

The United Illuminating Company

Development and Management Plan for the Construction of the Bridgeport Renewable Project

Petition No. 1104

February 5, 2015

Table of Contents

1.0	Introduction.....	1
2.0	Project Description.....	2
3.0	Development and Management Plan Details.....	3
3.1	Aerial Overview of Project.....	3
3.2	Plan Drawings.....	3
3.3	Land Ownership.....	3
3.4	Grading Plan.....	3
	Solar Area.....	3
	Fuel Cell / Service Entrance Area.....	3
3.5	Structure and Foundation Locations.....	3
	Solar Area.....	3
	Fuel Cell / Service Entrance Area.....	3
3.6	Site Access.....	4
3.7	Limits of Clearing.....	4
	Solar Area.....	4
	Fuel Cell / Service Entrance Area.....	5
3.8	Environmentally Sensitive Areas.....	5
3.9	Erosion and Sediment Control Plan.....	5
	Solar Area.....	5
	Fuel Cell / Service Entrance Area.....	5
3.10	Endangered Species, Critical Habitats.....	6
3.11	Earthwork.....	6
3.12	Worksite Health and Safety Plan.....	8
3.13	Maintenance.....	8
3.14	Site Security.....	8
3.15	Landscaping.....	8
3.16	Procedures for Notices and Reports.....	8
3.17	Hours of Operation.....	9
3.18	Mobilization and Laydown Areas.....	10
4.0	Anticipated Sequence of Construction.....	11
	Fuel Cell / Service Entrance Facilities:.....	11
	Solar Facilities:.....	11
5.0	Anticipated Milestone Schedules.....	12
6.0	Decommissioning.....	13
	Fuel Cell /Service Entrance Facilities.....	13
	Solar Facilities.....	13
7.0	Waste Heat Consideration.....	15

APPENDIX A – UI SERVICE ENTRANCE PLANS

APPENDIX B – FUEL CELL PLANS

APPENDIX C – SOLAR FACILITY PLANS

APPENDIX D – LEASE LIMITS

APPENDIX E – AERIAL VIEW OF PROJECT

1.0 Introduction

This D&M Plan was prepared by The United Illuminating Company (“UI” or “Company”) in accordance with the requirements contained within the Regulations of Connecticut State Agencies (“RCSA”), Sections 15-50j-60 through 16-50j-62, as they pertain to construction of a new renewable generation facility and with the Decision and Order received from the Connecticut Siting Council (“CSC” or “Council”) for the Project in Petition No. 1104, that requested the inclusion of the following:

- a) final plans of site development to include specifications for both the solar and fuel cell facility including infrastructure, electrical equipment, equipment compound, access and maintenance roads, utility connections, and landscaping;
- b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control, as amended;
- c) consideration of the use of waste heat from fuel cell operations to supply energy to a thermal loop or nearby user;
- d) detail for the installation of the fuel cell facility and adjacent switchgear at ground level of 15 feet above mean sea level;
- e) construction work hours; and
- f) a decommissioning plan.

2.0 Project Description

The Project is being constructed on property that UI is leasing from the City of Bridgeport located at 350 Waldemere Avenue (the “Property”). The Property is bounded to the north by Cedar Creek, to the west by Black Rock Harbor, to south by Seaside Park and the Long Island Sound and to the east by Barnum Dyke. UI’s contractors will access the Project Site from Barnum Dyke via an existing access road that runs along the northeast border of the property. See Appendix D for an overview of the Project. The existing access road is denoted as “Shared Area” in Appendix D, DWG 1.

The Project will use photovoltaic (“PV”) module and fuel cell technologies, both of which have been extensively tested, and are used in the power generation industry. The solar portion of the Project will consist of the installation of approximately 8,550 PV panels and associated ground equipment; improvement of the existing roadway for permanent access; the installation of a perimeter security fence that will completely enclose the PV facilities; and installation of an electrical interconnection. The Company will install the facilities as shown on DWG C-4 in Appendix C. The main access road to the solar facilities will be 12 feet wide and will consist of an upgrade to the existing road located on the property. The total length of this road is approximately 1,000 feet. The Company intends to surround the solar facilities with an eight-foot chain-link ballasted fence. The complete length of the fence will total approximately 5,400 feet. All solar facilities on the landfill are intended to be installed above ground level, so as not to disturb the integrity of the cap on the top of the landfill.

