



1222 79th St. S.
St. Petersburg, FL 33707
727 343 9688
727 580 5768
hweller@horizonenergygroup.com

Horizon Energy Group

December 13, 2007

Joann A. Dorval
Purchasing Manager
P.O. Box 147117, Station A-130
Gainesville, FL 32614-7117

Re: Gainesville Regional Utilities RFP 2007-135, Biomass Fueled Generation Facility

Dear Joann:

Attached is the Horizon Energy Group proposal for additional renewable base load electric generation to be constructed at the Deerhaven Generating Station.

Sincerely,

G. Heber Weller, P.E.
Director, Southeast Power Projects



[Click *here* and type slogan]

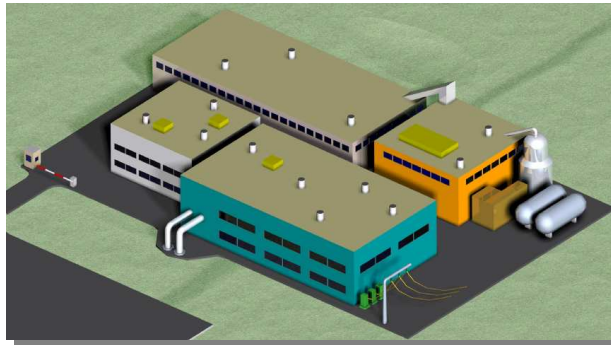


Horizon Energy Group
Proposal for
BioDeerhaven Power Plant

in accordance with
GRU Biomass Supply RFP NO. 2007-135



Deerhaven Generating Station
(zero discharge plant)



BioDeerhaven Power Plant
(zero emissions plant)

G. Heber Weller
Director, Southeast Power Projects
727-343-9688; hweller@horizonenergygroup.com
and
Steven W. Pullins
President, Horizon Energy Group
865-300-7395; spullins@horizonenergygroup.com

Table of Contents

Section 1 – Executive Summary	3
Section 2 – Financial Structure of the Proposal	6
Proposed Financial Structure	6
Proposed Contractual Arrangements	6
Section 3 – Technical Information (heber)	8
Section 4 – Economic Information	18
Section 5 – Production Cost Information	20
Section 6 – Respondent Information	21
Section 7 – Attachments for Section 6	24

Section 1 – Executive Summary

The Horizon team is pleased to provide this proposal for consideration in the design, build, and operation of a 36 MW 100% renewable energy power plant to supply electricity to GRU.

With the growing need for energy independence, alternate sources of energy, and curbing the ever-increasing cost of electricity, a technology that can satisfy multiple goals simultaneously warrants serious consideration. The Horizon power plant using an advanced gasification process to produce electricity from waste and other organic materials, at near-zero emissions, as base load generation, at utility scale, and as a destroyer of waste, meets many important goals for a metropolitan area.

Overall description of proposal

Horizon Energy Group proposes a new company, BioDeerhaven LLC, which will become the 36 MW power plant at GRU's existing Deerhaven Generating Station site. Horizon will provide all equity and financing for the project.

This power plant is based on an advanced gasification process that destroys refuse-derived fuels (RDF) without burning. The destruction process is exothermic creating hydrogen and carbon monoxide in a syngas form. This syngas is cleaned and sent to a gas turbine / steam turbine combined cycle for power production. The key advantages of this technology are:

- Landfills
 - Significantly extends the life of existing site
 - Enables “consolidation” with existing space at smaller landfill sites
 - Virtually eliminates the need for new landfill sites
- Waste to Energy
 - Stackless and odorless operation; clean, renewable technology
 - Efficient process (8000 Btu/kWh) and 15-times more energy production than conventional landfill gas burning for the same landfill waste intake
 - Base-load, utility-scale generation
 - High-efficiency combined power cycle
- Risk Management
 - Turnkey solution at an affordable tariff with a 2% cap on annual rate increase
 - Energy technology and project experts
 - Self-financed and funded

Technology

The proposed Horizon biopower plant will use a molten metal gasification process as its primary process combined with a secondary plasma arc process. This combined solution is referred to as an advanced gasification / plasma process which was developed by the New York Energy Group (NYEG).

The gasification-plasma technology was developed 12 years ago for the USA government to destroy hazardous waste for the US Department of Energy, the US Army, and the US Customs Service. In addition to the near-zero emissions, the developers found that the process generated enough heat and steam to become an effective power generator. In 2002, the largest such biopower plant (220MW) was built in the US for Mumbai, India. For ownership reasons, that power plant was actually built on a barge and shipped to India where it operates

today with the same or better reliability as any thermal power plant. The Horizon plant combines this gasification-plasma technology with a standard combined cycle power plant.

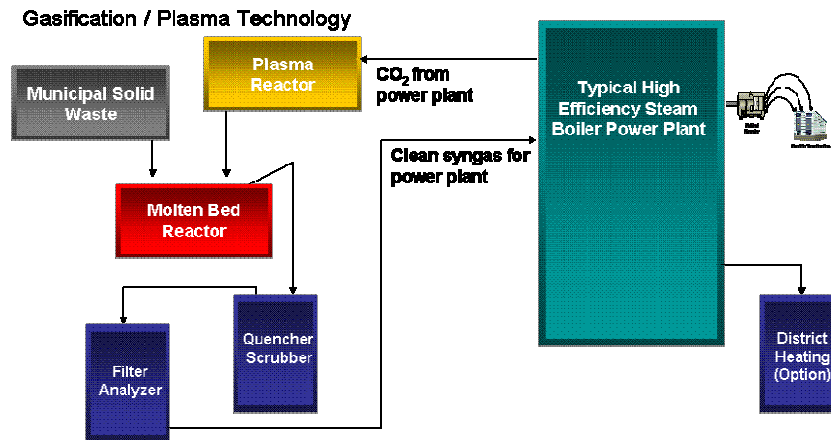


Figure 1: Horizon BioPower Diagram

The main technology in the gasification-plasma process is the molten bed thermal reactor (MBTR). It is here that the waste is added to a molten metal pool operating at extremely high temperature in an isolated (no exposure to the atmosphere) oxygen-controlled environment to prevent the waste from burning. Instead of burning, the waste simply breaks down into its individual chemicals: hydrogen, carbon monoxide, water vapor, and carbon dioxide. The hydrogen and carbon monoxide create the fuel to run the combined cycle power plant.

