



Jackson County Green Energy Park – Tour Info Sheet

JCGEP Mission Statement

The Jackson County Green Energy Park utilizes clean, renewable energy resources to encourage economic development, provide environmental protection, and offer educational opportunities that together will help lead towards a more sustainable future for western North Carolina.

<p><u>Project Overview</u></p> <p>Captures methane gas from the old Dillsboro landfill for use as a fuel.</p> <p>Provides process heat for:</p> <ul style="list-style-type: none"> ♦ Blacksmith forges ♦ Metal Foundry ♦ Glassblowing studios ♦ Greenhouses ♦ Facility heating ♦ Pottery kiln (wood-fired) 	<p><u>Economics</u></p> <ul style="list-style-type: none"> ♦ Encourage the success of new artisans ♦ Fully-functional studios available for rent ♦ Cost-free fuel ♦ Develop real business skills ♦ Open new opportunities for agriculture/greenhouse ventures by greatly reducing energy costs. ♦ County Grounds Department grows own landscaping plants to reduce expenditures. ♦ 10 – 20 new job opportunities created once project completed, with continued turnover of artisans. ♦ Increased eco-tourism and heritage crafts tourism. Several thousand visitors to date. 	<p><u>Environment</u></p> <ul style="list-style-type: none"> ♦ Jackson County required to manage landfill gas. ♦ Capturing the gas prevents methane from escaping into the environment. ♦ Methane is 20+ times worse than CO2 in terms of greenhouse gas effect. ♦ Removes odors caused by leaking landfill gas. ♦ Prevented 888 tons of methane from entering environment, to date. ♦ Environmental Benefits equivalent to: <ul style="list-style-type: none"> ○ Removing 916 vehicles off the road. ○ Planting 1,305 acres of forest.
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<p><u>Project Background</u></p> <ul style="list-style-type: none"> ♦ Dillsboro landfill closed in 1999, with roughly 750,000 tons of trash in place. ♦ Concerns over methane migration prompted County to examine LFG capture. ♦ County re-purchased property and buildings adjacent to the landfill. ♦ Gas wells installed March 2005. ♦ Project construction begun October 2005. 	<p><u>Funding</u></p> <ul style="list-style-type: none"> ♦ NC State Energy Office - \$75k ♦ USDA Rural Enterprise - \$80k ♦ NC Rural Center - \$120k ♦ Appl. Regional Commission - \$70k ♦ Golden Leaf Foundation - \$237k ♦ Handmade in America - \$27k ♦ Resourceful Communities - \$40k ♦ Jackson County contributions to date: \$1.4 million. 	<p><u>Gas Supply</u></p> <ul style="list-style-type: none"> ♦ Landfill size – 9 acres ♦ # of gas extraction wells - 13 ♦ Average gas flow - 40 cubic feet per minute ♦ Methane content - 58% - 62% ♦ Heat value - 1.2 Million Btu/hr <ul style="list-style-type: none"> ○ 1 Btu = Heat of 1 kitchen match ○ Average residential gas furnace = 60,000 Btu/hr ○ LFG resource = 20 gas furnaces burning continuously
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Site Clean-up

- ♦ GEP site had been used as a recycling center and trash transfer station. Once abandoned, it had accumulated many years' worth of salvaged materials and junk.
- ♦ Removed over **550 tons** (over 1,000,000 pounds) of **trash and debris** from site.
- ♦ Crafts building was full of junk, in terrible disrepair, with no interior walls or utilities.

Greenhouses

- ♦ Old gutter-connect greenhouses donated to project. **Savings** from reusing steel greenhouse framework: roughly **\$25,000**.
- ♦ Over 7,500 square feet of greenhouse space reconstructed.
- ♦ Boiler operates on landfill gas or biodiesel/fuel oil.
- ♦ Heated greenhouses offer new business opportunities and potentially new jobs.
- ♦ **County Grounds Dept. saves tens of thousands of dollars annually** by propagating and growing landscaping plants themselves. Future savings will almost certainly increase.
- ♦ Southwestern Community College uses greenhouses to grow their landscaping plants as well.
- ♦ Simple solar heating: Forty 55-gallon drums filled with water are placed inside the greenhouses to soak up solar heat all day and release it back into the greenhouses at night.
- ♦ Investigating idea of offering greenhouses as a "community garden" type facility.

Metals Studio

- ♦ **Only blacksmith forges and foundry in the world fired using landfill gas.**
- ♦ High temperatures reached to date – **2373° F**.
- ♦ Facility designed and built by master smith William Rogers.
- ♦ Studio rental entitles tenants to use of all equipment and free gas.
- ♦ Metal pours conducted in partnership with WCU Sculpture Dept.

Glassblowing Studio

- ♦ One of only three glass studios fired with landfill gas.
- ♦ Hot shop for working hot glass. Cold shop for final stages of polishing, cutting, and sandblasting glass work.
- ♦ Furnace operates on electric. Glory holes are gas-fired.
- ♦ Nearly all hot and cold shop equipment purchased used for 10% of its original value.
- ♦ **Both glass and metal shops open up new job opportunities for resident artists.**

Pottery kiln

- ♦ Anagama-style kiln is fired using wood and waste vegetable oil as fuels.
- ♦ Kiln designed by WCU alumni Preston Tolbert.
- ♦ Kiln constructed by WCU staff, students, and alumni.
- ♦ 100 cubic foot kiln, with 70 ft³ main chamber and 30 ft³ soda chamber.
- ♦ Kiln is available for rent, and is open for use by the public.

Art at the Park

- ♦ Annual art festival (5th year coming up), free of charge to public. Over 1,000 attendees last year.
- ♦ Over 30 artists participated in 2011.
- ♦ All artists must demonstrate their crafts, and/or do something hands on with the kids (not just sell stuff).
- ♦ Kids built mosaic tile wall, and painted large murals. Children now are coming back with school tours, and pointing out work that they did during the YAF.