Gundersen Health System & La Crosse County, Wisconsin

Landfill Gas (LFG) Electricity Project with Waste Heat Recovery and Utilization
Project Organization

LFG Conditioning, Compression, & Pipeline

General Contractor: McHugh Excavating & Plumbing, Inc.

LFG Electricity, Waste Heat Recovery, and Utilization

Engineer-Procure-Construct Contractor:
Gundersen Health System

- **Mission:** We distinguish ourselves through excellence in patient care, education, research, and improved health in the communities we serve

- **GL Health System**
  - Currently have 41 clinic facilities
  - 325 bed tertiary care hospital
  - Physician-led Integrated delivery system
    - ~700 providers and ~6,500 employees
  - Residency and medical education programs
  - Multiple Top 100 Hospital & Service Line recognition
  - Health Plan
  - A variety of affiliate organizations including EMS ambulance service, rural hospitals, nursing homes, hospice, etc.
Primary Objective

• Energy Independence by 2014 - Produce more power than Gundersen consumes from fossil fuel sources
  – Makes our healthcare delivery more affordable to patients
  – Benefits human health
  – Strengthens our regional economy
  – Improves our environment
Why Health Care Providers Should Care

• Pollutants from the burning of fossil fuels cause:
  – Cancer, liver disease, kidney disease, reproductive issues
  – Cardiovascular deaths and stroke

• According to the Department of Energy, hospitals are 2.5 times more energy intensive than other commercial buildings
  – This is inconsistent with our mission... we are responsible for contributing to disease through our wasteful consumption.

• Energy costs continue to escalate, making it more difficult to provide affordable care

• Reducing waste results in an improved bottom line

1Source: American Heart Association Scientific Statement: DALLAS, May 10, 2010
The Cost of Energy

$5,000,000+ Energy Bill in 2007

>$350,000 Increase Annually for Gundersen Lutheran

The need for affordable healthcare compels us to address this trend.
Our Envision® Program

- Energy Management
  - Energy Efficiency
  - Renewable Energy
- Waste Management and Control
- Recycling
- Sustainable Design of New Facilities
La Crosse County Solid Waste Department

The Responsible Resource

GREEN TIER
La Crosse Disposal System

Mission Statement

Provide environmentally and economically sound solid waste services through public/private partnerships.

To be your Responsible Resource.
Waste to Energy (WTE)

- Xcel tonnage exceeded 73,000 tons (74,578)
Feasibility Study

• Approval Summer 2009
• Finished Nov 2009
• Alternatives Explored
  – Micro turbines
  – Pipeline Gas
  – Compressed Natural Gas (CNG)
  – Boiler Gas (Direct Use)
  – Combined Heat and Power (CHP)
Feasibility Study Cont’d

• Recommendations
  – CHP with a partner offsite
  – Go it alone but without heat recovery distant 2nd choice
Request For Information (RFI)

- Local and Statewide Media contacts
- Local and Statewide Organizations
- Website access to RFI
- L.M.O.P. Landfill Methane Outreach Program
  (National Exposure)
Three Local Responses

- Solution Dynamics La Crescent Mn. (3rd party approach)
- River States Truck & Trailer La Crosse WI. (no specific project and needed more study)
- Gundersen Lutheran La Crosse WI. (Specific and detailed project, experience with Brewery project)
County Requirements

• Risk adverse
• Guaranteed income
• Solid Waste Department controls the gas
• Collaborative
The guys who keep it running >99% in Dec.
Lesson’s learned

• Don’t delegate your responsibility
• Make the regulators your allies
Elements of the Project:
LFG Conditioning Skid & Pipeline Specs

Unison Solutions, Inc. LFG Conditioning Skid
• Conditions up to 450 scfm LFG (Roots Blower)
• Conservative Discharge Pressure (8 psi)
• Chill to 40°F --> Re-heat to 80°F
• Auto Flare Startup

6” Pipeline
• 2 Miles
• Crossed I-90
• HDPE
Electrical Interconnection
One-Line Diagram

XCEL ENERGY

EXISTING CLINIC SERVICE

EXISTING SSB SERVICE

ONALASKA CAMPUS

1000 KW

PROPOSED GENERATOR
Power Plant Specs

- JGC416
- 56% Efficiency
- Offsets 100% of Facility Energy Needs (~12,000 MMBtu/Yr) (350,000 SF)
- Section 1603
Pump House / Utility Building
Typ. Building Flow Diagram & HX’s
Balancing Multiple Objectives
“Two-Sided Green”

- Reduce the Cost of Healthcare
- Achieve Energy Independence
- Decrease Emissions Harmful to Health
- Decrease Emissions Harmful to Environment
- Use Renewable Resources
- Reduce our Dependence on Fossil Fuel
- Provide Benefit to Regional Economy
- Local Jobs
- Improve Patient Experience & Cost
- Partner with Public and Private Organizations
- Make Cost Effective and Sound Investments
- Hedge against inflation
- Power Security/Reliability
- Wisconsin imports nearly $20B in fossil fuels each year...every bit of local production keeps dollars in our region
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