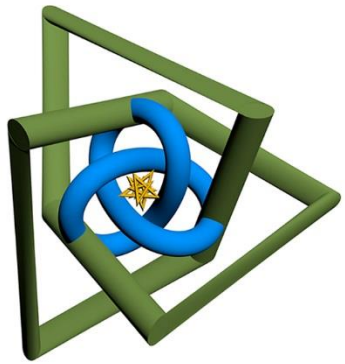

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INTRODUCTION: Preliminary Damage Assessment Report

Puerto Rico – Hurricane Maria FEMA-4339-DR

On September 20, 2017, Governor Ricardo Rosselló Nevares requested an expedited major disaster declaration due to Hurricane Maria during the period of September 17, 2017, and continuing.

The Governor requested a declaration for Individual Assistance and assistance for debris removal and emergency protective measures (Categories A and B), including direct federal assistance under the Public Assistance program for all 78 municipalities and Hazard Mitigation throughout the commonwealth.

This event was of the severity and magnitude that the need for supplemental Federal assistance was determined to be necessary prior to the completion of joint Federal, State, and local government Preliminary Damage Assessments (PDAs). Per 44 C.F.R.§ 206.33(d) and § 206.36(d), the requirement for a joint PDA may be waived for those incidents of such unusual severity and magnitude that formal field damage assessments are not required to establish the need for supplemental Federal assistance under the Stafford Act.[1]

This declaration also made debris removal and emergency protective measures (Categories A and B), including direct federal assistance, under the Public Assistance program requested by the Governor available to commonwealth and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for all municipalities in the Commonwealth of Puerto Rico. Finally, this declaration made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures to all municipalities in the Commonwealth.[2]

1 The Preliminary Damage Assessment (PDA) process is a mechanism used to determine the impact and magnitude of damage and resulting needs of individuals, businesses, public sector, and community as a whole. Information collected is used by the State as a basis for the Governor's request for a major disaster or emergency declaration, and by the President in determining a response to the Governor's request (44 CFR § 206.33).

2 When a Governor's request for major disaster assistance under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (Stafford Act) is under review, a number of primary factors are considered to determine whether assistance is warranted. These factors are outlined in FEMA's regulations (44 CFR § 206.48). The President has ultimate discretion and decision making authority to declare major disasters and emergencies under the Stafford Act (42 U.S.C. § 5170 and § 5191).

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- **CONGRESSIONAL OVERSIGHT:** Jan Schakowsky – Energy and Commerce Committee

Testimony given before oversight committee included:

Dr. Robert Kadlec - Health and Human Services assistant secretary for preparedness and response ASPR; reiterated power generator requirements by CMS for hospitals and health clinics;

Dr. Scott Gottlieb - FDA commissioner manufacturing and production facilities for drugs critical to Health Care delivery mainland included;

Rear Admiral Steven Redd - Director of Public Health preparedness and response CDC; for Puerto Rico; 33% of the population does not have potable drinking water. Concerns over leptospirosis outbreak, a bacterial infection acquired by drinking water contaminated by bacterium animal urine and can cause jaundice; 10 out of 51 wastewater treatment facilities out of service 50% of drinking facilities out of order.

Grants are available through ASPR for healthcare facilities and coalitions seeking resiliency; purchasing of generators Or other critical facility mission based energy and water requirements established in readiness and preparedness plan, training and adequate support for patient service provisions as required.

