



The Solutions Network
Rochester, New York

Landfill Gas to Energy

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THE TEAM

- ❖ Hill AFB
 - Energy Office, Environmental, Contracting, Legal
- ❖ Department of Energy
 - National Energy Technology Laboratory (NETL)
 - FEMP
- ❖ Utah State Energy and Environmental Offices
- ❖ Davis County and Wasatch Energy Systems
- ❖ Exelon Services Federal Group
- ❖ Utah Power and Light (UP&L)

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OVERVIEW

- ❖ Background
- ❖ Description
- ❖ Challenges
- ❖ Timelines
- ❖ Benefits

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BACKGROUND

- ❖ Federal "Industrial" Installations to Meet Executive Order Mandate of 20% Reduction by 2005
- ❖ Increase Use of Renewable Energy
- ❖ Federal Installations Authorized to Use Energy Savings Performance Contracting (ESPC)
 - No Federal Funding Available
 - No Out-of-Pocket Funding Required
 - No Change in Budget Allocation

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BACKGROUND - SITUATION

- ❖ Hill AFB is located in Davis County, Utah Adjacent to a County Landfill
- ❖ Landfill was Flaring Gas
- ❖ Landfill Operator Approached Hill AFB to See if a Use for LFG Could Be Found
 - Selling Gas to Benefit Community
 - Increase Revenue Stream
 - Environmental Benefit

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BACKGROUND - SOLUTION

- ❖ Department of Energy's ESPC Program
 - Biomass and Alternative Methane Fuels
 - Capture Energy Savings
 - Use of Renewable Energy Source

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BACKGROUND – HILL AFB

- ❖ Base is a Small City
- ❖ 16 Million Square Feet – Buildings
- ❖ Annual Energy Consumption of 228,000,000 kWh and 1.2 Million Decatherms of Natural Gas
- ❖ Electrical Demand – 40 to 45 mW
- ❖ Annual Steam Load of 30 to 100 klbs/hr
- ❖ One of Utah's Leading Employers

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BACKGROUND - LANDFILL

- ❖ Approximately 2,224,000 Tons of Waste
 - Open 1984
 - Disposal Rate of 400 Tons per Day
- ❖ Existing Landfill Collection System
 - 1 Phase Closed – 3 Additional Planned
 - Collection System Constructed in 2001
 - Flare Station Capacity 1,200 cfm
- ❖ Projected Landfill Closure - 2025

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PROJECT LOOK



- 2 engine generators rated for total of 1.4 mW
- Gas Dryer and Compressor System for 14 mbtu/hr of landfill gas
- Potential to expand plant in the next five years

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DELIVERY ROUTE



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PROJECT ECONOMICS

- ❖ Annual Savings of \$400,000
 - Simple Payback Under 10 Years
 - No Capital Investment by Hill AFB
 - Helps Goal Reduction for "Green Power"
- ❖ Addition Annual Savings of \$350,000
 - 8 Additional Energy Conservation Projects Implemented Under Same Contract
 - Decrease in Electrical, Natural Gas and Water Consumption

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PROJECT CHALLENGES

- ❖ Utility Agreement with Local Provider
 - Qualified Facility Process
 - Interconnection
- ❖ Air Quality Permit
 - State Regulated – Lengthy Process
- ❖ Landfill Gas
 - Defined Gas Quantity
 - Defined Gas Quality

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TIMELINES

- ❖ "FAST-TRACK" Pace; Task Order Award Required Prior to 30 Sept
 - Sunset Clause – Energy Bill to Expire
- ❖ Started Feasibility Study – June 2003
- ❖ Engineering and Financial Analysis Completed
- ❖ Contract Awarded 30 Sept – 8:00 pm
- ❖ Construction Start – April 2004
- ❖ Project Completion – September 2004

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PROJECT BENEFITS

- ❖ Air Emission Reduction
- ❖ Long-Term Secure Source of Power
- ❖ Green Power Source
- ❖ Allowed Funding for Additional Energy Conservation Projects
- ❖ Receipt of Over \$580K in Incentive Payments from Local Utility

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ENVIRONMENTAL BENEFITS

- ❖ Calculated Emissions Reduction
 - 5,000 Tons of Greenhouse Gases
 - 5.5 Tons of Nitrogen Oxide
 - 4.8 Tons of Carbon Monoxide
 - 19 Tons of Sulfur Dioxide

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PERSPECTIVE

- ❖ Landfill Gas Used to Generate 1 mW of Power is Equivalent to:
 - Taking 8800 Cars Off the Road
 - 12,000 Acres of Trees Saved
 - 200 Railcars of Coal
 - 93,000 Barrels of Oil
 - 660 Homes Powered

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QUESTIONS???

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