

Northwest North Carolina Visitor Center/Rest Area Fact Sheet

The Northwest North Carolina Visitor Center/Rest Area is the state's first environmentally friendly rest area. The 10,030-square-foot building is designed to be energy efficient, conserve water and reduce greenhouse gases.

The rest area's "green" features include:

- **Daylighting.** The building was designed to let as much natural light in during the day as possible. By increasing the amount of sunlight, the facility decreases the amount of electricity needed to power artificial lights;
- **Motion Sensor Lights.** The facility has motion detectors in the restrooms. At night, one light remains on at all times, but when someone walks in, the sensor detects the person's movement and turns on additional lights for increased visibility. During the day, the sensors measure the amount of daylight coming in through the building's windows. If it is a sunny day, the lights will dim and allow the natural light to illuminate the building. If it is cloudy, the lights will brighten to supplement the natural light;
- **Energy-efficient shell.** The building's shell was designed, so that more insulation could be placed in the exterior walls and roof than in an average building. The icynene insulation used contains no air quality contaminants and meets Energy Star standards. The roof is a smooth, Energy Star-rated membrane that is light in color to reduce heat gain during the hotter months. This type of roof also allows for more efficient collection of rain water;
- **Green building materials.** NCDOT used many materials made with recycled content on this project. They include the carpeting, ceiling tiles, countertops, concrete, masonry, guardrail and asphalt. Many of the materials were also manufactured and/or produced within 500 miles of the site, shrinking NCDOT's carbon footprint. Half of the wood used on the project is certified by the Forest Stewardship Council, which means it was harvested from certified renewable forests;
- **Hazardous spill basin and bio-retention basin.** The facility was designed for sustainable stormwater management. Most of the rainfall run off is directed to a bio-retention basin, which absorbs and removes pollutants from the water as it comes in contact with soil particles and plant roots. The hazardous spill basin captures accidental spills such as major fuel and oil leaks;
- **Indoor air quality.** The department used interior products such as paint, glue and carpeting with low or no pollutants. No smoking was allowed on site during construction, and it is now banned inside the building;
- **Domestic solar hot water.** The three solar panels visible above the main entrance to the building preheat the hot water used in the restrooms;
- **Photovoltaic panels.** Fourteen PV panels are located above the entrance walkway. The panels convert solar energy into direct current (DC) electricity, which is then converted to alternating current (AC) power for use in the facility. The PV system will produce enough electricity to provide one-third of the power required annually for a typical home in North Carolina. The system will produce approximately 4,380 kilowatt hours per year, and a typical home uses 12,045 kilowatt hours per year;
- **Rainwater catchment.** Rainwater is collected from the roof and piped to a 26,000- gallon cistern. There, it is treated with chlorine to prevent algae growth and used to flush the toilets and urinals. Calculations based on the normal amount of rainfall in Wilkes County show 309,000 gallons of rain will be harvested annually. Reusing the rainwater will allow the rest area to reduce its potable water use by 70-75 percent;
- **Geothermal heat pump.** Thirteen geothermal wells are part of the system that heats and cools the building. Each well is 300 feet deep. The wells are part of a closed-loop system that water flows through and is either heated or cooled by the constant temperature of the earth. When it returns to the surface,

the water passes through a heat exchanger and heats or cools the building. The process is expected to cut energy costs by about 30 percent;

- **Recycling systems and waste management.** The following construction materials were recycled: metal bonding, cardboard, concrete, wood and lumber. The goal for the project was to keep at least half of the construction waste out of the landfill. In actuality, about 90 percent of the construction waste was recycled or reused. All 1,400 tons of stumps were ground into mulch, and the small trees from the site were chipped to produce 1,900 cubic yards of wood chips for use on the 0.8-mile nature trail; and
- **Natural environment.** Landscaped areas include drought-resistant plants native to North Carolina. The nature trail offers visitors an attractive place to walk after hours of driving. Trees that were cleared for the site were transformed into benches where visitors can rest and relax.

LEED Certification

NCDOT is striving to attain Leadership in Energy and Environmental Design, or LEED, certification on this project. LEED is an internationally recognized “green” building certification system that provides third-party verification that a building or community was designed and built using strategies aimed at improving energy savings, water efficiency, CO₂ emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

The department is working to achieve the gold LEED rating. The project currently has 46 points that are earmarked as viable. Thirty-nine points are needed for LEED gold certification. NCDOT expects to find out if the facility received the gold rating after one year of operation.

Project Benefits

By building an LEED-certified facility, NCDOT lowers its carbon footprint and reduces the use of traditional energy pulled off the grid. An analysis shows the building should be 37 percent more efficient than a standard (non-“green”) building of the same size.

In addition to its environmental benefits, the rest also serves as an important educational resource. It shows how “green” building techniques can be effectively implemented into a building’s design and construction plans. It also provides a place to learn more about environmental responsibility.

Project Background

The department signed an agreement with Wilkes County and the towns of North Wilkesboro and Wilkesboro in 2003 to build the rest area along U.S. 421 Northbound in North Wilkesboro. In that agreement, the county and the towns committed to providing the land, as well as the municipal water and sewer service for the project. The county also agreed to operate the visitor center.

NCDOT and its project partners spent the next four years conducting site selection, drafting environmental documents and acquiring the land needed to build the facility. Preliminary engineering and site design, which cost about \$2 million, were also under way during that time.

In November 2007, NCDOT opened bids to build the project. The contract was awarded to J.R. Vannoy and Sons Construction Company Inc. for nearly \$10 million. Crews started building the facility in January 2008. It opened to the public less than two years later.

Live Energy Use Dashboard: <http://ncdot.technology-view.com/wilkes>