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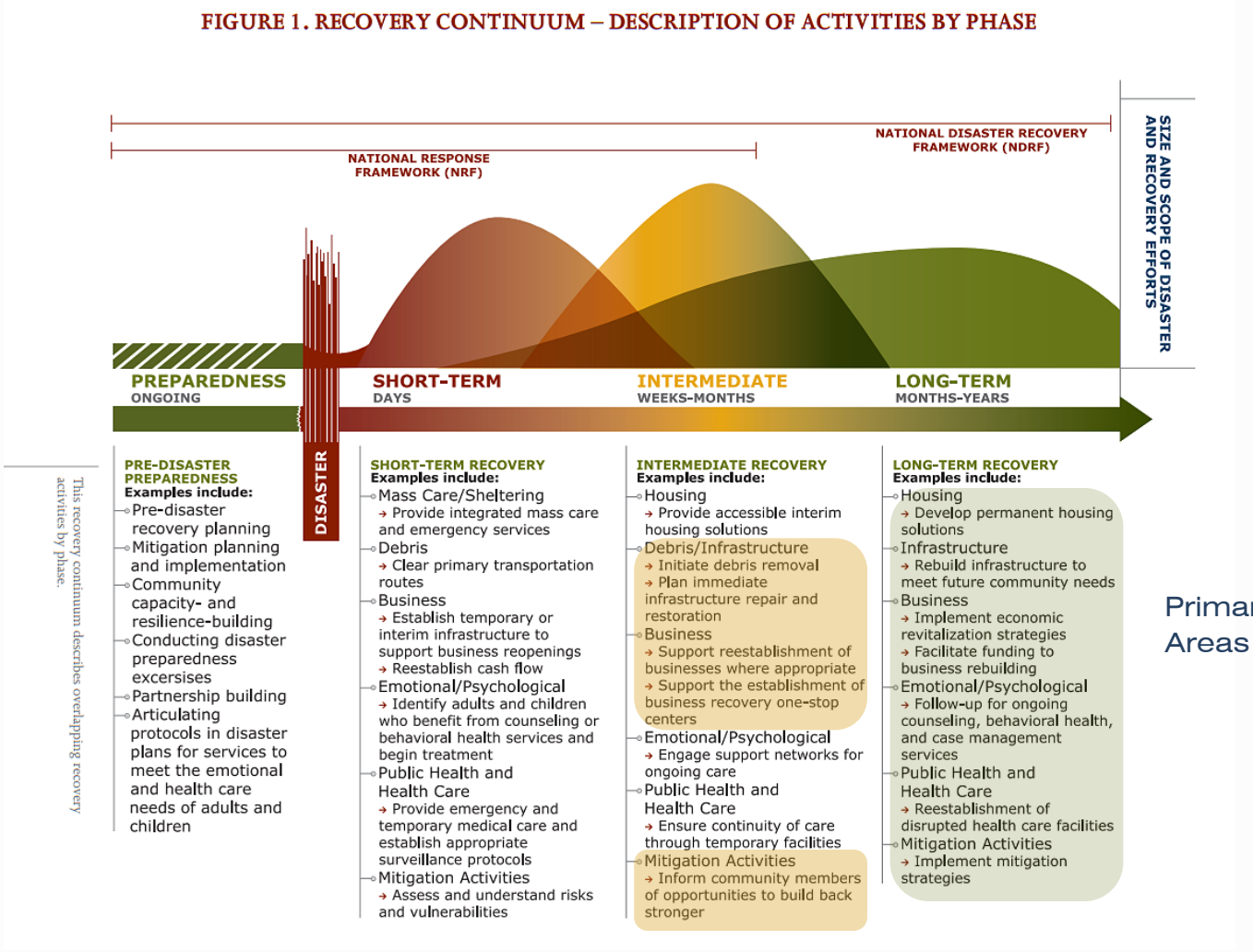
- **TIMEFRAMES:** Follow National Disaster Recovery Framework (NDRF) and scale up for long-term



Primary Focus Areas

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- **OUR APPROACH:** Focus on Debris processing and Healthcare related infrastructure needs

Intermediate Response:

Debris Processing ROW and Woodland Areas

- Proven Solutions Investigated: A Stationary 50 TPD Plant sized for Demonstration and Educational Purposes – Expandable to 1700 TPD or to fit based on MSW Volume.

Healthcare Facilities and Pharmaceutical Industry Infrastructure

- Proven Solutions Implemented: 16 Panel PVT Array – Ground or Roof Mounted
- Proven Solutions Implemented: Water Filtration and Surface Disinfection

Intermediate Recovery:

Community based Solar Power Micro-Grid Substation at DMS location

- Proven Solutions Implemented: Ground Based 2.2MW Micro-Grid with PV Array

Structural Insulated Panel Manufacturing

- Proven Solutions Implemented: Modular Wall, Roof and BIPV windows and doors

Long-term Recovery:

High Performance Buildings

- Net-Zero Homes designed by DAC Studios, Ltd and powered by LEDOLAS

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- **LOCAL AGENCY DECISION:** Short-term Recovery - Debris

  EMERGENCY REQUEST FOR PROPOSALS - DEBRIS REMOVAL, HAULING, CONSOLIDATION, PROCESSING AND DISPOSAL SERVICES - RFP #2018-02

  Following a major storm like Hurricane Maria, one of the first essential services to be procured in an expedited manner is debris consolidation, processing and disposal. Hurricane Maria produced massive volumes of construction and vegetative debris, which have created hazardous conditions including blocked roadways and driveways. The debris has created major obstacles that hinder restoration efforts, including ongoing power, water and communications restoration efforts. The hurricane debris has blocked routine, essential, and emergency traffic, both vehicular and pedestrian, including key access routes needed by first responders, emergency vehicles, delivery of essential services and products, among others. The accumulation of debris also poses threats to public health and safety that can lead to the creation of vermin nests, amongst others, that spread plagues and diseases.

