for pipe cleaning procedures at the proposed facility in accordance with Public Act 11-101, An Act Adopting Certain Safety Recommendations of the Thomas Commission.

R21. Use atmospheric air under pressure – no solvents or cleaners will be used.

22. Which National Fire Protection Association (NFPA) or other codes and standards apply to fuel cell construction, installation and/or modification?

R22. ANSI FC-1 2014: American National Standard for Stationary Fuel Cell Power Systems. This certification calls out all codes and standards for stationary fuel cell applications.

23. Please submit a noise analysis report to demonstrate compliance with DEEP noise control standards.

R23. The noise sound level on page 8 of the petition states that per each fuel cell the sound level will be less than 65dBA at 33 feet. For the three fuel cell unit install the noise prediction will be no more than 69.8 dBA at 100+ feet away from the units. This is in compliance with DEEP noise control standards.

24. In the Petition, Doosan predicts a noise level of not more than 62 dBA at 100+ feet away for the fuel cell. Does that include the cooling module(s) and the cumulative noise effects of having three fuel cell units instead of one? If no, please update this noise prediction accordingly in response to question 23.

R24. The noise level predicted includes both the fuel cell plant and the cooling module. The noise level stated in the petition is per each fuel cell unit; for the three fuel cell unit install the noise prediction will be no more than 69.8 dBA at 100+ feet away from the units.

25. Provide a table showing state criteria thresholds and projected emissions from the proposed facility for all greenhouse gasses listed in the Regulations of Connecticut State Agencies Section 22a-174-1(49) with or without the use of waste heat. Provide cumulate emissions from all three units.

R25. Please see the table below:

Table 1: PureCell® Model 400 Emissions Data

	lb/MWh	PPMvd @ 15.4% O ₂
NO _x	0.01	0.32
CO	0.02	0.67
VOC	0.02	1.36
CO ₂	1050	-

26. Which emission rate in pounds of CO₂ per megawatt-hour (MWh) did Doosan use for the eGRID non-baseload generation for the ISO New England, Inc. electric system? Doosan estimates that annual carbon emissions would be reduced by about 1,300 metric tons per year. Is this only for displacement of non-baseload electric generation, or would the total carbon reduction be potentially higher, for

example, because the use of waste heat would reduce the runtime of the building's heating system, if applicable?

R26. We use the 2012 eGrid "Fossil fuel output emission rate (CO₂ lb/MWh)" of 980.27 with a grid loss of 9.17% for a total of 1070 lb/MWh for the NEWI Region. We account for the CO₂ offset to natural gas heating fuel using avoided heat efficiency of 80% in our carbon emissions.

27. Does the amount of phosphoric acid in each fuel cell (or cumulatively for all three fuel cells) comply with the applicable State and federal regulations?

R27. Phosphoric acid is bound within a matrix within the fuel cell stacks and the quantity is proprietary. The amount does comply with the State and Federal regulations.

28. Natural gas has sulfur dioxide injected as an odorant. Is desulfurization required, e.g. to protect the fuel cell stack from sulfur? Explain. If yes, please submit a desulfurization plan narrative for the proposed fuel cell facility containing the following information:

- a) Chemical reaction overview concerning what substances are produced from the desulfurization process, as well as plans for their containment and transport;
- b) How much solid sulfur oxide would result from the desulfurization process, and methods and locations for containment, transport, and disposal;
- c) Whether any of these desulfurization substances are considered hazardous, and if so, plans for the containment, transport, and disposal of hazardous substances;
- d) Anticipated method of disposal for any other desulfurization substances; and
- e) Whether any gaseous substances resulting from desulfurization can be expected to vent from the fuel cells, as well as the applicable DEEP limits regarding discharge of these gasses.

R28a. The Model 400 desulfurizer system removes sulfur used as an odorant in natural gas. Sulfur is converted to zinc-sulfide, a non-hazardous waste, within the desulfurizer and remains there until an overhaul is required, nominally after 10 years. At no time is sulfur or zinc-sulfide accessible or removed during the operation or service of the fuel cell. When the desulfurized system is overhauled, it is sealed and transported back to the manufacturing facility for recycling.

R28b. There is no solid sulfur oxide result from the desulfurization process; all natural gas odorant, as noted above, converts to zinc-sulfide and remains sealed within the fuel cell.

R28c. The by-product, zinc-sulfide, is sealed within the fuel cell system, and as noted above, when the desulfurized system is overhauled, it is sealed and transported back to the manufacturing facility for recycling.

R28d. As noted above, the only by-product is zinc-sulfide, which is transported back to the manufacturing facility for recycling.






R28e. No gaseous substances resulting from desulfurization are expected to vent from the fuel cell – as noted above, the desulfurization process is sealed within the fuel cell system.

29. If the project is approved by the Council, approximately when would construction commence and when would it be completed? What are the estimated work hours and days of the week, e.g. Monday through Friday 7:00 a.m. to 5:00 p.m.?

