



U.S. Department of Energy
Energy Efficiency
and Renewable Energy



Greater New Haven Clean Cities Coalition, Inc

Recent Accomplishments & Future Goal

Lee Grannis
Coordinator

2009 Pittsburg Clean Cities Coordinator Peer Exchange



Coalition Status and Sustainability

- Current Stakeholders: 33
- There are two Co-Coordinator full and part time
- Membership Structure / Strategie: There are no dues.
- Steps to Become Self-Sustaining: The main method of operations is to put municipalities, utilities; business and individuals in contact with each other to promote alternative fuels and vehicles. This is includes the development of new related technologies in Connecticut and outside the state.



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Proterra Hydrogen Hybrid Electric Bus





CT Transit Hydrogen Bus Program

ISE Van Hool UTC Power A330
120 Kw Fuel Cell



Connecticut Biodiesel Power Generation Project

2009 DOE Biomass Program Review



16 April 2009

Biochemical Platform Review

Lee Grannis, Principal Investigator
Greater New Haven Clean Cities Coalition, Inc.

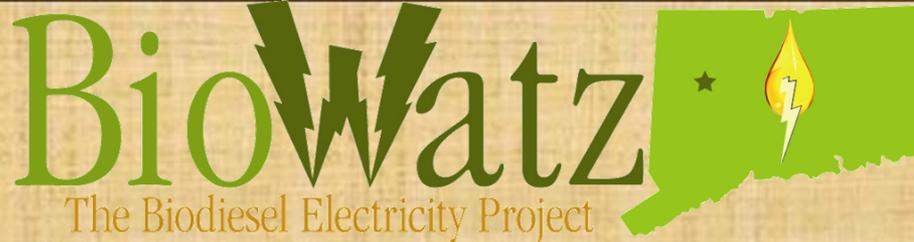
Presentation Given By:

Carla R. York, Business Officer and Robert Schmitz, Engineer

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Chief Executive Officer
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Overview



Timeline

- 1 August 2008
- 31 March 2010
- 40% complete

Budget

\$1,436,790

- \$738,000 DOE share
- \$698,790 Team share

\$261,925.50 Funding received
in FY08

\$443,413.91 Funding for FY09

Barriers

- Barriers addressed
 - Im-E: Lack of Industry Standards and Regulations
 - It-B: Commercial-Scale Demonstration Facilities
 - It-D: Sensors and Controls

Stage

Development Stage 3

Overview



Partners

Greater New Haven Clean Cities Coalition – Recipient / Prime

Gateway Community College – Workforce Development

BioPur Light & Power – Demonstration Partner

BioPur, Inc. – fuel supplier

PowerHouse Electrical Services – on-site electrical work

Kuegler Associates – Site engineering

CL&P – Installation of 3Phase Power and Purchase Power

Sabre Engineering – Master Control Systems development, Data Collection protocols and System Monitoring

Innovation Drive – Project Management, Reporting, Development of Technical Information, Education/Outreach



Goals and Objectives

1. Work with local, state and regional officials to identify and streamline regulations for biomass facilities to mitigate Market Barrier Im-E; Lack of Industry Standards and Regulations.
2. Validate technical and economic feasibility of electricity production with biodiesel in varying blends in areas with high electricity rates, remote areas, and peak power requirements to address a small fraction of Technical Barrier It-B; Commercials-Scale Demonstration Facilities.
3. Implement and validate system improvements, performance improvements and risk mitigation through novel system controls, sensors, preemptive maintenance monitoring and remote system controls as a foundation for future Enterprise Resource Planning. This effort addresses Technical Barrier It-D; Sensors and Controls and is believed to be a cross-cutting technology across the biomass program.



Goals and Objectives – cont.

4. Validate commercial viability while ensuring emissions controls and reductions.
5. Investigate the economic benefits of the various carbon offset instruments.
6. Develop technical and educational collaterals and deploy to target audiences.