New York Energy Group is an advanced gasification engineering, design, integration and manufacturing company. NYEG has patented and proprietary gasification systems, techniques and technologies which can be tuned to accept a variety of organic feed stream bio-sources.

Location

Horizon proposes to build the 36 MW BioDeerhaven power plant on the Deerhaven Generating Station site. It will require a lease of an approximately four (4) acre site with access to grid interconnection (existing for Deerhaven) and access to roads for bringing the waste to the site.

General contractual and pricing arrangement

The financial structure for BioDeerhaven is a 20-year GRU power purchase agreement (PPA) with a tariff rate of \$55 / MWH for the equivalent of 8000 hours of full-power operations. Horizon’s overall approach is to provide a solid framework for risk management by all participants, i.e., secure fuel supply, secure site, and secure power purchase arrangements:

- Contract with the City of Gainesville for a long-term lease on a 4-acre site at Deerhaven.
- Contract with the City of Gainesville for organic municipal solid waste (MSW) at a mutually agreeable tipping fee per ton delivered to the BioDeerhaven site.
- Contract with the New River Solid Waste Association for additional RDF to meet fuel needs for 36 MW.
- Contract with GRU for a power purchase agreement (PPA) with a tariff rate (\$55/MWH) and 2% cap on annual increases.

- Contract for the long-term operations and maintenance (O&M) support – BioDeerhaven LLC to Horizon Energy Group for 15 years or more. This helps maintain an adequate level of quality of operations and maintenance to meet performance expectations of the owners.

Section 2 – Financial Structure of the Proposal

Horizon Energy Group proposes a new company, BioDeerhaven LLC, which will become the 36 MW power plant at GRU's existing Deerhaven Generating Station site. Horizon will provide all equity and financing for the project.

Proposed Financial Structure

The primary basis of the financial structure for BioDeerhaven is a GRU power purchase agreement (PPA) with a tariff rate of \$55 / MWH for the equivalent of 8000 hours of full-power operations.

Horizon will register BioDeerhaven LLC and establish ownership as follows:

- Horizon Energy Group, or subsidiary – 44%; provide project development, technology license, design and construction.
- Equity and financing partner – 51%; provide equity and financing for the project
- GRU – 3%; provide adequate building site at Deerhaven and guarantee 98,000 tons per year of organic City MSW at a discounted tipping fee of \$10/ton.
- New River Solid Waste Association – 2%; guarantee 122,000 tons per year of organic Alachua County (and others) MSW at no tipping fee.

Horizon will finance the design and construction of the project as follows:

- Equity – use one of the existing Horizon Energy Group and New York Energy Group financial resources in the US and Europe. Based on previous projects, this will range between 10% and 51% of the total project development cost.
- Debt Financing – use one of the existing Horizon Energy Group and New York Energy Group financial resources in the US and Europe. Based on previous projects, the equity partner often will provide debt financing for the remainder of the project at a competitive market rate. If not, then Horizon will leverage the equity to secure debt financing from one of its other sources.

Horizon will establish long-term debt service upon commencement of operations as follows:

- Once the plant is deemed operational (post commissioning), Horizon will compete the plant debt among selected financial institutions for a favorable long-term (20 years or 25 years) mortgage.
- If part of the equity arrangement, this long-term mortgage may include the exit strategy for the equity partner.

Proposed Contractual Arrangements

Horizon's overall approach to contractual arrangements is to provide a solid framework for risk management by all participants in the process. This means, secure fuel supply, secure site, and secure power purchase arrangements:

- Contract with the City of Gainesville for a long-term lease on a 4 acre site at Deerhaven Generating Station for the BioDeerhaven power plant.

- Contract with the City of Gainesville for organic municipal solid waste (MSW) at a mutually agreeable tipping fee per ton delivered to the BioDeerhaven site.
- Contract with the New River Solid Waste Association for additional organic MSW to complete the secure fuel requirements for a 36 MW BioDeerhaven.
- Contract with GRU for a power purchase agreement (PPA) with a tariff rate (\$/MWH) that provides a reasonable long-term return on the investment. It is important to note that the rate (\$/MWH) and tipping fee (\$/ton) from GRU are interdependent for calculation of the return on investment.
- Contract for the long-term operations and maintenance (O&M) support – BioDeerhaven LLC to Horizon Energy Group for 15 years. This helps maintain an adequate level of quality of operations and maintenance during the first years of plant life to assure the best practices, safety, emissions, and performance meet the expectations of the owners.

Section 3 – Technical Information

The Horizon biopower plant will use a molten metal gasification process, which we refer to as the advanced gasification / plasma process developed by New York Energy Group (NYEG).

The key advantages of this technology are:

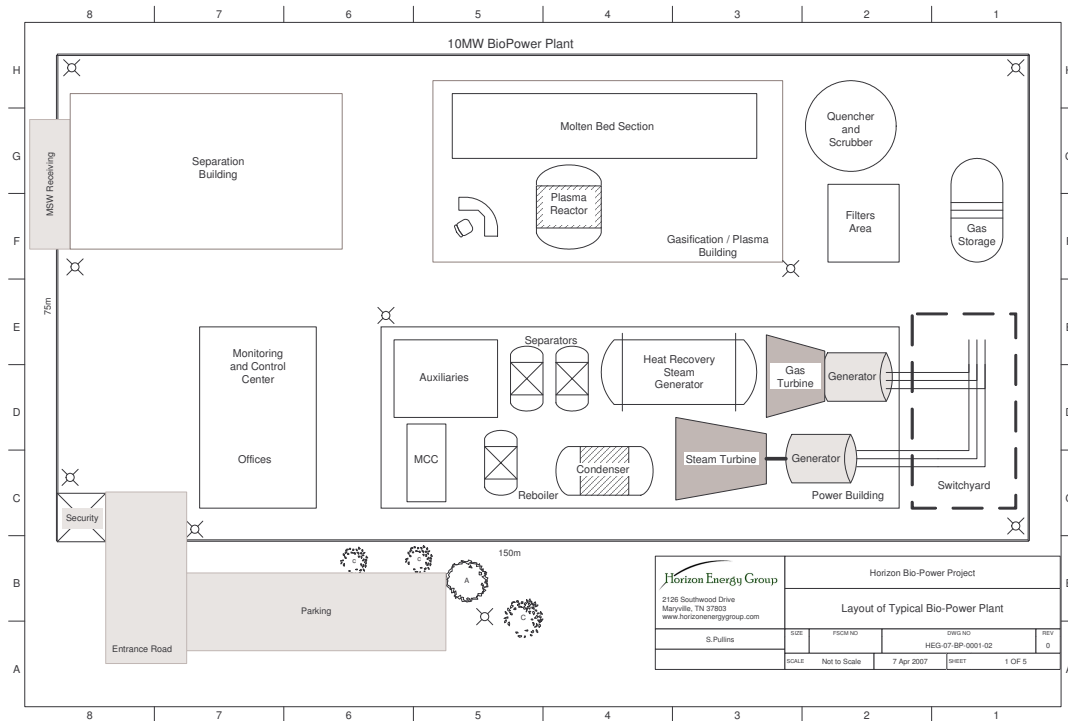
- Landfills
 - Significantly extends the life of existing site
 - Enables “consolidation” with existing space at smaller landfill sites
 - Virtually eliminates the need for new landfill sites
- Waste to Energy
 - Stackless and odorless operation; clean, renewable technology
 - Efficient process (8000 Btu/kWh) and 15-times more energy production than landfill gas burning for the same landfill waste intake
 - Base-load, utility-scale generation
 - High-efficiency combined power cycle
- Risk Management
 - Turnkey solution at an affordable tariff with a 2% cap on annual rate increase
 - Energy technology and project experts
 - Self-financed and funded