  In order to allow for security, emergency, and other essential service traffic as well as avoiding all other threats to health and public safety that said debris poses, it is in the best interest of the Puerto Rico Department of Transportation and Public Works (hereinafter the "Agency") has divided the Island in 5 zones and will enter into agreements with experienced and competent contractors that can provide debris consolidation, processing and disposal services as a result of the aforementioned disaster. No single contractor will be awarded more than 2 zones.

  The Agency solicited proposals for debris removal and disposal services to deal with the consequences of Hurricane Maria in Puerto Rico. As used in this Emergency Request for Proposals (hereinafter "RFP") the term "debris" shall mean any construction materials, brush, vegetation, tree materials, white goods, soils, demolition materials, vehicles, boats, vessels and any other natural or man-made materials affected or resituated by the disaster. - See attached Notice of Award

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- **LOCAL AGENCY DECISION:** Short-term Recovery - Debris

EMERGENCY REQUEST FOR PROPOSALS - DEBRIS REMOVAL, HAULING, CONSOLIDATION, PROCESSING AND DISPOSAL SERVICES - RFP #2018-02 (Relevant Excerpts)

The Agency is seeking proposals and qualifications for the removal and disposal, at one (1) or more site(s), of hurricane generated debris from state roads due to Hurricane Maria. Debris from private property may also be included as directed. The primary purpose of these services is to ensure that the entire debris removal (which includes consolidation and processing or reduction) and final disposal process is done properly and expeditiously and is eligible for reimbursement under Federal Emergency Management Agency (FEMA) Public Assistance Program and all state emergency management agency guidelines...

2.7 DMS Management and Reduction by Grinding

Under this contract, work shall consist of all labor, equipment, fuel, and miscellaneous costs necessary to reduce disaster debris by grinding. **Reduction methods are at the discretion of the AGENCY.** Grinding must be approved by the AGENCY prior to commencement of reduction activities...

2.7.2 The CONTRACTOR must obtain the AGENCY'S approval to reduce C&D debris. If approved for reduction by the AGENCY, C&D debris must be reduced via grinding for the AGENCY to compensate the CONTRACTOR for reduction. Incineration or mauling of C&D are not acceptable methods of C&D reduction.

2.8 DMS Management and Reduction by Incineration

Under this contract work shall consist of all labor, equipment, fuel, and miscellaneous costs necessary to reduce disaster debris by incineration. Reduction methods **(controlled open-air incineration and air curtain burning)** are at the discretion of the AGENCY. Incineration must be approved by the AGENCY prior to commencement of reduction activities.

- **LOCAL AGENCY DECISION:** Short-term Recovery – Debris

Evaluation of the Combustion of Storm-Generated Vegetative and C&D Debris in an Air Curtain Burner: Source Emissions Measurement Results - DRAFT Revision 5 • February 2010 • Contract No. EP-C-05-060 • Streams Task Order 72

Summary

In an effort to expand available options to better manage natural disaster debris in the future, EPA evaluated the combustion of both vegetative debris and C&D debris in an air curtain burner (ACB). ACBs can be mobilized to where they are needed as a potential means of reducing waste volume while minimizing potentially harmful environmental impacts. These tests were conducted in June 2008 by EPA/ORD at the Old Paris Road Landfill in St. Bernard Parish, Louisiana.

Testing was comprised of triplicate tests for each of two main test conditions:

1. Evaluation of emissions while burning vegetative debris; and
2. Evaluation of emissions from burning a mixture of construction and demolition (C&D) debris which did not contain asbestos in sufficient quantities to be categorized as Regulated Asbestos Containing Materials (RACM) and vegetative debris (used as supplemental fuel to maintain operating temperatures).

The data suggest that for some of the pollutants (e.g., PM, NOX), there is not a statistically significant difference between ACB operation on vegetative debris or on C&D debris. Other pollutants (e.g., CO, SO2, HCl) were somewhat higher from combustion of C&D debris than from combustion of vegetative debris. Some pollutants (e.g., dioxins and furans), were significantly higher from burning C&D debris than from burning vegetative debris. It must also be noted that the emission factors for vegetative debris reported in this study more accurately reflect emission factors for vegetative debris recovered from hurricane response operations rather than from clean vegetative debris that had not sat in brackish water, exposed to sediment and other sources of contaminants for an extended period of time prior to combustion.