R29. We plan to start construction work by January 15, 2017 or sooner if allowed. . The work is to be completed and commissioned by the end of April 2017. Regular work hours are Monday through Friday 7:00am to 5:00pm.



Flood Hazard Zones

-  1% Annual Chance Flood Hazard
-  Regulatory Floodway
-  Special Floodway
-  Area of Undetermined Flood Hazard
-  0.2% Annual Chance Flood Hazard
-  Future Conditions 1% Annual Chance Flood Hazard
-  Area with Reduced Risk Due to Levee



AQUIFER PROTECTION AREAS

Naugatuck, CT
October 6, 2016

-  Level A APA (Final Adopted)
-  Level A APA (Final)
-  Level B APA (Preliminary)
-  Town Boundary

NOTE: The Aquifer Protection Areas were delineated through Connecticut's Level A and Level B Mapping Processes. Aquifer Protection Areas are delineated for active public water supply wells in stratified drift that serve more than 1000 people, in accordance with Sections 22a-354c and 22a-354z of the Connecticut General Statutes. Level B Mapping delineates a preliminary aquifer protection area, providing an estimate of the land area from which the well draws its water. Level A Mapping delineates the final Aquifer Protection Area, which becomes the regulatory boundary for land use controls designed to protect the well from contamination. As Level A Mapping is completed for each well field and approved by DEEP, it replaces the Level B Mapping. Final Adopted Level A Areas are those where towns have land use regulations for them.

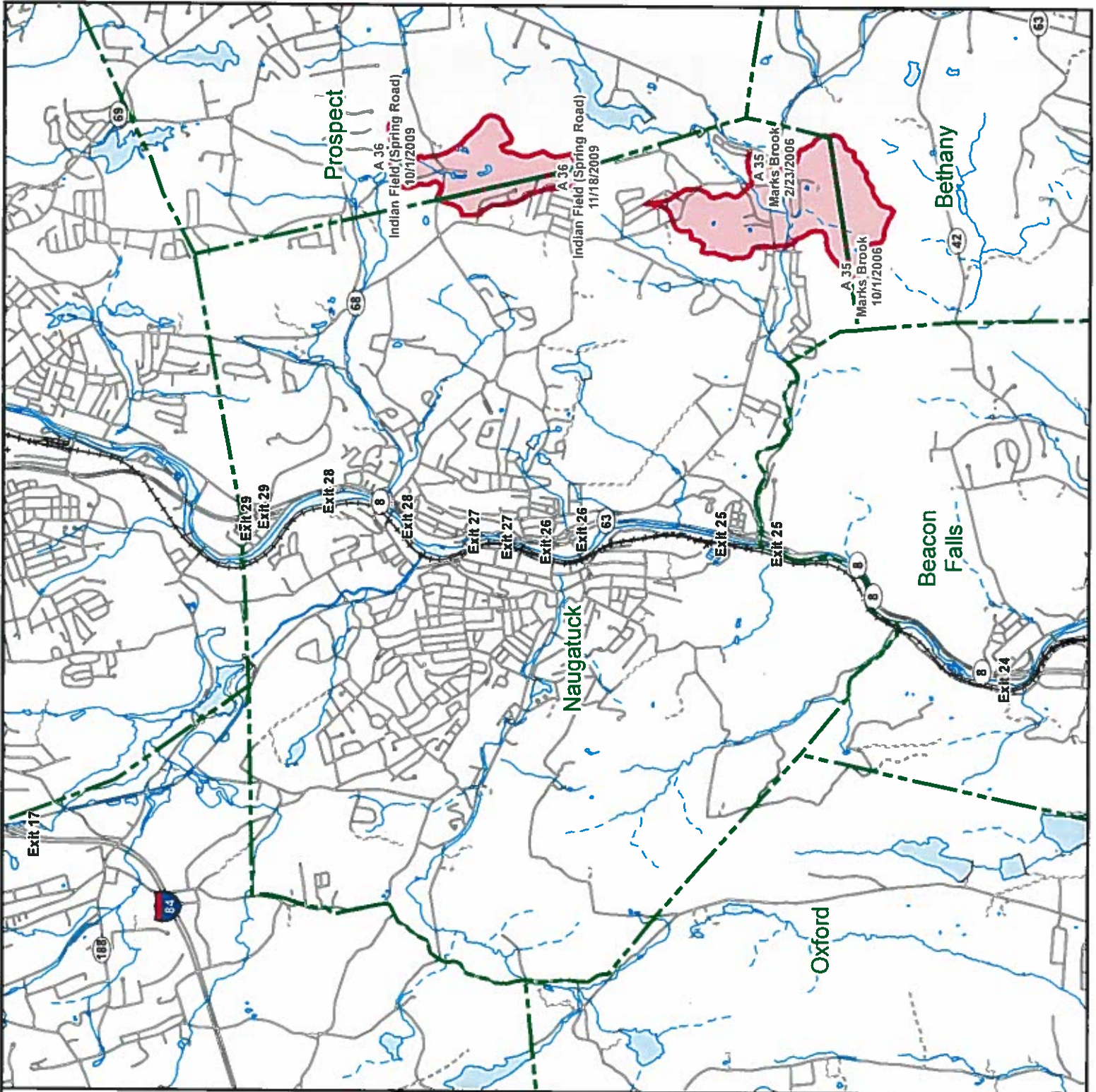
Massachusetts and Rhode Island Wellhead Protection Areas may be shown for informational purposes.