a) Description of technology and configuration

To describe the power plant, it is best to describe it in terms of its major processes:

- Material Separation
- Advanced Gasification & Plasma
- Gas Turbine and Steam Boiler Combined Power Cycle
- Electric Interconnection

The following diagram shows the overall plant layout for BioDeerhaven Power Plant.



Material Separation Process - there are actually three wastes streams that result from the material sorting:

- Compostable – 30%
- Usable Organics – 55%
- Inert (metals, glass, etc) – 15%

This is primarily an automated process supported by human sorting where needed. After the sorting process, the organic waste is shredded and dried to prepare it for introduction to the advanced gasification process.

Advanced Gasification Process - NYEG’s integrated technologies embody advanced techniques in molten metal gasification, plasma applications and optimal control. The application specific designs have no residual waste by-products or ash and can be operated in a carbon neutral state. The NYEG process uses a molten iron to gasify the biomass feedstock thereby creating H₂ and CO (syngas). At this point in the process the syngases are not thermally disassociated compounds. Hence coming out of the furnace the NYEG process will have small amounts of Chlorine, Fluorine and Bromine which will form HCl, HF, HBr (halogen acid gases) which are removed by a sodium hydroxide scrubbing process. Likewise sulfur is scrubbed out with an oxidizing process.

As for other trace compounds, furans and dioxins form in the 250-400° C region and are quickly quenched (cooled) in the gas from 1400° to 600° C with a heat recovery boiler and steam generator. Then at 600° C, the process rapidly quenches the gas dropping its temp from 600° C to 200° C in a matter of a few seconds, thereby eliminating the chance of furan/dioxin formation.

Combined Power Cycle - The BioDeerhaven power cycle will employ more than one thermodynamic cycle to extract a maximum amount of energy from the syngas resulting

from the gasification process. The syngas burning gas turbine is one cycle, and the steam boiler driven turbine is the second cycle. Hence, combined cycle.

This is a standard turnkey power cycle delivered as a near-commodity by at least 10 different suppliers.

Electric Interconnection - The electrical connection between BioDeerhaven and GRU's transmission system will occur at GRU's existing Deerhaven Generating Station switchyard. The typical power plant generator output is 19.2KV (nominally referred to as 20KV). This will require a step-up transformer at the plant's switchyard.

b) Major equipment manufacturers

Nearly all of the equipment Horizon and NYEG use in the processes are available from several companies. The following list is the latest list, but we do add qualified vendors from time to time.

Material Handling

- Staging/Transfer Equipment
- Shredders
- Magnetic Separators
- Eddy Current Separators
- Vibration Separator
- RotoClave
- Dryer
- Tire Grinder

Vendors

- Conveyors,Etc, VecoPlan, Komar, Tempieco
- Conveyors,Etc, VecoPlan, Komar, Tempieco
- Conveyors,Etc, VecoPlan, Komar, Tempieco
- Conveyors,Etc, VecoPlan, Komar, Tempieco
- Conveyors,Etc, VecoPlan, Komar, Tempieco
- Conveyors,Etc, VecoPlan, Komar, Tempieco
- Allied Technologies,Komar, M-E-T
- VecoPlan

Gasification System

- Injectors Subsystem
- Fuel Injection System
- Molten Bed Thermal Reactor
- High Temp Cyclone
- Syngas Temperate Cooler
- Quencher/Shock
- Oxide Scrubber (Sulfur)
- Acid Scrubber (Ammonia)
- Caustic Scrubber (Acid gases)
- Electrostatic Particulate Precipitator (4 stage)
- Gas Dryer

- Berry Metals
- ISIS
- Duca, Pillar
- Buell Industries, Farr Industries
- Various
- Fisher-Klostermann
- CS2, Fisher -Kloisterman
- CS2, Fisher -Kloisterman
- CS2, Fisher -Kloisterman

Effluent Treatment
 Plasma Generation System
 Plasma Reaction Chamber
 &Instrumentation

Thermal System

Waste Heat Boiler	Transparent,CS2
Heat recovery Steam Generation	Transparent,CS2
SuperHeaters/Exchangers	Transparent,CS2
Steam Turbine	Dresser Rand, GE
Compression System	FES Systems
Pumps	Numerous
Condensors	ONDA, Thermo-key

Electrical System

Switchgear and Motor Control Centers	Allen-Bradley,ITE Siemens
Transformers and Load Center Eq	ABB, Siemens, numerous
Medium Low Voltage Swgr & MCC	ABB, Siemens, numerous
Electrical Drawings	

Instrumentation and Control System

Data Collection Equipment	Allen Bradley/Rockwell
Gas Analyzers, Monitoring	Allen Bradley/Rockwell
Test Equipment	Allen Bradley/Rockwell
PLC Systems	Allen Bradley/Rockwell

c) Fuel supply and requirements including any backup fuels

Municipal Solid Waste (MSW) characterization will be required prior to final agreements to validate the morphology and amounts. We have based our initial assessments of the MSW upon the US EPA Ultimate Waste Analysis.

