Ports to Plains Energy Summit
Using Community Resources for Energy Production
April 7, 2011
Objectives for Today

- Overview of a Landfill Gas Project
- Benefits to the Community
- Stakeholder Roles in the Project
- Project Development Process
- Overview of a Solar Project
- Summary
Portfolio of City Solutions

Airport
Financial Services
Energy & Environmental care
Metropolitan Security
Traffic & Public Transportation
Healthcare
Water / Wastewater
Public Administration
Education
Harbor
Lighting
Building Technology
Sports Venues, Fairs & Sites
Available Resources Change from City to City

- Agricultural Biomass
- Methane from a Landfill
- Methane from a WWTP
- Green Waste Collection
- Food Waste Collection
- Fats, Oil and Grease Collection
- Solar
- Water
- Wind

_All of these “waste” products can be viewed as Resources_
A Landfill Gas Project
San Angelo Basic Facts

- San Angelo has approximately 3,000,000 tons of waste in place.
- They collect approximately 100-120,000 tons of waste per year.
- The Landfill is permitted to stay open for the next 30 years or more.
- They currently have a collection system operating on the landfill.
- The collection system is gathering between 300 and 400 SCFM of gas that is being flared.
Options for Use of Methane

- Currently considering whether an electric generation project or a direct use project is the better option.
- There are endusers for both gas and electricity available to the city.
- We are looking at generating approximately 2 MW of power or selling between 700 and 800 SCFM of gas.
- Will dry, compress and either send the gas into a pipeline for use in a local industry, or send the gas to two Jennbacher engines to produce electricity.
A Beneficial Use of San Angelo’s Landfill Gas

- **Benefits to the City:** Provides the City with a new source of revenue from the sale of the landfill gas

- **Benefits to the Local Economy:** Provides a competitive advantage to a large local employer and provides jobs for local construction crews.

- **Benefits to the Environment:** Destroys a potent greenhouse gas, methane.
Customer Responsibilities

• Install/Expand Collection System
• Own the project
• Finance the project
• Negotiate terms with end use customer
• Help with permitting of the project
• Sale of renewable energy attributes
Siemens Responsibilities

- Provide economic analysis on electric project vs. direct use project
- Provide final design and engineering
- Install and commission the project
- Help with negotiations with End Use Customer
- Help with valuation of renewable attributes
- Help obtain necessary permits
- Refine and finalize O&M costs
- Provide a guarantee for operating availability
Landfill Gas Project
Development Process

1. Sign Letter of Intent With Siemens
2. Determine most beneficial project
3. Expand existing well field
4. Siemens provides final price for project
5. Negotiate contract terms with end use customer and Siemens
6. City Council Approval of final contract terms
7. Complete financing of project
8. Sign Contracts and begin construction
9. Start up and commissioning of Project

Total Process is between 18 months and 36 months
Solar Project for Dedham, MA

- The Town was awarded a grant for a solar installation
- The Town is also undergoing an energy efficiency upgrade program
- The Town is interested in obtaining renewable energy sources that increase energy security.
- The Town has also begun the Sustainable Dedham initiative to encourage energy conservation and sustainability among its constituents.
The Solar Installation

• Siemens is installing 96 panels at 245 Watts on the Town Hall and 525 panels at 245 Watts for a total of 152 kW of solar.
• The system is expected to produce approximately 183,000 kWh of electricity per year.
• The project includes a kiosk in the Town Hall and the High School which will monitor production and usage for the public.
• The current utility rates in Dedham are between $.11/kWh and $.15/kWh.
Power Purchase Agreements

- A vehicle to provide cost effective solar power to public entities
- Third party owners can take advantage of federal tax incentives.
- No upfront capital required by municipality or non-profit entity.
- Only makes sense in areas where state or local utility incentives exist.
Solar Project Development Process

1. Sign Letter of Intent With Siemens
2. Design Solar Array
3. Finalize Pricing for Solar Array
4. Determine kWh pricing
5. Negotiate contract terms for PPA or installation of system
6. City Council Approval of final contract terms
7. Sign Contracts and begin construction
8. Start up and commissioning of Project

Total Process is between 6 months and 12 months
Summary

• Each City in the Ports to Plains Initiative has some set of resources it can use to:
  – Reduce dependence on foreign sources of fuel
  – Increase renewable sources of generation
  – Turn sources regarded as “waste” into valuable resources
  – Benefit the local economy by producing competitively priced, sustainable energy
  – Use the assets it has wisely to benefit the surrounding community
Questions?