QUESTIONS:

Bureau of Water Protection and Land Reuse
Planning and Standards Division
Phone: (860) 424-3020
www.ct.gov/deep/aquiferprotection



STATE OF CONNECTICUT
DEPARTMENT OF
ENERGY & ENVIRONMENTAL PROTECTION
79 Elm Street
Hartford, CT 06106-5127





MAP SCALE 1" = 500'



INQUIRY

PANEL 0256H

FIRM FLOOD INSURANCE RATE MAP NEW HAVEN COUNTY, CONNECTICUT (ALL JURISDICTIONS)

PANEL 256 OF 635
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
BEACON FALLS, TOWN OF 090072 0256 H H
NAUGATUCK, BOROUGH OF 090137 0256 H H

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

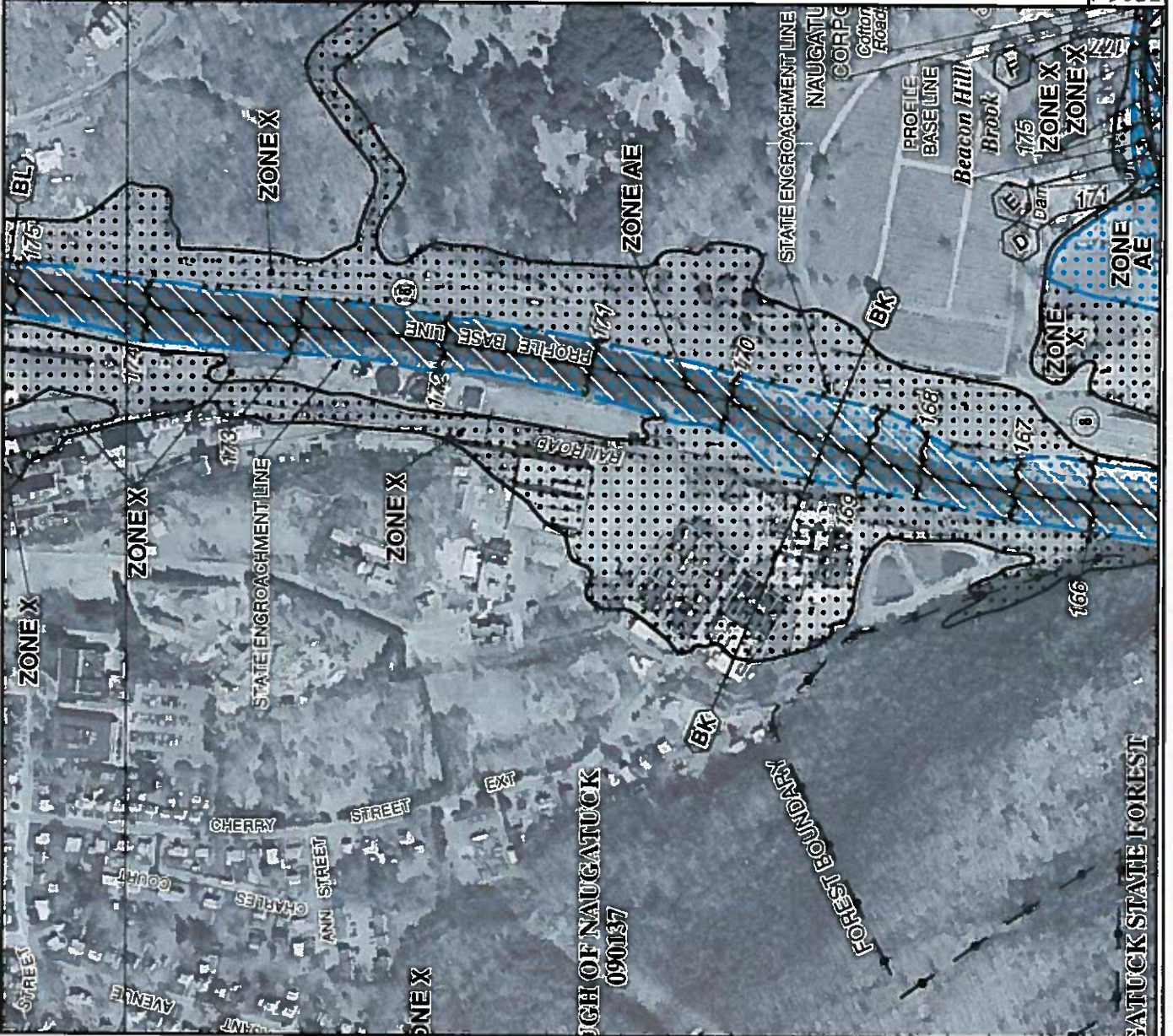


MAP NUMBER
09009C0256H
EFFECTIVE DATE
DECEMBER 17, 2010

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

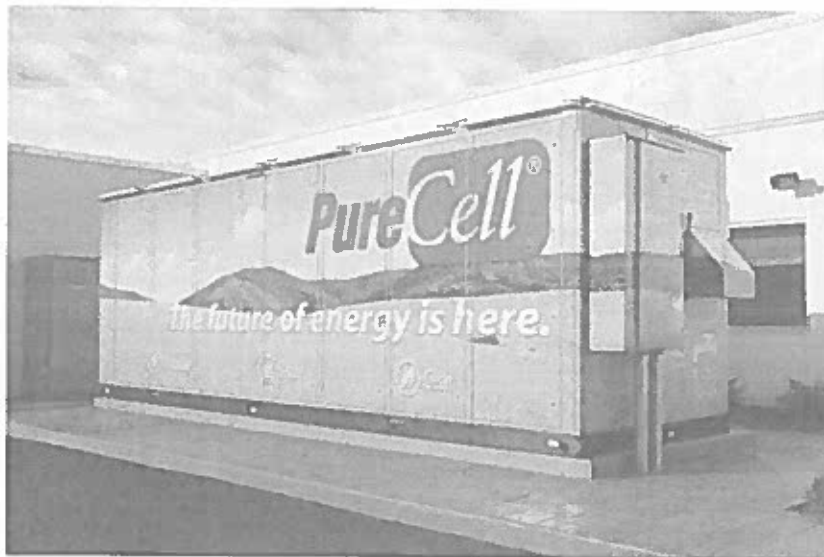
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.mtc.fema.gov





Doosan Fuel Cell America, Inc. Fuel Cell Emergency Response Guide

Naugatuck Treatment Plant
500 Cherry St Exd,
Naugatuck, CT 06770



DISCLAIMER

Doosan Fuel Cell America reserves the right to change or modify, without notice, the design or equipment specifications of the PureCell® system Model 400 without obligation with respect to equipment either previously sold or to be sold. This guide is provided by Doosan Fuel Cell America, and no liability will accrue to Doosan Fuel Cell America based on the information or specifications included herein. No warranties or representations are made by this guide and no warranties or representations shall apply to the equipment except as stated in Doosan Fuel Cell America's standard terms and conditions of sale applicable at the time of purchase, a copy of which will be provided upon request. The Model 400 is designed to provide safe and reliable service when operated within design specifications, according to all applicable instructions, and with the appropriate operating materials. When operating this equipment, use good judgment and follow safety precautions to avoid damage to equipment and property or injury to personnel. Be sure to understand and follow the procedures and safety precautions contained in all applicable instructions, operating materials, and those listed in this guide. All information in this document is as of May 30, 2015.

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Policy

The following plan has been developed to minimize the severity of damage to human health, the environment, and property in the event of an unexpected failure.