ULTIMATE ANALYSIS OF MUNICIPAL SOLID WASTE COMPONENTS (percent by weight)									
MATERIAL	C	H	O	N	Cl	S	Moisture	Ash	HHV (Btu/lb)
Mixed Waste	27.5	3.7	20.6	0.45	0.5	0.83	23.2	23.4	4,830
Corrugated	36.79	5.08	35.41	0.11	0.12	0.23	20	2.26	8,322
Newsprint	36.62	4.68	31.76	0.11	0.11	0.19	25	1.55	8,233
Magazines	32.93	4.64	32.85	0.11	0.13	0.21	18	13.13	5,468
Other Paper	32.41	4.51	29.91	0.31	0.61	0.19	23	9.06	5,481
Plastics	56.43	7.79	8.05	0.86	3.00	0.29	15	8.59	11,588
Rubber/Leather	43.09	8.37	11.67	1.34	4.57	1.17	10	22.49	8,433
Wood	41.20	6.03	34.85	0.24	0.09	0.07	18	2.82	8,933
Textiles	37.23	6.02	27.11	3.11	0.27	0.28	25	1.98	6,595
Yard Waste	23.29	2.93	17.54	0.89	0.13	0.15	45	10.07	4,005
Food Waste	17.93	2.55	12.85	1.13	0.38	0.06	60	5.10	3,265

Source: D.A. Tillman, "The Combustion of Solid Fuels & Wastes," Academic Press, San Diego, 1991

Printed from the MSW Factbook, Vol. 4.0, Office of Solid Waste, USEPA, Washington, DC, 1997.

d) **Net capacity rating**

36 MW

e) **Indicative net heat rates**

8000 BTU/kWh

f) **Site requirements and layout**

4 acres; see the layout drawing in a) above.

g) **Projected permitting and construction schedule and in-service date**

The following chart is indicative of the overall project schedule. From this, the overall timing of the permitting and construction can be seen.

ID	Task Name	Start	Finish	Duration	2007				2008				2009				2010			
					01	02	03	04	01	02	03	04	01	02	03	04	01	02	03	04
1	Briefings and Planning	2/1/2007	8/1/2007	130 d	█															
2	Secure BioDeerhaven Fuel Source	5/2/2007	10/23/2007	125 d	█															
3	Secure BioDeerhaven Site	5/2/2007	10/23/2007	125 d	█															
4	Negotiate and Sign BioDeerhaven PPA	7/2/2007	6/20/2008	295 d					█											
5	Secure Project Financing	3/3/2008	7/2/2008	88 d					█											
6	Design Phase	6/2/2008	10/29/2008	108 d					█											
7	Construction Phase	9/2/2008	10/29/2009	303 d									█							
8	Testing & Commissioning	10/2/2009	11/30/2009	42 d													█			
9	BioDeerhaven Startup and Operations	11/16/2009	12/11/2009	20 d													█			
10	BioDeerhaven Project Operations	12/2/2008	9/30/2010	478 d									█				█			

h) Dispatchability of the project, including facility limitations that may constrain operation or dispatch

The plant is a base load plant dispatched by GRU. The technology limits this plant to base load as the advanced gasification technology does not accommodate load following and peaking response capabilities.

i) Environmental characteristics and emission rates

Air Emissions Characteristics:

Parameter	European Union Emissions Standards (European Directive 2000/76/EC)	United States Emission Standards	Analyzed Emissions of Gasification Process for BioDeerhaven Power Plant	Comments
PCDD TEQ (dioxin)	0.5 mg TE/Nm ³	0.14-0.21 TE/Nm ³	< 3.3 E-9 mg/Nm ³	
Cd	0.05 mg/Nm ³	0.02 mg/Nm ³	< 3.3 E-9 mg/Nm ³	
Hg	0.05 mg/Nm ³	0.08 mg/Nm ³	< 3.3 E-9 mg/Nm ³	
HCl	10 mg/Nm ³	25 mg/Nm ³	< 3.3 E-9 mg/Nm ³	
NO ₂	200 mg/Nm ³	150 mg/Nm ³	< 3.3 E-9 mg/Nm ³	
Particulate	10 mg/Nm ³	24 mg/Nm ³	< 0.16 mg/Nm ³	
SO ₂	50 mg/Nm ³	30 mg/Nm ³	< 3.3 E-9 mg/Nm ³	
CO	50 mg/Nm ³	100 mg/Nm ³	2.47 E+5 mg/Nm ³	This gas is burned in the gas turbine and steam boiler for power; it does not escape the power plant

The chemical analysis for this process was determined using rigorous ASPEN Technologies gas/liquid equilibrium models. Comparing BioDeerhaven to other power processes shows how much more environmentally friendly it is.

Parameter	BioDeerhaven	Biomass Burning	Landfill Gas Burning	Natural Gas* (TEC1,TEC2)	Average Coal Plant*
NO ₂	<3.3 E-9 mg/Nm ³	140	80	600	1909
Particulate	<0.16 mg/Nm ³	61	20	No data	No data

SO2	<3.3 E-9 mg/Nm3	10	50	872	5673
-----	-----------------	----	----	-----	------

* These values converted from the average values for typical US natural gas and coal fired power plants.

j) Ash and other by-products

BioDeerhaven produces very little by-products and waste materials as a result of its process. The only by-products produced are the result of metals and glass that pass through the MSW sorting process. These metal and glass by-products are environmentally benign and are either used in other process like roadbed construction (metal by-products) or conventionally recycled (glass by-products). All other material is consumed in the process.

k) Water use (see section above on Environmental Considerations)

The plant design includes a wastewater treatment plant for reusing circulating water in the various gasification, cleaning, and power processes.

l) Electrical interconnection requirements

BioDeerhaven will have a switchyard for conversion of its output voltage to the grid voltage of the point of common coupling (IEEE 1547). The Horizon proposal includes the cost of interconnection and transmission (or distribution) upgrade to support the plant’s output being integrated to the grid.

m) Readiness of the proposed technology

Horizon Advanced Gasification Process

Again, it is important to make it absolutely clear that the NYEG advanced gasification of organic compounds is not a burning process. This is a chemical compound dissociation process that yields energy without ash and other combustion products.

NYEG’s integrated technologies embody advanced techniques in molten metal gasification, plasma applications and optimal control. The application specific designs have no residual waste by-products or ash and can be operated in a carbon neutral state. While there are several gasification processes used in industry today, only two basic gasification designs operate in the power generation industry. The first group is the Westinghouse Plasma Corporation, Thermostelect, Plasco, and Solena systems operating at 1,200^oC to 2,000^oC. The other is the NYEG advanced gasification – plasma process which operates at 1,480^oC in the molten bed thermal reactor (MBTR) and 6,000^oC in the plasma reactor; see Figure A6: NYEG Advanced Gasification. There are several advantages of the NYEG process over the typical plasma gasification of others.

