



E-RENEWABLES, LLC
Accelerating Green™

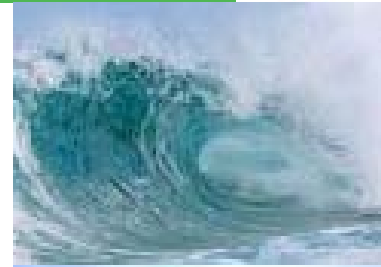
NY State Strategic Planning Meetings July 30, 2009

Christopher von Zwehl - President, E-Renewables
Linda Shaw, Future Energy Development, LLC
Steve Healey, Rochester Biofuels Consulting



Agenda

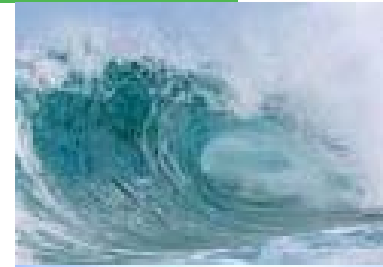
- **Introductions (3 min.)**
- **Meeting Goals (2 min.)**
- **Project Objectives (5 min.)**
- **Key Strategic Considerations (10 min.)**
- **Vision (5 min.)**
- **Path Forward (5 min.)**





Meeting Goals

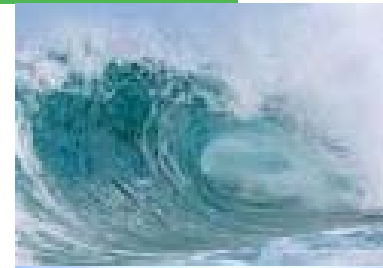
To Engage Key Stakeholders as to the viability of pursuing research & development and market opportunity in the profitable conversion of MSW to biofuels & energy in New York State “through other means than incineration”.





Project Objectives NY

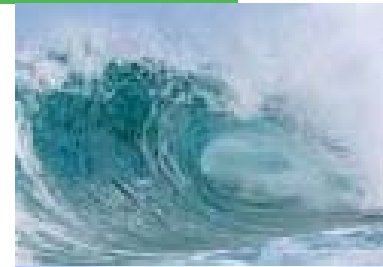
1. Reliable Feedstock
2. R & D Partners
3. Government Support in NYS
4. Prospects to Profitable Commercialization
5. Assess Scale-up Viability
6. Project Execution Plan (1-Year)
7. Final Project Report





Key Strategic Considerations: #1

1. Nationwide there is approximately 505 MM tons of MSW generated annually.
2. About 1/3 (166 MM tons) of this MSW could potentially be used as a biomass feedstock and converted to ethanol.
3. If the conversion efficiency is 100+ gallons per ton, then that's about 16.6 B gallons of biofuel.
4. Even better, this feedstock could have a negative cost, creating a highly competitive position.





Key Strategic Considerations: #2

5. It is critical to find and work with a MSW sort and separate technology providers that are capable of generating a pulp fraction from MSW that has been biologically decontaminated and, potentially, to a significant degree, inorganically decontaminated also.
6. We have identified prime candidates in this area and have developed relationships.





Key Strategic Considerations: #3

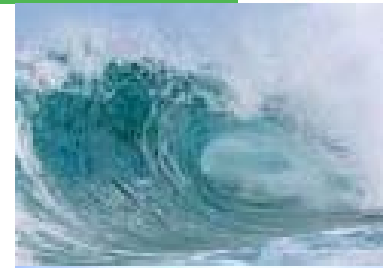
7. If the reformatted MSW pulp product is compatible as a feedstock with certain Biofuels technologies, then this could be a significant opportunity to jump start the industry in New York.





Key Strategic Considerations: #4

8. The most concentrated MSW is in the radius around our biggest city—New York.
9. The government and the hosting community that is most ready to accept new technologies in the Albany, NY location.
10. The reason is a recent controversial decision by the NYSDEC granting Albany a landfill extension but under mandates to come up with solutions for approximately 1000 tpd of MSW within 7 years.





Key Strategic Considerations: #5

11. The very significant advantage of technology like microbial and other non-incineration processes over gasification technologies is the fact that it promotes greater recycling and resource recovery.
12. Established NYSDEC regulations mandate such a focus on recycling.
13. Most of the environmentalists now push for composting the organic component of the MSW seeking a market at about \$15-\$20 per ton in mulch and composted soils.
14. At \$1.50> per gallon target, there is lots of work to be done.





Vision

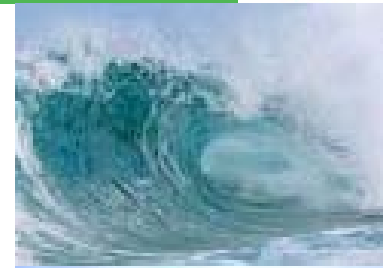
1. Establish NY State programs to promulgate the R&D of MSW to biofuels/ energy in NY State.
2. Establish in the Albany area facility that will entail a flow of selected organic MSW pulp components for pilot-scale testing.
3. Monitor all aspects of this operation, with the cooperating NYS University/ NYSERDA/ NYSTAR/ DOE and DEC, to develop a license's and/ or commercialization plans for the technology. The prime candidate would be from those seeking the contract to manage the 1000-1500 tpd Albany area MSW flow.





Vision

4. Since about 10% of the MSW of a major facility will be gasifiables (light plastics, textiles, rug fragments, and rubber) determine if a gasification process for this material could satisfy the thermal and energy loads for a biochemical process or whether the syngas produced would be better converted to Biofuels. Initial estimates suggest that this may balance out favorably.
5. Since the objective of the governmental programs is to prepare the contract winners with the performance data required to license commercial developers, this program could be used to design the full scale facility.





Vision

6. By performing this work in NYS using a facility established with NYSERDA/DOE/NYSTAR funds (as a data gathering facility and the locus of the design effort for a full scale operation) this would provide for the establishment of a successful technology in NYS for MSW.
7. Beyond, this initial facility could be used to develop additional facilities for all others in those communities where their landfills are reaching capacity constraints. This implies a significant touring and data release program.





DOE Application by E-Renewables Team - Letters

- NYSERDA Commitment \$250K
- New York State Commitment \$1.8 mil.
- National Grid Commitment \$7.2 mil.
- Total Cost Share of 28.5% of \$24 mil.
- E-Renewables Coast Share \$350k +
- BNL/ SBU Commitments
- Other (IFS/ Pearsons E-Squared, etc.)





Commitment from NYS Universities

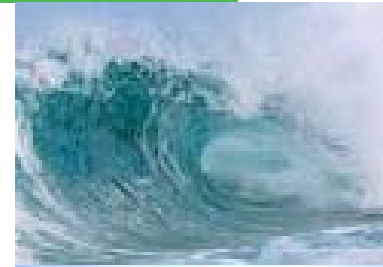
- Rensselaer (RPI)
- SUNY Stony Brook (AERTC)/ NSF
- Brookhaven National Labs (BNL)
- Cornell University





Path Forward

- Q&A.
- Define Next Steps.





Thank you!



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