Scope

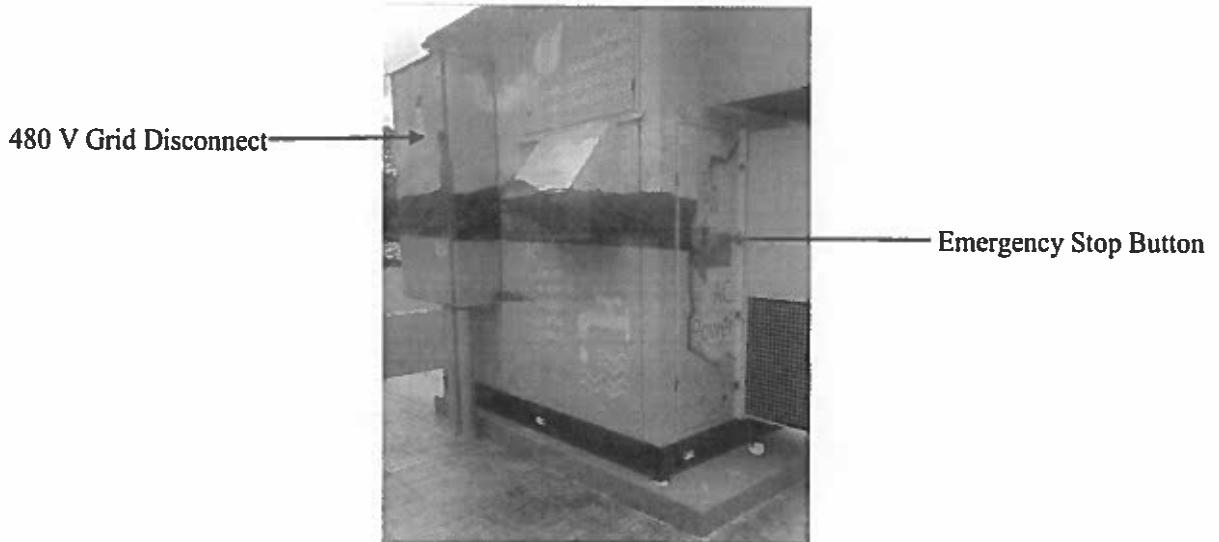
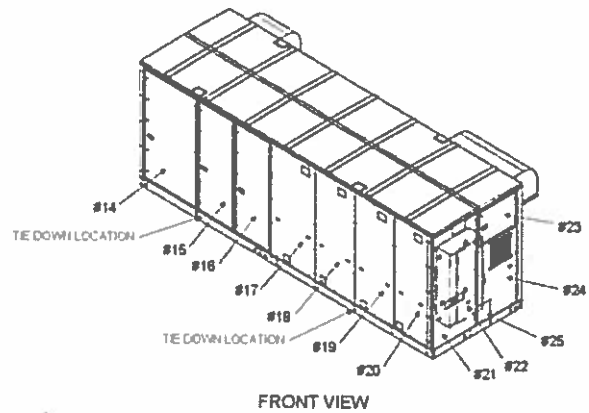
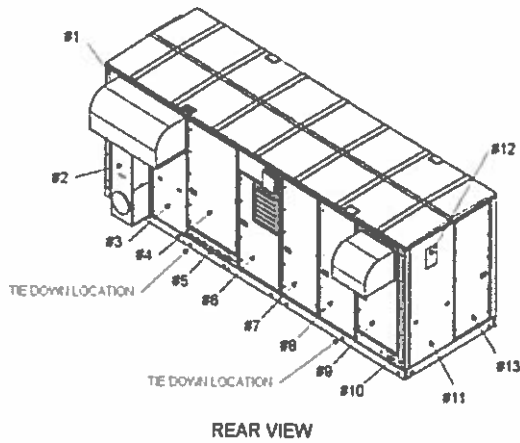
This Emergency Response Guide shall be integrated into the site Emergency Response Plan. Information contained in this document shall be customized to meet local requirements and shall be shared with local responders as necessary. This guide is only a template and in no way assumes or transfers liability or ownership. Doosan Fuel Cell America should be contacted if clarification is needed.

Emergency Contacts and Numbers

Local Emergency Number	911
Doosan Fuel Cell America Control Center	(860) 727-2847
Clean Harbors Emergency Cleanup Response	(800) 645-8265
Fire Department – Non-emergency number	Naugatuck Fire Department (203) 720-7080
Hospital – Non-emergency number	St Mary’s Hospital urgent Care Centre 1799 New Haven Rd, CT 06770 203-723-5636
Electric Utility Name: Eversource Energy	800-286-5000
Gas Utility Name: Eversource Energy	*Gas Leaks Only: <u>877-944-5325</u>
Local Oil & Chemical Spill Response Division	800-645-8265
EPA - Environmental Protection Agency Region 1	(800) 424-8802 Environmental Emergency
OSHA - Occupational Safety and Health Admin. Emergency Number	(800) 321-6742 National Emergency Number
Poison Control Center	(800) 222-1222 National Emergency Number



Fuel Cell Hazard Overview



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Rear View Panel	Primary Hazard	Front View Panel	Primary Hazard
1 (Computer Terminal)	Electrical = 120 VAC	14 (Reformer)	Electrical = 480 VAC Chemical = Air sensitive catalyst / combustibles Thermal = 600°F Reformer Pressure = 150 psi steam
2 (Air Conditioner)	Electrical = 480 VAC Chemical = Refrigerant	15 (Reformer)	Electrical = 480 VAC Chemical = Air sensitive catalyst / combustibles Thermal = 600°F Reformer Pressure = 150 psi steam