1. For large mass flow rates of any solid material mixed waste stream (i.e. 500 tons per day or larger) it is just too difficult to get sufficient plasma plume impingement upon such a large solid mass volume. This is particularly true of a DC torch with such a narrow plume. However, even for the more efficient AC torch, with a much greater plume area, (e.g. the NYEG AC torch), the problem still remains. Keep in mind, 500 tons per day is 20.833 tons per hour, a huge solid mass of material. It would take too many non-transferred arc torches (or too large of a transferred arc furnace) to make it commercially feasible. There is a transferred arc furnace project in Florida for MSW now in the feasibility stage. They have a current specification which requires about 35% more power than we do to process the same amount of waste. What they don’t know yet is

that their specification is wrong. They will require even more power as they get into operation (see item 2).

2. Even if you could justify a large transferred arc furnace, the MSW tends to char. When this happens the material self-insulates. To help this problem, you can design a moving bed reactor or material agitator, which is very expensive and a nightmare to maintain. Even doing this, the self insulating char still occurs. The final solution is un-avoidable. You must turn up the power to burn through the char. The less than efficient plasma-only process just went over the edge.
3. Ignoring items 1 and 2 above, there is still a fundamental problem. Even if you process MSW to remove the in-organics (as we do), there is still a percentage of metal and glass that gets through. Therefore, even at a few percent by weight of in-organics, after a few hours of operation, the furnace begins to build up a layer of molten metal and slag (slag is primarily melted glass). Now one must design the furnace to process and tap molten metal and slag. At this point, the plasma-only approach involves a clean but dramatically inefficient thermal conversion process in a furnace which is already designed to handle molten metal and slag.
4. If you think about it, the conclusion is obvious. Plasma torches work great for low solid flow rates of material, ground to small particle size with little or no inorganics. Therefore, plasma is great for gasifying the fines in the syngas stream resulting from any gasifier (including our own). What is needed is a simple way to quickly and cheaply convert the large solid mass flow rate, contaminated with in-organics, into a raw synthesis gas. The name of that process is Molten Bed Thermal Reactor (MBTR), better known as NYEG MBTR. We have the best design for an advanced molten bed gasifier in the industry.

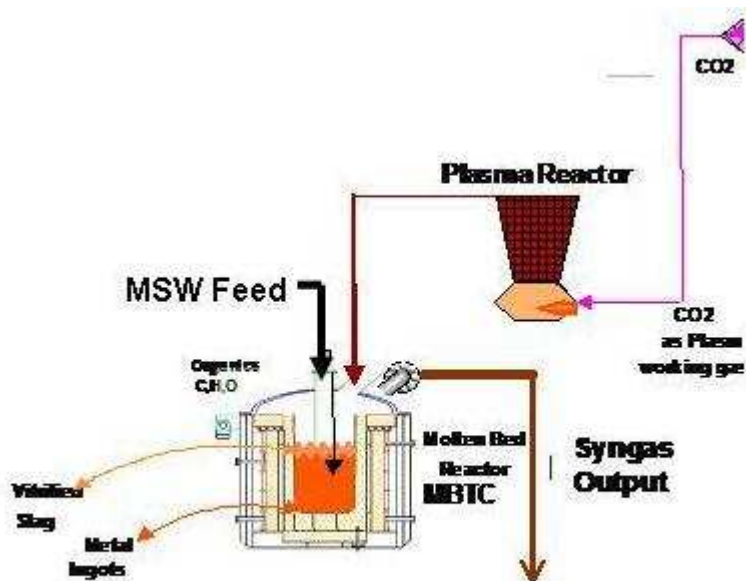


Figure A6: NYEG Advanced Gasification

The NYEG process uses a molten iron to gasify the biomass feedstock thereby creating H₂ and CO (syngas). At this point in the process the syngases are not thermally disassociated compounds. Hence coming out of the furnace the NYEG process will have small amounts of Chlorine, Fluorine and Bromine which will form HCl, HF, HBr (halogen acid gases) which are removed by a sodium hydroxide scrubbing process. Likewise sulfur is scrubbed out with an oxidizing process.

As for other trace compounds, furans and dioxins form in the 250-400° C region and are quickly quenched (cooled) in the gas from 1400° to 600° C with a heat recovery boiler and steam generator. Then at 600° C, the process rapidly quenches the gas dropping its temp from 600° C to 200° C in a matter of a few seconds, thereby eliminating the chance of furan/dioxin formation.

Mercury and Lead should not be in biomass, but active carbon filtering takes out the Hg and Pb.

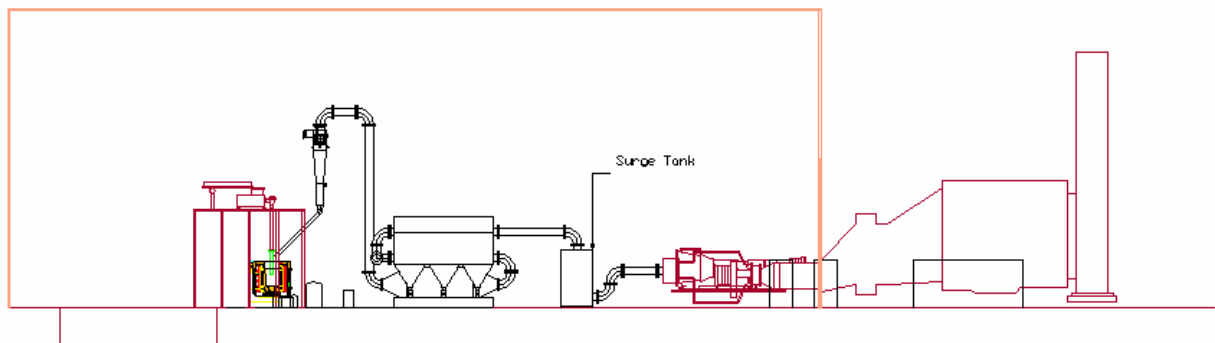
Other Differences NYEG Considered in Building Their Process

NYEG looked at the Enersol plasma gasification used by Westinghouse Plasma. This system would not be applicable to power operations at the utility scale due to limited throughput of the gasifier. In addition, it uses steam as a working gas in the reactor which is consistent with the Lurgi approach to increase hydrogen in the syngas. While it does help increase hydrogen content it is not energy efficient. The key to performance is the preparation and injection of the feed stream to maximize syngas output. The NYEG patented injection gasification uses oxygen, not steam, as the transfer gas, so that the reaction stays optimized and exothermic. Most gasification techniques employ steam and have problems with fly-ash and slag. Because of NYEG’s unique approach, there is no fly-ash and contaminants are vitrified in the slag layer. This also reduces costs of scrubbers and eliminates the need for electrostatic precipitators.

