

# Creating a Carbon Neutral Campus

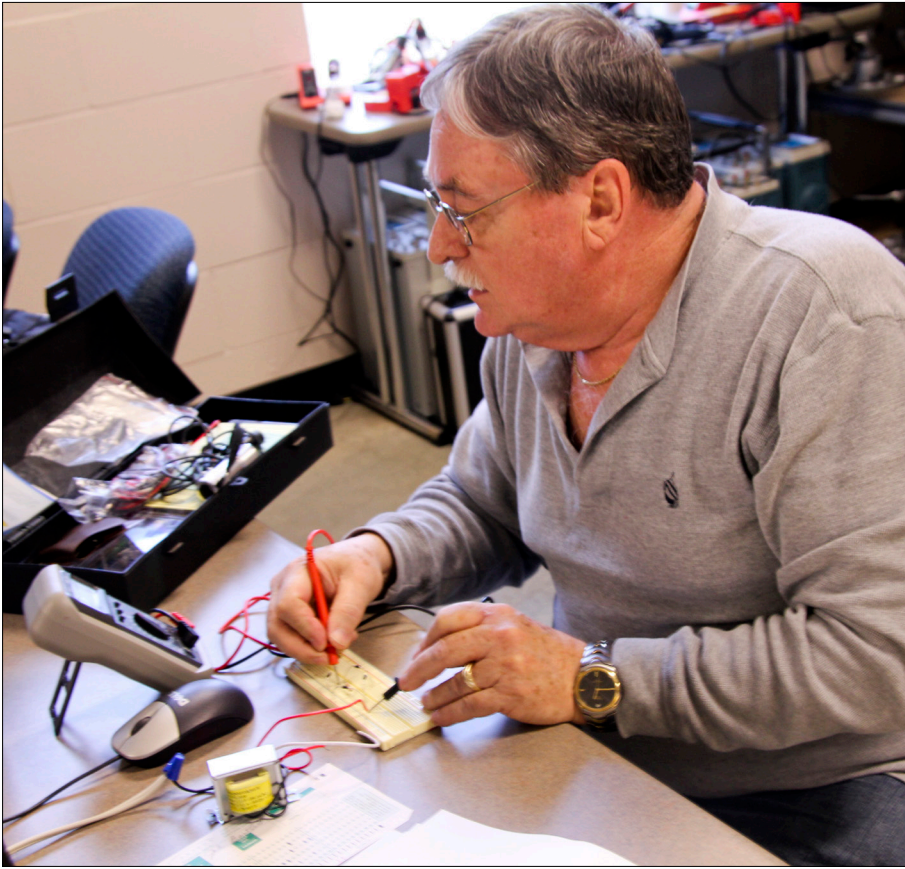
*Envision. Educate. Engage. for a Sustainable Future*





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# Introduction



## A Message from President Bullock

As a national leader in sustainability, Lake Land College is committed to creating a greener and cleaner education and environment. Beginning in 2008, the college implemented a multi-year plan called Envision. Educate. Engage. for a Sustainable Future in order to create a replicable energy control system that generates energy while reducing overall consumption. Using geothermal, solar and wind energy installations, the college has created educational opportunities for the more than 20,000 students Lake Land serves each year.

The college is committed to this initiative not only to protect the land and resources we have, but also to remain good stewards of the taxpayers' money. Not only does operating sustainably help protect the environment, but it is financially responsible. With the variety of alternative energy installations on campus, the college is already seeing reductions in energy consumption and costs. Since 2010, the college has saved \$560,000 in energy costs alone and has reduced energy consumption substantially.

With an eye toward the future, we look forward to exploring other sustainable practices and educational opportunities here at Lake Land College. As a community college, we are uniquely positioned to expand these opportunities not just on a local level, but nationally. We will continue to stay at the forefront of creating curriculums that empower our students for jobs of the future and prepare them to become leaders in a global effort to be more energy conscious.