3 (Swing Door)	Electrical = 480 VAC	16 (Reformer)	Electrical = 480 VAC Chemical = Air sensitive catalyst / combustibles Thermal = 600°F Reformer Pressure = 150 psi steam
4 (Mechanical Entry)	Electrical = 480 VAC Chemical = Propylene Glycol Thermal = 350°F Steam Pressure = 150 psi Steam	17 (DC Cell Stack)	Electrical = 300 VDC Chemical = Solid phosphoric acid / combustibles
5 (Mechanical Entry)	Chemical = Propylene Glycol Thermal = 350°F Steam Pressure = 150 psi Steam	18 (DC Cell Stack)	Electrical = 300 VDC Chemical = Solid phosphoric acid / combustibles
6 (TMS)	Electrical = 480 VAC Chemical = Propylene Glycol / Deionized Water / Resin Thermal = 350°F Steam Pressure = 150 psi Steam	19 (DC Cell Stack)	Electrical = 300 VDC Chemical = Solid phosphoric acid / combustibles
7 (ILS)	Electrical = 480 VAC Chemical = Air sensitive catalyst / combustibles Thermal = 600°F Reformer Pressure = 150 psi steam	20 (DC Cell Stack)	Electrical = 300 VDC Chemical = Solid phosphoric acid / combustibles
8 (Fuel Processing Area)	Electrical = 480 VAC Chemical = Air sensitive catalyst / combustibles Thermal = 600°F Reformer Pressure = 150 psi steam	21	Not accessible
9 (Fuel Processing Area)	Electrical = 480 VAC Chemical = Air sensitive catalyst / combustibles Thermal = 600°F Reformer Pressure = 150 psi steam	22 (Grid Connect Disconnect)	Electrical = 480 VAC
10 (Gas/Nitrogen Inlet)	Chemical = combustibles	23 (Blower 110)	Electrical = 300 VDC Mechanical = Blower
11 (Reformer)	Electrical = 480 VAC Chemical = Air sensitive catalyst / combustibles Thermal = 600°F Reformer Pressure = 150 psi steam	24 (Inverter)	Electrical = 1400 VDC / 480 VAC
12 (Reformer)	Electrical = 480 VAC Chemical = Air sensitive catalyst / combustibles Thermal = 600°F Reformer Pressure = 150 psi steam	25 (Grid Independent Circuit)	Electrical = 480 VAC
13 (Reformer)	Electrical = 480 VAC Chemical = Air sensitive catalyst / combustibles Thermal = 600°F Reformer Pressure = 150 psi steam	ALL Roof Panels	Multiple Hazards DO NOT WALK ON ROOF!