Gas Turbine and Steam Turbine Combined Power Cycle

The BioDeerhaven power cycle will employ more than one thermodynamic cycle to extract a maximum amount of energy from the syngas resulting from the gasification process. The syngas burning gas turbine is one cycle, and the steam boiler driven turbine is the second cycle. Hence, combined cycle.

Figure A8 shows two views of the combined power cycle. This design was developed by NYEG for its current project in Western Europe.



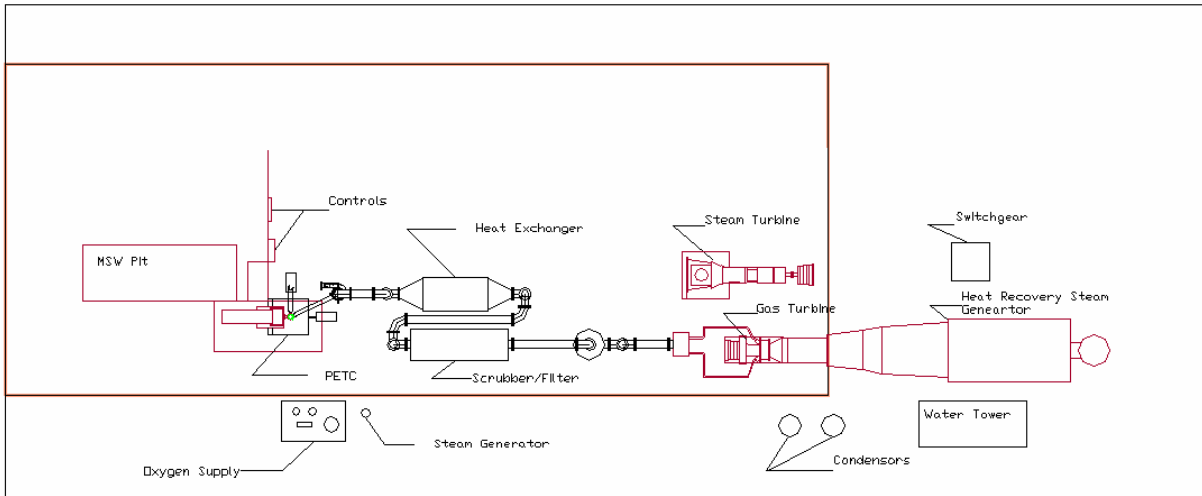


Figure A8: BioDeerhaven Combined Power Cycle – Two Views

As stated before, Horizon’s design goals include using existing designs, technologies, and component suppliers to create as much of an “off the shelf” design / build approach as possible for the BioDeerhaven power plant. There are literally dozens of suppliers of combined power cycle plants in Europe and the USA.

n) Reliability of the proposed technology

BioDeerhaven production is 8000 hours per year (this is a conservative assumption – we expect to see a long-term average of 8200 hours)

o) Performance guarantees, warranties and risk mitigation

As this is a self-funded turnkey project, the performance guarantees, warranties, and risk mitigation steps are a primary interest to the owners of BioDeerhaven. Under the PPA, BioDeerhaven guarantees to GRU an annual output of 283,000 MWH. See section 6.c) for more information.

p) Backup systems and fuels

There are few backup systems required in this plant design. The backup systems are in controls and instrumentation for processes, sampling, and analysis.

As a support to continuity of operations (alternate to backup systems), BioDeerhaven will store sorted, shredded, dried RDF for a two-week supply.

q) Estimated truck traffic associated with fuel supply

At about 600 tons per day, considering that modern waste haulers (compaction) carry roughly 15 tons per load, there will be 40 loads per day.

r) Description of how fuel procurement practices are consistent with GRU’s commitment to Sustainable Resource Forest Management

Not applicable.

Section 4 – Economic Information

The following information is provided in accordance with the RFP. The BioDeerhaven power plant is designed to be a base load operation.

a) Capacity offered and all relevant pricing information including, but not limited to:

- Capacity charge by year

The capacity charge for BioDeerhaven will only result from GRU not using the plant at its 100% capacity of 36MW for 8000 hours per year which are the PPA terms. This does not include reduced capacity from BioDeerhaven purposes such as the annual maintenance outage.

The capacity charge will be calculated and invoiced monthly:

Monthly Capacity Charge = Energy charge (escalated by year) * (planned monthly MWH production – GRU caused reduced MWH production in the month)

- Energy charges by year or guaranteed conversion rates and fuel cost index

First year energy charge of \$55/MWH delivered from BioDeerhaven.

Energy charge escalation rate of 2% per year for the life of the PPA.

- Variable O&M charges and index

Horizon has included any variable O&M costs in the energy charge escalation rate above.

- Start charges and index

Because BioDeerhaven is a base load power plant no start charges will be assessed.

- Transmission wheeling charges

Horizon assumes the BioDeerhaven site will be on the Deerhaven Generating Station site, therefore, no transmission wheeling charges will be applied.

- Other charges

None.

b) Fuel cost assumptions

- A \$10/ton tipping fee for the City of Gainesville organic MSW
- Total of 98,000 tons per year from the City of Gainesville in accordance with Appendix A, Table 3.
- Total of 122,000 tons per year of organic Alachua County (and others) MSW from the New River Landfill.

c) REC and environmental allowance management (see section above on Environmental and Tax Credits)

The plant is a near-zero emissions plant yet is fully instrumented with analyzers to automatically track possible emissions, including carbon dioxide. The Carbon Dioxide offset of the plant will be calculated using standard international and/or national protocols that support various Carbon Markets and reported on a monthly basis. For the 36 MW design, we anticipate Carbon Dioxide credits in excess of 43,000 tons CO₂ per year.