The fuel cell portion of the Project will consist of one Fuel Cell Energy DFC3000 power plant, the installation of a perimeter security fence that will completely enclose the fuel cell facilities, and the installation of an electrical interconnection. The fuel cell facilities will be installed in the area denoted as “Fuel Cell/Service Area” in Appendix D, DWG #1. The Company intends to surround the fuel cell facilities with a ten-foot high chain-link fence with barbed wire and a one inch mesh. The complete length of the fence will total approximately 580 feet.

The service entrance equipment interconnecting the solar and fuel cell power to UI’s distribution system will also be located in the area denoted “Fuel Cell/Service Area” in Appendix D, DWG 1. This area will be constructed at an elevation 15 feet above mean sea level.

3.0 Development and Management Plan Details

3.1 Aerial Overview of Project

An aerial overview of the Project site with an overlay of the proposed new facilities is included in Appendix E.

3.2 Plan Drawings

Drawings that identify the location of the Project site, public roads, probable locations of all equipment, enclosures, fence, access points, and existing vegetation that must be removed are included in Appendices A, B, C, D, & E.

3.3 Land Ownership

UI will lease property from the City of Bridgeport for the Project. See Appendix D.

3.4 Grading Plan

Solar Area

Site Grading in the Solar Area will be minimal. Minor grading (excavations less than six inches) will be required to level the solar panel ballast foundations; the inverter/transformer pad foundations; and the above grade conduit support blocks. See Appendix C – DWGs C-4, D-1, D-2 and D-3 for grading information.

Fuel Cell / Service Entrance Area

This area will be raised to an elevation of 15 feet above mean sea level. In areas where a 2:1 transition from the proposed final grade to the existing grade cannot be accomplished within the work area, retaining walls will be installed. Please refer to Appendix A – DWG SP-1 for grading information.

3.5 Structure and Foundation Locations

Solar Area

A ballast foundation system is being installed for all of the solar equipment on the landfill. The ballast block foundation details for the solar panels can be found in Appendix C, DWGs D-2 and D-3. The fence around the perimeter of the solar facilities will also utilize ballast block foundations and spaced no greater than ten feet apart. See Appendix C, DWG # D-2.

Fuel Cell / Service Entrance Area

The location and type of structures and their corresponding foundations at the Fuel Cell /Service Entrance Area are shown on the Site, Foundation Plan and Section Drawings. Please refer to Appendix B - DWG's C-1, S-1, S-2.

3.6 Site Access

The solar, fuel cell and service entrance facilities will be accessed from Barnum Dyke. Deliveries and other traffic-related activities associated with construction of the PV system and Fuel Cell facilities will be performed to minimize traffic in residential neighborhoods. The anticipated route from 95 is along South Avenue to Barnum Dyke. UI contractors will coordinate with the City of Bridgeport to determine the route that will provide the least impact. The main access point is noted on Appendix E.

3.7 Limits of Clearing

Solar Area

The limits of clearing for the solar area are called out as “Proposed Limit of Work and Clearing” on DWG C-4 in Appendix C. An on-site inspection of the landfill showed the vegetative cover to include grass, small trees, and mugwort. Clearing of the area within PV footprint will require the use of hand held and low ground pressure equipment. Selective clearing and trimming of additional vegetation will be required as necessary to prevent shading of the array. All clearing within the limit of work shall be removed and disposed of properly off-site. Existing vegetation outside the limit of work shall remain undisturbed.

Trees within the limits of work are expected to be removed through the following process:

- Cut tree near existing grade;
- Hand excavate around the tree stump to maximum 8-inches below grade;
- Use chainsaw or stump grinder to remove tree stump below grade; and
- Fill and compact holes with loam.

Permanent removal of mugwort poses multiple challenges. Mugwort’s root system can be extensive, potentially causing soil cap issues if pulled out of the ground. In addition, pulling the above ground portion of the plant out, causes new underground stems to emerge quickly. Permanent removal of the plant may not be possible and will be managed by routine mowing. UI is investigating techniques for more permanent management measures of mugwort. Depending on the construction schedule and anticipated weather, disturbed areas shall be graded to fit the surrounding area and re-seeded using a shade resistant mix.

Fuel Cell / Service Entrance Area

Site clearing and grubbing at the fuel cell will be minimal as the site was previously developed. Clearing will be accomplished by conventional methods, using a combination of chain saws, hand labor and mechanized equipment. If required, tree and stump removal will be similar to urban forestry techniques employed when a tree is removed from a property located within a city landscape.