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Conditional Assessment

Normal Condition	Potential Abnormal Condition	Response
Fuel Cell White steam exiting power plant at exhaust chimney, above panel #6 (It can be a large amount of white steam depending on ambient conditions)	Dark colored smoke exiting chimney or any other part of enclosure	1. Establish safe perimeter 2. Contact Doosan Fuel Cell America Control Center (860) 727-2847
	Observable fire or heavy smoke at any point on fuel cell	1. Press Fuel Cell 'Stop Button' – Only if safely accessible! 2. Dial 911 or Local Emergency Response Number 3. Establish safe perimeter 4. Contact Doosan Fuel Cell America Control Center (860) 727-2847
Fuel Cell Moderate humming, clicking and fan sounds	Grinding or loud intermittent noises	1. Contact Doosan Fuel Cell America Control Center (860) 727-2847
	Observable fire or heavy smoke at any point on fuel cell	1. Press Fuel Cell 'Stop Button' – Only if safely accessible! 2. Dial 911 or Local Emergency Response Number 3. Establish safe perimeter 4. Contact Doosan Fuel Cell America Control Center (860) 727-2847
Cooling Module Fan humming	Smoke or fire coming from module	1. Press Fuel Cell 'Stop Button' – Only if safely accessible! 2. Dial 911 or Local Emergency Response Number 3. Establish safe perimeter 4. Contact Doosan Fuel Cell America Control Center (860) 727-2847
	Grinding or loud noise coming from fans	1. Contact Doosan Fuel Cell America Control Center (860) 727-2847
Cooling Module No leaking from cooling loop piping or coils	Small leak dripping from joint, valve or connection	1. Contact Doosan Fuel Cell America Control Center (860) 727-2847
	Medium to large leak	1. Follow local spill response protocol or contact Clean Harbors Emergency Cleanup Response (800) 645-8265 2. Contact Doosan Fuel Cell America Control Center (860) 727-2847
Mechanical Hi/Lo Grade Piping Small amounts of condensate dripping from piping	Small leak dripping from joint, valve or connection	1. Contact Doosan Fuel Cell America Control Center (860) 727-2847
	Medium to large leak	1. Follow local spill response protocol or contact Clean Harbors Emergency Cleanup Response (800) 645-8265 2. Contact Doosan Fuel Cell America Control Center (860) 727-2847
Disconnects/Other Equipment No leaks or smoke	Smoke or fire coming from equipment	1. Dial 911 or Local Emergency Response Number 2. Establish safe perimeter 3. Contact Doosan Fuel Cell America Control Center (860) 727-2847

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Compressed Gas Manifold (N₂/H₂) No leaks, May hear intermittent gas flow during purges	Leaks – may be able to hear hissing sound.	<ol style="list-style-type: none"> 1. If Indoors – Evacuate Immediately! Dial 911 or Local Emergency Response Number 2. Establish safe perimeter 3. Contact Doosan Fuel Cell America Control Center (860) 727-2847
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Fuel Cell Related Material Safety Data Sheets (MSDS)

1. Propylene Glycol – DowFrost®
2. Phosphoric Acid – Solid
3. Reformer/ILS Catalysts
4. Anion/Cation Resin
5. Nitrogen / Hydrogen Compressed Gas Mixture (non-flammable)

Inspections

Inspection Type	Equipment Requirements	Frequency Required
General Maintenance	Laptop, Service Vehicle	Monthly
General Housekeeping	N/A	Monthly
Waste and Chemical Storage*	N/A	Weekly
Internal Combustible Gas Monitor	AT-160 Calibration Kit	Annual
Fire Prevention	N/A	Monthly

*When applicable

Fuel Cell operation is monitored and controlled remotely 24 hours a day 7 days a week by the Doosan Fuel Cell America Control Center. Upset or abnormal occurrences outside of normal operating parameters are immediately identified and service technicians are dispatched within 24 hours to respond when required.