The Carbon Dioxide credits, REC, or any other allowance has not been used as a basis for calculating the financial returns on the plant or required tariff rate under the PPA. This leaves the CO₂ credits, REC, and any other allowance as a point of negotiation. Horizon would like to negotiate a shared 50/50 ownership of CO₂ credits, REC, and any other allowance generated by BioDeerhaven.

d) Treatment of tax credits and other financial incentives (see section above on Environmental and Tax Credits)

The ad valorem property tax rate (24.6135 mils) is a substantial challenge to the economics of the power plant. It drives the proposers to offer less capital intensive solutions that are less efficient and generate more emissions. In essence, this property tax is counterproductive to the GRU environmental goals of a renewable energy supply from municipal solid waste.

Horizon proposes to GRU that BioDeerhaven be taxed like Deerhaven Generating Station since it will be on existing GRU (Deerhaven) property and operated in the same manner.

e) Liquidated damages

Since Horizon is supplying all financing of the project and no financial burden is placed on GRU, liquidated damages do not apply.

f) Limitations on damages and remedies

Not applicable per e) above.

g) Replacement power or capacity

If for BioDeerhaven reasons, it cannot supply the agreed MWH, Horizon will supply replacement power for the remainder of the committed MWH. Any cost differential will be Horizon's responsibility.

h) Other proposed forms of risk mitigation

Horizon will provide a performance bond for the operating period as a measure of risk mitigation for itself. Since GRU is not at risk for any financing, risk mitigation for GRU is not applicable.

i) Land purchase or lease assumptions

Horizon assumes that GRU will lease 4 acres of land at the Deerhaven Generating Station at no cost.

j) Number of employees on-site under normal operations

We have a plant staff of 18, of which, normal operations daytime on-site staff will be 10.

Section 5 – Production Cost Information

The below Illustrative All-In Production Costs table below does not fit a MSW-fueled, base-load generator scenario directly. However, by assuming a MSW tipping fee paid to BioDeerhaven, we can calculate a relative production cost

Table 2: Illustrative All-In Production Costs (\$/MWH)

Unit Capacity Factor	Average Delivered Refuse-Derived Fuel Cost (\$/mmBTU) or Index Value (% of base)*				
	- \$0.58 - 30%	- \$0.71 - 15%	- \$0.83 100%	- \$0.96 + 15%	- \$1.08 + 30%
95%	\$53.20	\$52.60	\$52.00	\$51.40	\$50.70
90%	\$56.30	\$55.80	\$55.00	\$54.50	\$53.80
85%	\$59.80	\$59.20	\$58.50	\$57.90	\$57.20
80%	\$63.80	\$63.20	\$62.50	\$61.80	\$61.20
Off-line** (Daily Payment)	\$38,500	\$38,500	\$38,500	\$38,500	\$38,500

* Tipping Fee at BioDeerhaven for taking municipal solid waste (MSW). The index is \$10/ton MSW converted to \$0.83/mmBTU.

** Off-line directed by GRU; minimum 3 days off-line required.

Table 3 is not applicable for the BioDeerhaven technology since it is a base load electric generation system and not viable for load following or peak response.

Table 3: Illustrative Variable Costs for Economic Dispatch (\$/MWH)

Unit Capacity Factor	Average Delivered Refuse-Derived Fuel Cost (\$/mmBTU) or Index Value (% of base)*				
	- \$0.00 - 30%	- \$0.00 - 15%	\$0.00 100%	+ \$0.00 + 15%	+ \$0.00 + 30%
95%	Not applicable				
90%					
85%					
80%					
Off-line (Daily Payment)					

Section 6 – Respondent Information

Horizon is responding as a team of Horizon Energy Group LLC, New York Energy Group (NYEG), and financing partners. Horizon Energy Group LLC (Horizon) was formed in November 2005. Horizon is an energy project development and consulting firm focused on integrating new smart grid and renewables technologies into the mainstream electric industry. NYEG is an advanced gasification engineering and development company focused on the energy industry, both electric supply and biofuels supply.

Horizon and NYEG have several equity and financing partners, mainly because of the increased interest in clean technology businesses today. For this project, the team's discussion has been mainly with Gilo Ventures for equity and Deutsche Bank and HSBC for financing. The final set of equity and financing partners are dependent upon the structure and details that would arise from Horizon's negotiations with GRU for the 36MW power plant.

a) Respondent's qualifications and experience in the provision of energy supply

The principals of Horizon have been in the US utility industry for more than 30 years with specific background in the construction and startup of power plants, as well as long-term operations, maintenance, and engineering of such facilities.

Steve Pullins, President, is a qualified chief engineer on 4 types of nuclear power plants, a gas turbine plant, a geothermal plant, and has developed large power projects with gas turbines and geothermal power. He has operated several power plants and trained operators in nuclear and geothermal operations. He has developed engineering processes to find and correct erosion-corrosion phenomena in steam cycles, developed remote inspection techniques for nuclear reactors, and was an original development team member for the Risk-Based Predictive Maintenance techniques used in the US power industry for the last 15 years. Steve Pullins is a frequent invited speaker (15+ per year) from utility, federal, state, and vendor groups on the future of the utility business, integration of renewables power plants into grid operations, and the development of new grid practices and technologies.

Joe Miller, Senior Vice President, was the chief start up engineer for Clinton Power Plant in Illinois. He is the former Vice President of Illinois Power and ran all engineering for the utility. He currently leads the US DOE concept development team for modernizing the US grid.

The principals of NYEG have been in the US utility industry as executives and innovators for more than 25 years, with specific background in fielding new technologies.

Bill Newell, CEO of NYEG, has more than 40 years in the utility business best known as a co-founder of Itron, the world's largest utility metering and data management company (> \$1B annual turnover). He has extensive background in developing new technologies and bringing them to market.

Keith Bucher, President of NYEG, has more than 25 years in the gasification and plasma technologies. He is the original developer of the plasma gasification process used by the US Army for hazardous waste destruction and by the US Customs Service for cocaine destruction where zero emissions were required. Keith was the original technology chief engineer for the 220MW Mumbai power plant, which was the first power plant with the Molten Bed Thermal Reactor concept.

Bill Hetherington, Executive Vice President of NYEG, has more than 20 years of utility engineering and management. He also has started up two companies supplying advanced technology to the utility industry. As the chief engineer at a utility in Florida, Bill has lead major power plant and electric grid projects. He is the project manager on the Portugal gasification / plasma project to produce clean biodiesel from MSW.

b) Respondent’s qualifications and experience with the technology being proposed including references

There are two main technologies that constitute the Horizon BioPower plant. The first is NYEG’s advanced gasification technology and the second is the combined cycle electric plant.