Approach

- COTS components provide repeatable performance
 - Focus on value added systems design engineering and integration to facilitate scalability and deployment.
 - Utilized best in class technologies
- Innovative Master Control System (MCS)
 - Integrates operation of Biodiesel, generator, heat recovery, power to grid
 - Open systems architecture
 - Easily updated and adapted to additional equipment and modifications
 - Readily scalable for additional systems and global system control network
 - Enables local and remote access for control and data
 - Local access via interactive touch screen
 - Remote access via integrated visual web server
 - System provides historical and real-time operational metrics.
 - Operational data via web links and push downloads
 - Component and system operational data
 - Increases performance efficiencies and safety via prognostic alerts
 - MCS alerts operators via web, email and text alerts to pending issues

Approach

- Fully Integrated Systems Engineering IPT approach
 - Central Desktop (CD) utilized to provide central clearing house for all communications, data and project history and management. CD provides continuous open dialog among all team members with communication tracking and sharing. Everyone is kept abreast of project details.
 - Project combines technical expertise from diverse application backgrounds to facilitate process and results improvements
- Key Go/No-Go Decisions for Regulatory and Integration
 - To date, no hard stops have been experienced
 - Individual systems testing near completion – full deployment July 2009



Technical Accomplishments/ Progress/Results

- The Team is now commissioning the system in the month of April. The following activities are currently underway and scheduled for completion before the end of July 2009:
 - *Electrical connections and testing*
 - *Generator testing*
 - *Switch testing*
 - *IP connections and testing*
 - *Education / viewing room set-up*
 - *Site clean-up*
 - *Full system testing*
 - *System commissioning*

Technical Accomplishments/ Progress/Results

- Procurement of all equipment and site improvements
- Completed all required site improvements to accommodate equipment and ensure safety
- Utility upgrade to 3 Phase Power on-site
- Receipt and installation of new electrical panels, generator, soft switch, control system, initial phase heat recovery, fuel tanks, IP line, monitors and sensors

Site Changes focused on Generator



August 2008



October 2008

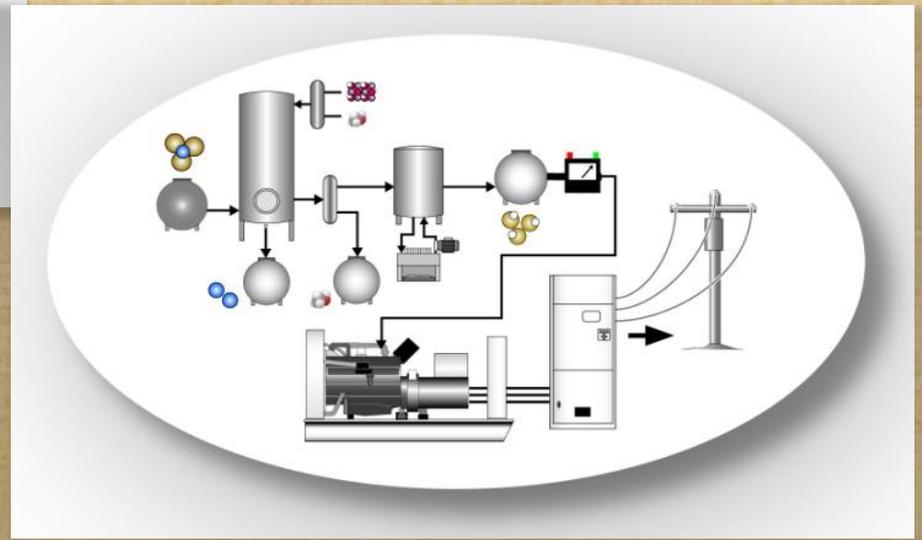
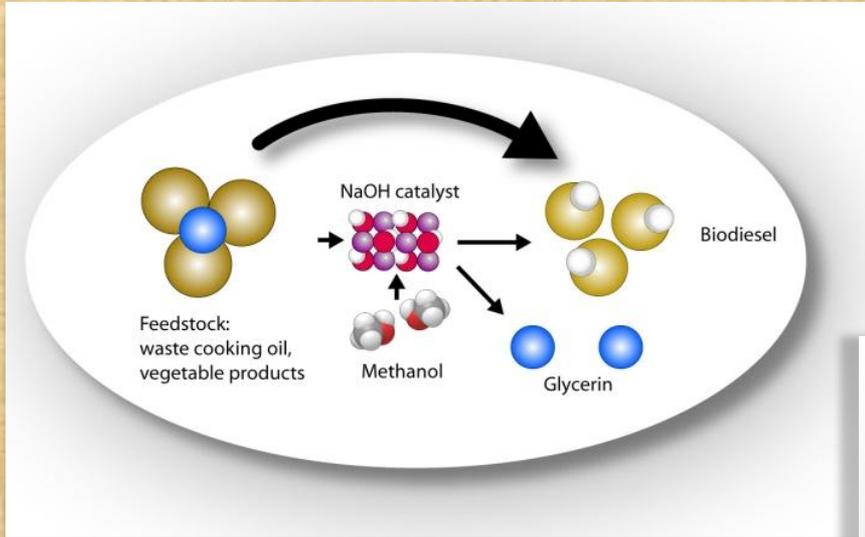