Emergency Procedures

Alarms	There are no audible or visual alarms on Fuel Cell. Alarm conditions are relayed immediately to the Doosan Fuel Cell America Control Center. The Doosan Fuel Cell America Control Center will then contact the appropriate site personnel on the site’s emergency contact list.
Emergency Shut Down Onsite	Actuate Fuel Cell Stop Button
Emergency Area Egress - Gas Odor	Evacuate 330 Feet in all directions
Emergency Area Egress - Fire	Evacuate 330 Feet in all directions – CV000 automatic natural gas supply shut off
Emergency Egress - General	Fuel cell is unmanned remotely monitored and controlled. No Doosan Fuel Cell America employees attending unit unless service or maintenance is required.



Signage and Labeling

External service lines will be clearly identified. Labeling will be in accordance with ANSI A13.1. Labeling will be similar to example below:



Perimeter fencing will have signage clearly identifying that "No smoking, no ignition sources" on every side of the fence. Signage will be similar to the sign below:





General

Safety Hazard Analysis

The PureCell® Model 400 fuel cell system has been designed to meet strict ANSI/CSA safety standards to protect against risks from electrical, mechanical, chemical, and combustion safety hazards. The following items are a few of the safety measures incorporated into the design.

Fire Detection and Protection:

The power plant design incorporates a combustible gas sensor as well as thermal fuses located throughout the power module cabinet to detect fire. The detection of a potential flammable gas mixture, a fire, or the failure of this detection circuit will result in a power plant shutdown and a subsequent inert gas (nitrogen) purge of the fuel cell stack and fuel processing system. This event will also result in an alarm callout notification to Doosan Fuel Cell America service personnel. The power plant is designed with an integral emergency-stop button on the outside of the enclosure to enable immediate shutdown in the event of an emergency. There is also a gas shut-off valve and electrical disconnect switch easily accessible to emergency personnel. There are no restrictions for type of fire suppression equipment.

Gas Leak:

Augmenting the internal combustible gas sensor, the power plant also monitors the flow rate of natural gas. If the gas flow rate exceeds the equivalent power production of the power plant then a shutdown will result. The largest possible accumulation from a leak prior to shutdown is below combustible limits. Fuel valves inside the power plant are "fail safe" and will return to their normally closed position upon loss of power. The power plant is designed to have a physical barrier that separates the equipment handling combustible gases (fuel compartment) from electrical or potential spark-creating equipment (motor compartment). The fuel compartment is kept at a negative pressure to contain and remove any potential gas leaks, whereas the motor compartment is pressurized by a fan source to prevent combustible gases from entering.

Hydrogen:

Hydrogen is lighter than air and thus does not pool like other fuels and will readily dissipate with proper ventilation making it less likely to ignite. Although hydrogen has low self-ignition characteristics, the fuel in the power plant is not pure hydrogen. Also, the power plant is not producing or storing hydrogen, it consumes hydrogen-rich gas equal to what it requires to produce power. The fuel cell stack is wrapped in a fire retardant blanket. There are no materials inside the unit that would sustain a flame. There is no large volume of gas or any ignition that occurs within the cell stack.

Phosphoric Acid:

Phosphoric acid is integral part of the fuel cell system, acting as the electrolyte within the fuel cell stack. Phosphoric acid is a surprisingly common substance that is contained in common cola drinks. A leak of phosphoric acid is not possible because phosphoric acid is not in liquid form once applied in the equipment. There is no reservoir of liquid. Phosphoric acid is contained in the porous structure of the fuel cell stack material by capillary action, similar to how ink is absorbed into a blotter.

Fluid Leak:

The only fluid source is water. All pressurized water vessels are designed to ASME boiler codes and inspected annually. All piping, welds, etc. meet pressurized piping standards. Water produced through the electrochemical process is "pure" water and is reclaimed and reused by the process. The other source of water is water used in the external cooling module, which is mixed with a polypropylene glycol and a rust inhibitor to prevent rust and freezing in colder climates.

Hazardous Waste:

The fuel cell does not produce any hazardous waste. Standard Material Safety Data Sheets (MSDS) are available upon request.