3.8 Environmentally Sensitive Areas

Two wetland areas were identified within 100' of the PV Project. One of the wetland areas is located in proximity to the construction access road, however, with erosion and sedimentation control measures the wetland area will be protected. The other wetland area is located on top of the landfill near the southwest corner of the proposed solar PV Project. This small area (approximately 530 s.f.) will be filled in order to bring the area to the existing grade to allow for positive drainage¹. The location of both wetlands related to the project are indicated in Appendix C, DWG C-1.

3.9 Erosion and Sediment Control Plan

Solar Area

At the solar project, straw wattle or other approved erosion and sediment control measures shall be implemented along the project's limit of work. An anti-tracking pad be installed and maintained at the entrance to the landfill. Construction techniques will be implemented to reduce the likelihood of erosion. Such techniques include minimizing the area of exposed soils during construction and having routine inspections performed by on-site staff; and implementation of erosion control matting, as required. The landfill is not considered an area of high erosion potential. The existing stormwater collection system shall remain unchanged. See Appendix C, DWGs C-2 and G-2.

Fuel Cell / Service Entrance Area

At the fuel cell location, silt fence will be installed around the perimeter of the site, an anti-tracking pad be installed and maintained at the entrance to the site, silt sacks will be installed in all catch basins surrounding the construction area. De-watering is not expected to be an issue as the site is being raised four to five feet above existing grade. See Appendix A, DWG ECP-1 and DET-1.

¹ See Finding of Fact No. 77.

3.10 Endangered Species, Critical Habitats

The project site does not contain suitable habitat breeding or nesting of avian species or suitable growing condition for any of the plant species of concern. However, during observations of the site, an American kestrel (State Threatened species) was noticed perching on a snag located outside of the project limits at the southern tip of the landfill property. The snag contained several holes capable of providing potential nesting locations for American kestrel. Although outside the project area, a 500-ft. buffer zone will be maintained and this area will be periodically monitored during construction in the breeding/nesting period between late March and mid-August.

3.11 Earthwork

3.11.1 Site Preparation

Ground surfaces within the construction areas will be cleared of all debris, surface vegetation and paving. Material will be removed from the sites and disposed of at a state-approved landfill.

3.11.2 Excavation and Backfilling

Solar Area

Minor excavation will be required for installation of ballasted solar racking and fence foundations; and inverter/transformer pad foundations. Excavations will be a maximum of six inches. Minor filling of areas will be required for creation of the access road base and for leveling of equipment. See Appendix C – DWG's D-1, D-2 and D-3.

Fuel Cell / Service Entrance Area

The entire Fuel Cell / Service Entrance Area will be filled with structural process gravel to achieve a final equipment pad elevation of 15 feet above mean sea level. Excavation will be required into this new filled area for the installation of grounding, conduit, enclosure and equipment foundations, and duct bank and conduit trenches. Mechanical equipment will be used for excavating. Stability will be provided by sheeting, shoring and bracing techniques. Groundwater is not anticipated in that this will be an elevated site.

3.11.3 Final Grading

Solar Area

All disturbed areas in the solar area shall be graded with topsoil to match the contours and elevations of the original undisturbed ground surface and re-seeded.

Fuel Cell / Service Entrance Area

Final grading of the Fuel Cell / Service Entrance will be a 1 ½" processed gravel with the exception of the driveway, which will be asphalt pavement. If, during construction, existing pavement and curbs outside of the project area are damaged or require cutting or removal, they will be repaired, replaced and/or resurfaced to match the existing surfaces. They will be finished flush with the adjoining pavement. If fills, embankments and backfills settle or erode before construction is complete, such areas will be repaired, filled, compacted and/or graded to meet the original Project specifications.

3.11.4 Site Drainage

Solar Area

The existing stormwater runoff characteristics of the landfill shall remain unchanged. Erosion and sedimentation control measures will routinely be inspected during construction and additional erosion control matting will be installed if necessary.

Fuel Cell / Service Entrance Area

As described above, the final grade of the Fuel Cell / Service Entrance Area will be process gravel. Water runoff from the fuel cell pad will run off into the gravel area. A new catch basin and sanitary line will be installed to discharge excess water from the fuel cell into the existing sanitary sewer system.

3.11.5 Disposal of Materials

Excess earth materials, not suitable for re-use during Project construction, will be temporarily stockpiled on-site. Spoil piles will be protected from wind and water erosion by such means as hay bales, silt fences, and/or temporary diversion runoff channels. Excess spoils will eventually be disposed of in an approved manner.