February 2009

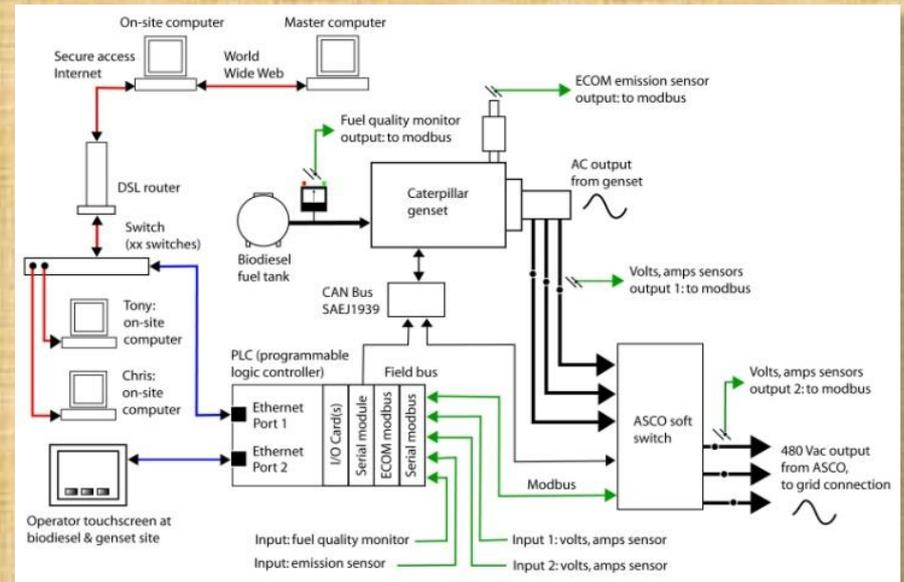
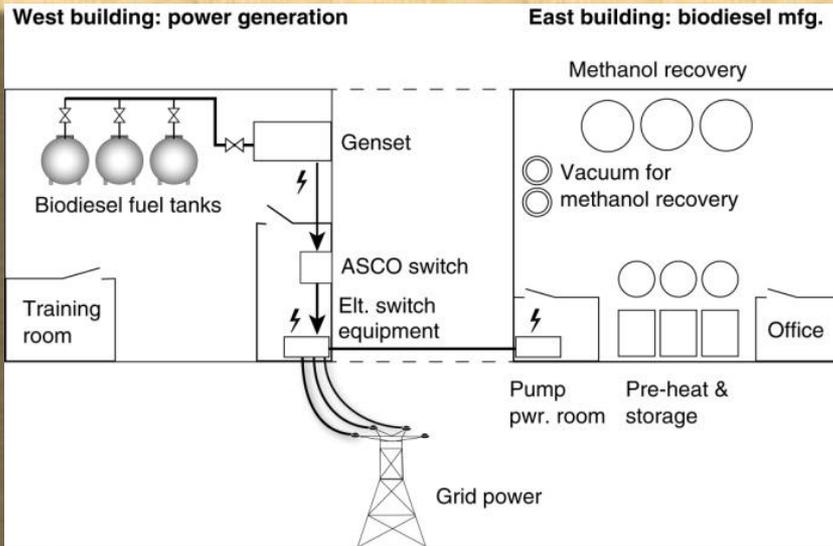
Technical Accomplishments/ Progress/Results

