Raceland Raw Sugar Corp.
Raceland, Louisiana

Business Plan
Mission Statement

- It is the objective of Raceland Raw Sugar Corp. to diversify into markets which will utilize residual materials, i.e.; bio mass and effluents, from the present raw sugar production in order to ensure long term sustainability for the local farming community. The intention is to achieve this diversification while maintaining a policy of producing raw sugar as a primary market.
The Team

- M.A. Patout and Son.
- Raceland Raw Sugar Corp.
- Sugar Cane Farming Community.
- Department of Energy
- Bio Energy Investments
Opportunities

- **Bio Refinery production:**
  - 120,000 tons Raw Sugar per year
  - 65,000 tons Molasses production per year
  - 120,000 tons Fuel Briquettes per year
  - Synthesis Gas production
  - Renewable Power Generation
  - Methane gas capture
Challenges

- **Farming:**
  - What are the best yielding crops to satisfy all economic expectations?
  - How much biomass is required to meet economies of scale for a bio refinery?
  - What is the extra cost to the farmer?
  - What savings are expected?
  - What in-field equipment is required?
  - What are the labor requirements?
Challenges

- Factory:
  - What is the best final product mix to satisfy all economic expectations?
  - What is the best location for the plant?
    - Located at existing plant?
    - Centrally located to accept biomass from surrounding factories?
  - What is necessary to meet the freight requirements?
  - What are labor requirements?
Market Environment

- Sugar, Bio Fuels, Plastics and Electricity:
  - Sugar is a reasonably stable, low margin commodity.
  - The Bio Fuels/Energy market is presently experiencing the most exciting activity in USA history.
  - 2% Ethanol Mandates are in place in Louisiana.
  - 2005 Energy bill provides a positive foundation and future goals for Renewable Energy production.
  - 2008 Farm Bill offers positive incentives to produce Renewable energy.
  - Power Generation from renewable Bio Mass is both an inexpensive and environmentally friendly process.
Business Concept

Bio - Refinery Concept – Present

Cane Farm → Sugar Mill → Bagasse storage

Sugar Mill

Bagasse → Molasses

Effluent → Waste Product

Revenue

Molasses

Sugar

N/V ; Cost

N/V ; Cost
Business Concept

Bio - Refinery Concept – 1st Phase

- Sugar Mill
  - Cane Farm
  - Bagasse CLM
  - Effluent
  - Waste Product

- Dryer & Briquette Plant

- Revenue
  - Molasses
  - Sugar
  - Briquette sales

N/V; Cost
Business Concept

Bio - Refinery Concept – Future Phases

- Cane Farm
- Sugar Mill
- Bagasse CLM
- Dryer & Briquette Plant
- Effluent
- Anaerobic Digestion
- Briquettes
- Methane Gas
- Gasification
- Briquettes
- Power Generation
- Syngas
- Molasses, Sugar, Briquette sales
- Revenue
- Power Sales
- Ethanol, Butanol, Ethylene, Plastics, Bio Fuel, Etc.
Timing – Short Term

1\textsuperscript{st} Phase testing

- Bio Mass/Cane Separation technology will be tested during 2009 grinding season.
- Trials to determine necessary modifications to farming practices in order to deliver all Bio Mass to the factory have been carried out. Further tests will take place in 2009 grinding season.
- Drying and Briquetting of the Bio Mass will be carried out after June 2009. All the above tests will be carried out under the auspices of the DOE to determine technology reliability and cost, personnel, economic and financial requirements.
Timing – Long Term

- Future Phase testing.
- Pilot Plant trials of converting Bio Mass to Ethanol have been carried out successfully using a thermal conversion.
- Gasification trials have been successfully completed however further testing using alternative Gasifier technologies will be necessary.
- IGCC technology is proven and may be termed standard.
Pros. - Feedstocks

- Bio Fuels and Electricity produced from Bio Mass at an existing raw sugar facility offers a very positive energy ratio, is environmentally friendly and is a positive ally in the march toward energy independence.
- Raw materials used in the Bio Refinery production will not compete with products in the human food chain.
- Huge Environmental impact with elimination of in-field burning.
- Bio Mass Briquetting offers tremendous shipping advantages which opens up the potential for centralized Bio Refinery Plants.
Pros. - Location

- Raceland Raw Sugar Corp. is geographically located in close proximity to the major oil refineries and chemical plants which reduces transport costs.
- All existing Bio Mass delivered to Raceland comes from a 40 mile radius.
- Power grid is local to Raceland Raw Sugar Corp.
Pros. – Factory Operations

- Bio Refinery
  - Improved raw sugar factory performance.
  - Diversified Technical skill opportunities.
  - Extended period of factory operation.
  - It is our intention to use the same model at the other M. A. Patout and Son Sugar factories following successful commissioning & operation at Raceland.
Cons.

- No obvious commitment from large Power Generation Companies in Louisiana to favor Electricity from Renewable sources.
- Louisiana Public Service Commission is always willing to meet and discuss renewable projects however there does not appear to be any motivation to get these projects off the discussion table.
- Louisiana DOTD has no obvious agenda or commitment to assist with the very important freight issue that is compliment to any biomass project. Special High Volume Trailers will be required to handle biomass from farm to field.
Financial Requirements

- **Funding:**
  - DOE (DE-FG36-08GO88045) and RRSC have to date fully funded the 1\textsuperscript{st} Phase of the project on a 50/50 basis.
  - Future phase funding will be sought at an appropriate time from:
    - Private investment – Venture Capital.
    - Federal and State Grant programs.
    - Federal and State Loan Guarantee programs.
Risks & Rewards

- Risks
  - Any project involving new technology is risky.
  - Total collapse of the local Agricultural industry.
  - Severe Weather.

- Addressing risk
  - This project has been evaluated after extensive successful trials and testing and as such risk is reduced.

- Rewards
  - The reward is the sustainability of an industry which has been in operation in Raceland since 1892.
Key Issues

- **Near term**
  - Complete 1st phase installation and commissioning of drying and Briquette plant by June 2009.
  - Complete 1st phase installation of Separation plant by October 2009.
  - Work with LADOTD to develop viable solutions to the necessary freight requirements.
  - Complete 1st phase testing at end of 2009.

- **Long term**
  - Development of Energy Cane Varieties with USDA – Houma LA.
  - Work with DOE on Gasification technology.
  - Work with LAPSC and Power companies to develop electrical generation from Renewable sources.
  - Work with interested parties on Anaerobic digestion and Methane capture.
Conclusion

- To ensure success in this type of biomass program, local Power Companies, LAPSC and the LADOTD are key participants and their expertise and cooperation will be needed.

- This project will test and demonstrate, from field to factory, the technical and economic viability of the use of Sugar Cane Biomass as a renewable feedstock for the future.

- Should the industry experience severe weather, either Hurricanes or Freezes, then the Cane crop can be easily converted to bio fuels and biomass fuel and as such farming risk is reduced.

- This project will be the first of its kind in the US Sugar Industry.

- The success of this project could become the major driving force for the entire Sugar Industry Energy Program.
Acknowledgements

- Senator Landrieu’s Office.
- Department of Energy (EERE).
- Louisiana USDA Rural Development.
- Louisiana Department of Economic Development.
- American Sugar Cane League.
- Local Farming Community.
By achieving our goals we can keep our Agricultural Industry profitable and sustainable