3.11.6 Dust Control

Control of fugitive dust during construction will be the responsibility of the construction contractors. On-site movement of equipment and vehicles will be restricted to predetermined routes where possible. Dust suppression may include water, calcium chloride or a temporary crushed stone cover. Dust control of earthen stockpiles will include water spray, a crusting agent, or a material covering, whichever is most feasible and effective given the size and location of the stockpile.

3.12 Worksite Health and Safety Plan

UI's contractors will develop a worksite Health and Safety Plan that will be strictly adhered to by the contractors. UI employees and each construction contractor will be responsible for the safety and protection of all workers on-site and the public. During construction, UI employees and each contractor will protect all existing structures, features, utilities, and equipment designated to remain in place within or adjacent to the facilities.

3.13 Maintenance

After construction, UI will implement its standard Operations/Maintenance Program for the interconnection equipment. Contractors will be responsible for operations and maintenance of both the fuel cell and solar facilities. The entire site will be periodically inspected for weed control and rodent damage to equipment. Equipment will be inspected monthly and cleaned as necessary, and pavement will be swept on an as-needed basis. Snow will be removed from driveways as needed. Debris will be removed from the facilities during inspections. Planted landscape materials and ground cover will be maintained and watered if needed. Dead plantings will be replaced during the next appropriate growing season.

3.14 Site Security

During working hours, all gates will remain unlocked to allow authorized personnel to enter and exit the fuel cell/interconnect facilities and the solar facilities. The gates will be locked at night and on weekends when work is not taking place. UI and its construction contractors will have the only keys to the gates and will share responsibility for site security until the facilities are no longer in use. The Project site will have a temporary six-foot chain link fence and typical high-voltage warning signs during construction. Permanent site security measures, apart from fencing, are still being designed.

3.15 Landscaping

Plans for landscaping near the fuel cell/interconnect facilities are shown in Appendix A, DWG ECP-1. There are currently no plans for landscaping on the landfill.

3.16 Procedures for Notices and Reports

The procedure governing notices of the beginning and completion of construction activities, and of any changes in the D&M Plan during construction activities, will be as follows:

3.16.1 Advance Notice on Construction Activities

UI will provide the CSC, in writing, with a minimum of one week advance notice of the beginning of construction activities and the beginning of the

installation of storm water management and oil containment devices at the Project site.

3.16.2 Municipal Notification

UI will provide the City of Bridgeport, in writing, with a minimum of one week advance notice of the beginning of construction activities at the Project site.

3.16.3 Landowner Notification

UI will notify each adjoining landowner, in writing, with a minimum of one week advance notice of the beginning of construction activities at the Project site.

3.16.4 Notice of Completion

UI will provide the CSC with written notice of completion of construction activities once the work is completed.

3.16.5 Modifications to D&M Plan

If any significant changes to the D&M Plan are required, UI will submit proposed changes to the CSC in writing. Upon Council approval of any such changes, UI will undertake actions to implement these changes. If any changes to the D&M Plan are required which are deemed by UI not to be significant, UI will notify the Council either by telephone or in writing of those changes and will undertake actions to implement these changes following such notification.

3.16.6 Final Report

UI will provide the CSC with a final report for UI's construction phase of the project within three months after the conclusion of one year of operation. The final report will include any significant changes to the D&M Plan that were required during the course of construction, drawings depicting the location of all buildings, structures, and conduits; and will provide the final cost of construction for the Project.

3.17 Hours of Operation

Construction operations on the site will be performed during hours that have been designated by the City of Bridgeport. Construction times will be between 7 a.m. and 6 p.m., Monday through Friday; and 7 a.m. to 5 p.m. on Saturdays, unless extended hours are authorized by the Council.

3.18 Mobilization and Laydown Areas

Mobilization and laydown areas are locations where vehicles, machinery, and equipment are temporarily stored during construction. The access road off of Barnum Dyke will be utilized for temporary solar facility laydown. Storage of solar equipment will be offsite and daily deliveries of this equipment will be conducted. Once storage and laydown areas are identified, UI will provide notice to the Council of the location.