- Created illustrations as visual explanation for the user to understand the process of biodiesel manufacturing and electrical generation process
- Visual explanations explain new technology (biodiesel) to an audience unfamiliar with biodiesel, *in-situ* fuel manufacturing and electrical generation process and safety
- Visual explanations lower risk mitigation, increase safety and compliance, and ensure consistent fuel-blending via training
- Training, knowledge is transferable to new workforce in small, medium, and large biodiesel/electrical generation facilities
- Prompts addition research into new workforce needs

Technical Accomplishments/ Progress/Results (cont'd)



Technical Accomplishments/ Progress/Results (cont'd)



Success Factors and Challenges

- **Critical Success Factors**
 - *Streamlined regulatory process requirements*
 - *Fully integrated system, operational and providing desired results / info*
 - *Technically and commercially viable technology system*
- **Challenges to Overcome for Successful Results**
 - *Overcoming regulatory issues*
 - *Seamless integration of individual systems for control system communications and control*
 - *Validating system technical and commercial viability*
- **Window of Opportunity**
 - *Market and industry opportunity window – 2 years*
 - *Project partners opportunity window – 1-2 years*

BioWatz Biodiesel Power Generation Project

Waste Oil Feed Stock to Biodiesel to Electricity





Significant/Noteworthy Coalition Outreach Activities

Clean Cities Outreach Events in Connecticut





Truck Stop Idle Reduction

The advertisement features a blue background with two images of trucks. The top image is a white semi-truck with a yellow CabAire charging station. The bottom image is a white box truck with a CabAire charging station. Both images include the CabAire LLC logo and the text 'Truck Stop Electrification'. The bottom right corner of the advertisement has a small number '1'.



CabAire LLC Travel Plaza Services

306 Truck Stop Spaces to be Installed

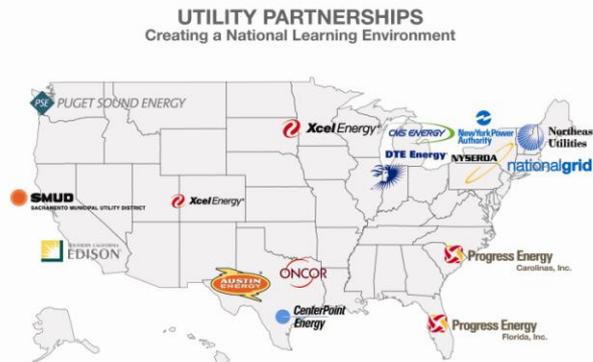
150 Truckstop Spaces from Clean Cities Coalitions





Grid Powered Transportation

- Utilities are getting involved in Grid Powered Transportation



- Chargers will include Level 1, II and III, but new PHEVs and High Speed Electric Vehicles will be Level II (220/240 volts-25 to 40 Amps) in order to get a full charge over night
- Charging systems are evolving going through UL testing
 - Charging Communications: SAE J1772 or ZigBee Wireless



Mercedes-Benz Cars-eMobility Concept

Universal AC charging connector proposal submitted to IEC

- 5 power pins 500V, 63A three phase / 70A single phase
- 2 signal pins 30V, 2 A
- Locking (to avoid tripping, cable theft and hot disconnect)
- Diameter 51 mm
- Submitted to IEC / SC23H (January 2009)





The Grid and Transportation Con't

- OEMs will have High Speed All electric cars out possibly as soon as one year to 18 months
 - Miles (New High Speed Car Co. Coda)
 - Nissan
- You may have a new Li-Ion Chemistry Battery Company in your back yard-Here are a couple of new companies!
 - EnerDel-Indianapolis, In
 - Yardney Technology Products-Enfield, CT



Contact Information

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