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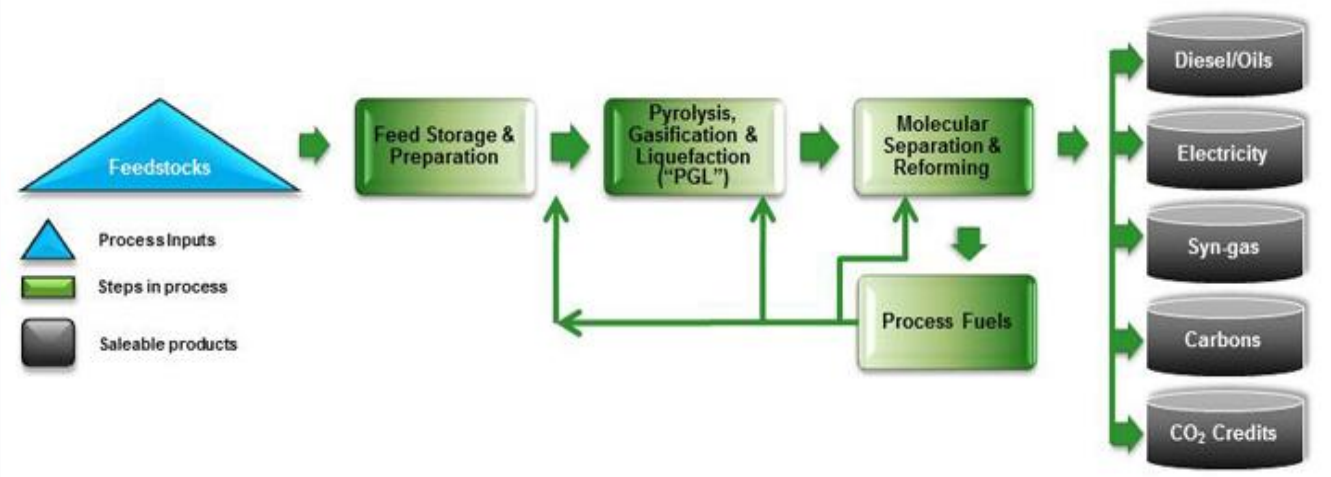
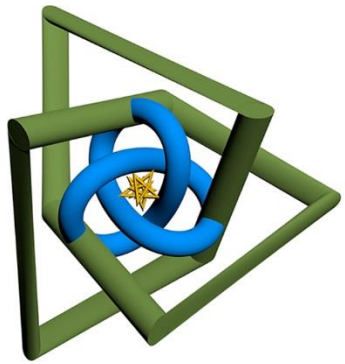
- **OUR APPROACH:** Propose A Stationary 50 TPD Conversion Plant at DMS location

Using Pyrolysis, Gasification & Liquefaction Technologies to Produce Electricity, Refined Fuels, Recovered Carbon Blacks & Nano Carbon Filler Compounds

Klean Industries, a strategic partner of LEDOLAS, provides advanced systems that are redefining the science of thermal treatment technologies. Pyrolysis is a thermal process where carbon-based substances are decomposed, in the absence of oxygen, into energy and inert end-products without burning or combusting them. Gasification is a related process that introduces a control amount of oxygen into the decomposition reaction to increase the thermal properties of the gases and to calibrate the characteristics of energy output.



Approach provides an environmentally friendly way to convert all organic residues into a clean alternative fuel for use in generating revenue streams. The system has the green stamp of approval from the Canada Environmental Technical Verification Program, and results that exceed California EPA standards.



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ENERGY

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ENERGY: A Stationary 50 TPD Conversion Plant

A mobile system is an environmentally friendly way to convert all organic residues into a clean alternative fuel. An innovative, continuous-process "waste to energy" pyrolysis power-generation system that simultaneously utilizes biomass and municipal wastes as an energy source to produce clean "green" power without the production of large quantities of CO2. The unique patented design of this technology allows the system to produce highly efficient power in any size application.

Benefits

- This eco-friendly system generates no dioxins and breaks down the gases that are generated during carbonization.
- Will convert anything organic into clean energy products.
- Has portable capabilities.
- Has a small footprint, with a big punch.
- A lower-cost system than anything on the market today.

Products

- Electricity Production
- Bio-Oil Fuel and various Syn-gases
- Charcoal for home, commercial and industrial heating
- Pellets for heating greenhouses and industrial heating
- CO2 Sequestration
- Use on farmers' fields as a high yield soil amendment