The advanced gasification technology has been developed by NYEG scientists and engineers over the last 12 years originally for the US government as a previous company, Scientific Utilization Inc. The first two government projects were for the US Army to destroy VX Nerve Gas and the US Customs Service to destroy seized Cocaine both with zero emissions, an obvious prime objective of the technology. These scientists and engineers also used their advanced gasification technology with project developer, GSB Technologies, to design and build a 220MW waste to electric power plant in Mumbai, India in 2002.

NYEG has 8 patents pending so far on this process and has been commercializing the technology for biodiesel and power applications.

The combined cycle electric plant technology, based on a gas turbine front cycle and a steam turbine back cycle is standard and virtually commercial off the shelf technology supplied by at least 10 large vendors worldwide. Both, Horizon and NYEG have experience with these power plant designs.

c) Respondent’s financial capability including, but not limited to:

- *Recent annual report for the Respondent and any other parties involved, or a recent copy of an audited income statement and balance sheet*

As before, Horizon is a two-year old company with little financial background to share with this proposal. The following table is a summary of Horizon’s financial performance:

Year	Revenues	Assets	Liabilities	Earnings before Taxes
2005	\$14,000			
2006	\$150,000			
2007	\$600,000*			

* estimated year-end based on 11 months of actuals.

NYEG began operations in 2006 with their first contract for a \$150M waste to diesel project in Portugal. This is the first of six such plants in Europe under the contract between NYEG and the large Portuguese engineering and development firm, SGC Energia.

- *Bond rating of Respondent or its parent company by Moody's, Fitch, Standard & Poor's, and/or Dunn & Bradstreet*

Horizon and NYEG have no bond rating.

HSBC Bank USA, AA (S&P)

Deutsche Bank, AA (S&P long-term)

- *Description of financing for the project*

Under the proposed financial structure outlined in Section 2 above, the Horizon team constructs the financing for the project in a standard 20-year or 25-year equity, mezzanine financing, and debt financing arrangement.

Horizon and the equity partner negotiate two parts:

Initial equity at the project stage

Mezzanine financing position desired by the equity partner at a negotiated rate

Once, the equity partner is onboard, Horizon leverages multiple interested and informed financial institutions with energy funds for the remaining project financing.

Upon completion of the plant and commencement of operations, Horizon negotiates a new long-term debt financing agreement which may include the original financial institution debt, or may include both the institutional debt and mezzanine financing. The goal is to achieve the lowest long-term debt expense for the BioDeerhaven owners.

This structure is generally considered a build, operate, and own structure for an independent power producer. An option to consider between GRU and Horizon is whether or not there will be a transfer (buy-out) of the plant desired at some point in the future of the operation.

- *Financial guarantees from affiliates or others, as appropriate*

Because Horizon's team is proposing a self-financed project, financial guarantees to GRU are not applicable. However, as a brief description of the financial guarantees within the internal financing structure, there is a project delivery warranty and a long-term plant performance guarantee.

Based on the equipment vendor warranties and design / build warranty, Horizon supplies a two-year plant warranty to the equity and financing partners.

Based on establishing a long-term operations and maintenance (O&M) contract for fifteen or more years, Horizon supplies a plant performance guarantee based on a 90% availability of the power plant delivering 283,000 MWH each year.

Section 7 – Attachments for Section 6

To be supplied in the next round of the RFP process.

Submitted by:

Horizon Energy Group, Inc.

G. Heber Weller, P.E.



Director, Southeast Power Projects

PURCHASING DIVISION

ADDENDUM NO. 1
BIOMASS FUELED GENERATION FACILITY
Request for Proposals 2007-135

DATE: November 29, 2007

PROPOSAL DUE DATE: December 14, 2007 @ 2:00 p.m.

NOTE: This addendum has been posted on the GRU website where the original RFP was posted. Only respondents to that posting have been notified via email. The original specifications remain in full force and effect except as revised by the following changes which shall take precedence over anything to the contrary.

RFP 2007-135, Biomass Fueled Generation Facility:

Section 5.0 SUBMISSION OF PROPOSALS

Add the following sentence:

“Three separate CDs containing electronic pdf. files of the Proposal shall be included.”

Section 18.0 ALLOWABLE FUELS

Add the following as the last paragraph of the section:

“Process additives other than coal and petroleum coke that are not biogenic may be included for consideration if it can be shown that their addition is less than ten percent (10%) by weight, needed for the process, and that the price of the additive is such that it is not being added to reduce the production cost of energy.”

Section 25.0 SUSTAINABLE FOREST RESOURCE

Should read, “SUSTAINABLE FOREST RESOURCE MANAGEMENT”

Section 30.0 EVALUATION CRITERIA

Item (l). Delete “Project Risk Profile” and substitute “Proposer’s Financial Strength”.

Item (n). Delete “Ability to execute the project” and substitute “Local Economic Impact”

The following link to aerial photography, provided by the Alachua County Property Appraiser, may be used to view vegetation at the Deerhaven site

<http://acpawebmap.acpafl.org/WebMaps/ParcelView/asp.htm?Title=ArcIMS%20Parcel%20Information%20Viewer>

The Metadata for this site may be viewed at:

<http://acpawebmap.acpafl.org/GIS/metadata.htm>

Relevant parcel numbers

- 05884-001-000 – Current Site
- 05884-001-003
- 05884-000-000
- 05943-001-000
- 05943-000-000
- 05868-001-000
- 05868-099-000

GRU Addendum Number1.txt

05869-002-000
05869-001-000
05882-004-000
05946-003-000
05946-004-000

(352) 334-3400 ext. 1240 P.O. Box 147117, Station A130, Gainesville, Florida
32614-7117 Fax: (352) 334-2989

□
05973-001-000
05974-000-000
05883-000-000
05871-002-000
05871-003-000

A.J. Sontag, C.P.M.
Senior Buyer
Utilities Purchasing

ACKNOWLEDGEMENT:

Each Proposer shall acknowledge receipt of this Addendum No. 1 by signature below,
and shall attach a
copy of this Addendum to its proposal.

CERTIFICATION BY PROPOSER

The undersigned acknowledges receipt of this Addendum No. 1 and the proposal
submitted is in
accordance with the information, instructions and stipulations set forth herein.

Proposer: ___Horizon Energy Group_____

By: ___G. Heber Weller, P.E., Director, Southeast Power
Projects_____

□