Doosan Fuel cells USA
195 Governor's Highway
S. Windsor CT 06074

Rep. DE Laura Raso
127 Church St. Suite 218
New Haven CT 06510



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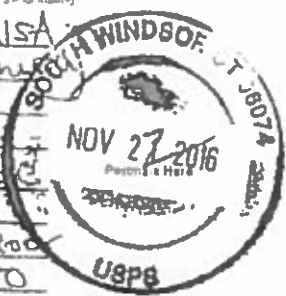
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Sue Goggin
229 Church Street 3rd Floor
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Legislative Office Building
Hartford CT 06106-1519

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195 Governor's Highway
South Windsor
CT 06074

To Ivan Hartley - State Sec
Legislative Office Building
Rm 3100
Hartford, CT 06106-1519

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195 Governor's Highway
South Windsor, CT 06074

To Building Inspector Nagegi
Bill Herzman
229 Church Street
Naugatuck CT 06770

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From: Doosan FC America
195 Governor's Highway
S. Windsor, CT 06074



To: Melody A. Currey - Commissioner
State Department of Administrative
Services, 165 Capital Ave.
Hartford, CT 06106

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From: Doosan Fuel cells - USA
195 Governor's Highway
S. Windsor CT 06074



To: Dora B Schirra - Commissioner,
Dept of emergency Services
& Public Protection
1111 Country Club Rd Middletown
CT 06457

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From: Doosan FC America
195 Governor's Highway
S. Windsor, CT 06074



To: Dr. Jewel Mullan - Commissioner
State Dept of Public Health
410 Capital Avenue
Hartford, CT 06106

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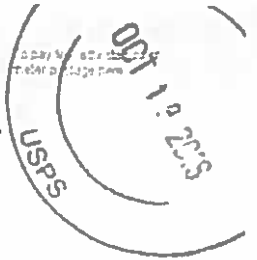
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195 Governor's Highway
S. Windsor, ct 06074



To Catherine Smith - Commissioner Postmark Here
State Dept of economic &
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Hartford, ct 06106-7106

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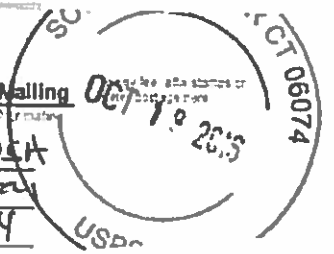
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From Doosan Fuel cells - USA
195 Governor's highway
S. Windsor, ct 06074



To Cong. Joe Courtney
77 Hazard Avenue Un
Enfield ct 06082



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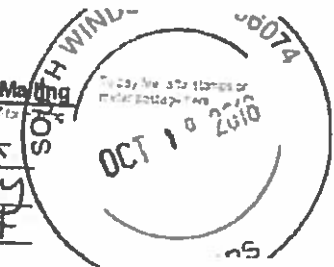
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From Doosan Fuel cells - USA
195 Governor's highway
S. Windsor - ct 06074



To Matthew Vertefeuille
Director of Code Enforcement
979 Main St 1st floor
Willimantic ct 06226-2818



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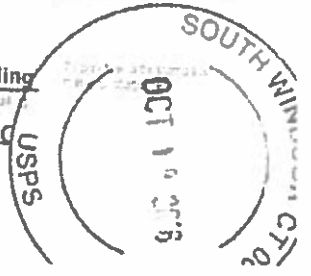
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From Doosan Fuel cells - US
195 Governor's highway
S. Windsor, ct 06074



To Robert Klee



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From: Doosan Fuel Cells America
195 Governor's Highway
S. Windsor Ct 06074

To: Susan Merrow - Chair
State Council of Environmental
Quality, 79 Elm St
Hartford, Ct 06106



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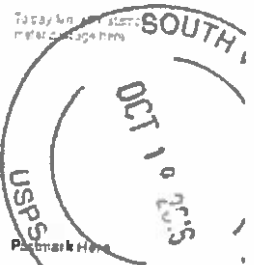


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From: Doosan Fuel Cells USA
195 Governor's Highway
S. Windsor Ct 06074

To: Steven Roviczky - Commissioner
State Dept of Agriculture
165 Capital Avenue
Hartford, Ct 06106



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From: Doosan Fuel Cells America
195 Governor's Highway
S. Windsor, Ct 06074

To: Jonathan Harris - Commissioner
Dept of Consumer
Protection,
165 Capital Ave. Hartford Ct 06106



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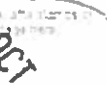
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From Doosan Fuel Cell America
195 Governor's Highway
S. Windsor, Ct 06074

To Arthur House - chairman
Public Utilities Regulatory
Authority, 10 Franklin Sq
New Britain, ct 06651

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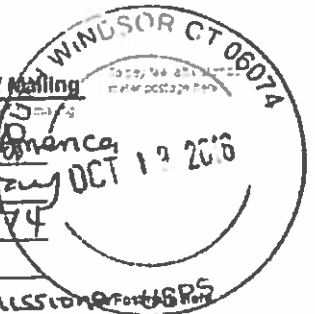
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From Doosan Fuel Cells of America
195 Governor's Highway
S. Windsor, ct 06074

To James Redeker, Commissioner
Dept of Transportation
2800 Berlin Turnpike
Newington, ct 06111

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Capital Region Council of
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To George Jepsen.