4.0 Anticipated Sequence of Construction

Fuel Cell / Service Entrance Facilities:

1. Installation of Erosion and Sedimentation Control measures
2. Site clearing
3. Installation of retaining wall and structural fill to elevation 15 feet above sea level
4. Installation of temporary security fence
5. Installation of conduit and foundation pads
6. Installation of fuel cell equipment
7. Installation of service entrance equipment
8. Installation of permanent perimeter fence
9. Installation of landscaping
10. Interconnection
11. Testing and Commissioning

Solar Facilities:

1. Installation of Erosion and Sedimentation Control measures
2. Site clearing
3. Installation of perimeter fencing
4. Installation of ballast, racking and solar panels
5. Installation of inverter/transformer foundations
6. Conduit, wire and cable work
7. Installation of service entrance equipment
8. Interconnection
9. Testing and Commissioning

5.0 Anticipated Milestone Schedules

The following Tables show project milestone schedules for each portion of the Project:

Table 1 – Anticipated Construction Schedule for Fuel Cell Facilities	
Project Milestone	Anticipated Completion
All Permits Awarded	February 2015
Mobilization and Site Preparation	March 2015
Construction	September 2015
Testing, Commissioning, and Witness Testing	October 2015
Commercial Operations	November 2015

Table 2 – Anticipate Construction Schedule for Solar Facilities	
Project Milestone	Anticipated Completion
All Permits Awarded	February 2015
Mobilization and Site Preparation	March 2015
Construction	October 2015
Testing, Commissioning, and Witness Testing	November 2015
Commercial Operations	December 2015

6.0 Decommissioning

The generation facilities have a minimum expected operational life of 20 years. UI has a lease agreement with the City of Bridgeport for 20 years, with options for two – five year extensions for a maximum term of 30 years. If the PV and/or Fuel Cell systems are performing well at the end of the initial 20 year term, UI will exercise our option to extend the lease agreement. PV modules in Japan have been documented to be operating reliably for well beyond 30 years after installation. Per the lease agreement for the property, The City has the option of taking ownership of the generation facilities (assuming all O&M costs); or asking UI to remove the generating facilities at UI's expense. If the City requests that UI to remove the facilities, the following decommissioning plans will be performed for each facility:

Fuel Cell /Service Entrance Facilities

Decommissioning and site restoration will be performed in accordance with all regulatory requirements. The decommissioning and restoration process includes the shut off and isolation of all site utilities in a manner approved by the utility companies. Water service will be shut off at the meter pit and gas service will be isolated at the gas company supplied meter pad. Electrical service will be isolated by opening and locking open the utility-owned disconnect switch at the service entry of the site. The de-installation of the fuel cell power plant is largely the reverse of installation. Because the plant is constructed in a modular fashion, it will be removed as modules.

First, the fuel system will be purged of combustibles, sorbent media will be removed from the desulfurizer vessels, and catalyst will be removed from the preconverter and hauled away. Then, the interconnecting above ground piping, which is all flanged, will be unbolted and trucked away. Interconnecting cabling between skids will be de-terminated and coiled back to the skid of origin. Overhead cable trays will be disassembled and the skids will be unbolted from their foundations. The skids may then be crane lifted onto to trailers for removal from site similar to the way they were initially installed. Fuel Cell stacks will be recovered and reconditioned by Fuel Cell Energy, Inc. The remaining power plant foundation pad will then be demolished and appropriately disposed if requested by the City. The components and material will be evaluated for reconditioning, sale or salvage based on the greatest return to UI ratepayers.

Solar Facilities

Decommissioning and site restoration will be performed in accordance with all regulatory requirements. The decommissioning and restoration process includes the dismantling and removal of all panels and supporting equipment,

transformers, cables, poles, foundations, fencing, restoration of the roads (if required), removal of all stone pads, and module sites to substantially the same physical condition that existed immediately before construction of the facility. To the extent possible, the site will be restored and reclaimed to the topography and topsoil quality that existed prior to the construction of the solar array. Disturbed earth will be graded and reseeded. The components and material will be evaluated for reconditioning, sale or salvage based on the greatest return to UI ratepayers.

7.0 Waste Heat Consideration

UI has been in discussions with the City of Bridgeport and NuPower, LLC on the availability of the waste heat from the fuel cell facility for use in a thermal loop that the City is considering installing as part of Bridgeport's BGreen2020 initiative.

CERTIFICATION

This is to certify that on this 5th day of February, 2015, the foregoing was delivered via by hand to the Connecticut Siting Council, 10 Franklin Square, New Britain, CT and one (1) copy was delivered via U.S. mail, postage prepaid, to all other known parties and petitioners.

A handwritten signature in black ink, appearing to read "B. McDermott", written over a horizontal line.

Bruce L. McDermott