## Overview of a Green Campus:

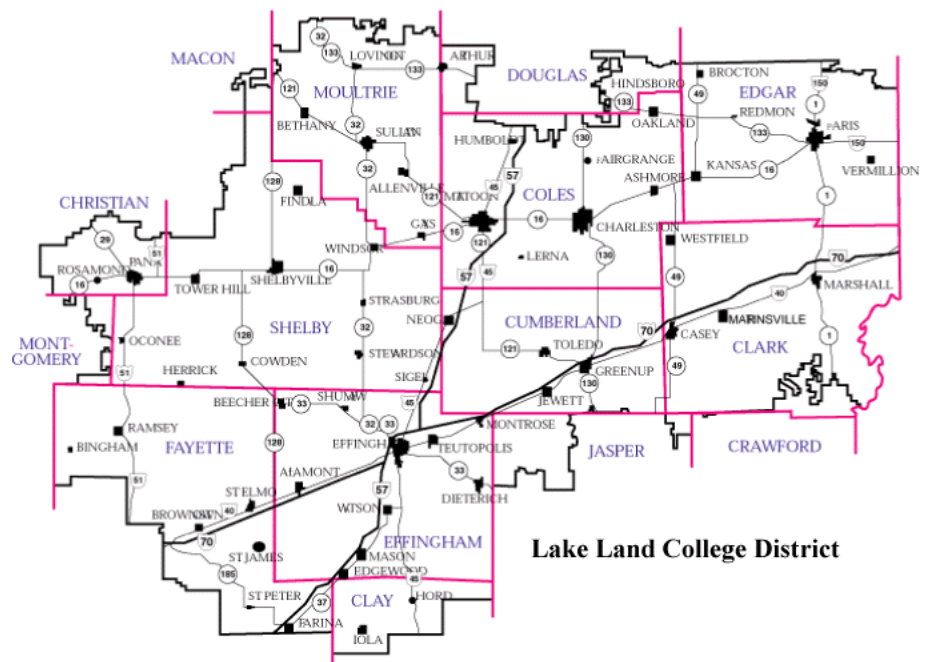
Lake Land College, located in Mattoon, Illinois, serves the second largest community college district in the state, with a total population of 189,869. The district comprises all or part of 15 counties and 31 public school districts in rural east central Illinois. About the size of Connecticut, the district spans nearly 4,000 square miles and depends on an economic base of agriculture and manufacturing.

Lake Land College was founded in 1966 and originally offered classes in temporary buildings to students from 13 area school districts. It now operates on a 308-acre main campus with nine major buildings, in three extension centers, on the Internet, and at several other off campus sites, including 18 correctional centers. Annual enrollment has grown from 1,412 in 1968 to more than 21,000 students in 2011.

The college currently offers over 100 technical degrees and certificate programs leading to immediate employment after graduation and over 50 pre-baccalaureate college transfer programs. Lake Land College creates and continuously improves an affordable, accessible and effective learning environment for the lifelong educational needs and economic development of the diverse communities it serves.

## 3 Parts of Sustainability

1. Reducing Carbon Footprint
2. Financially Sustainable
3. Educational Outreach



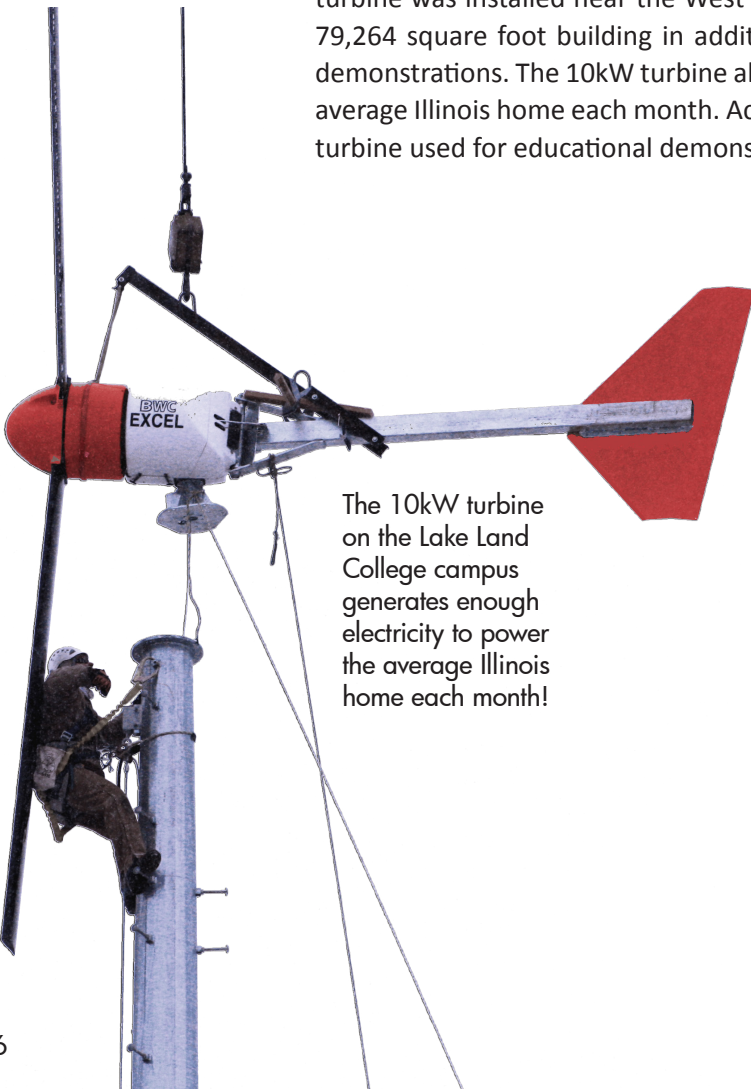


# Moving Toward a Carbon Neu

## Wind Power:

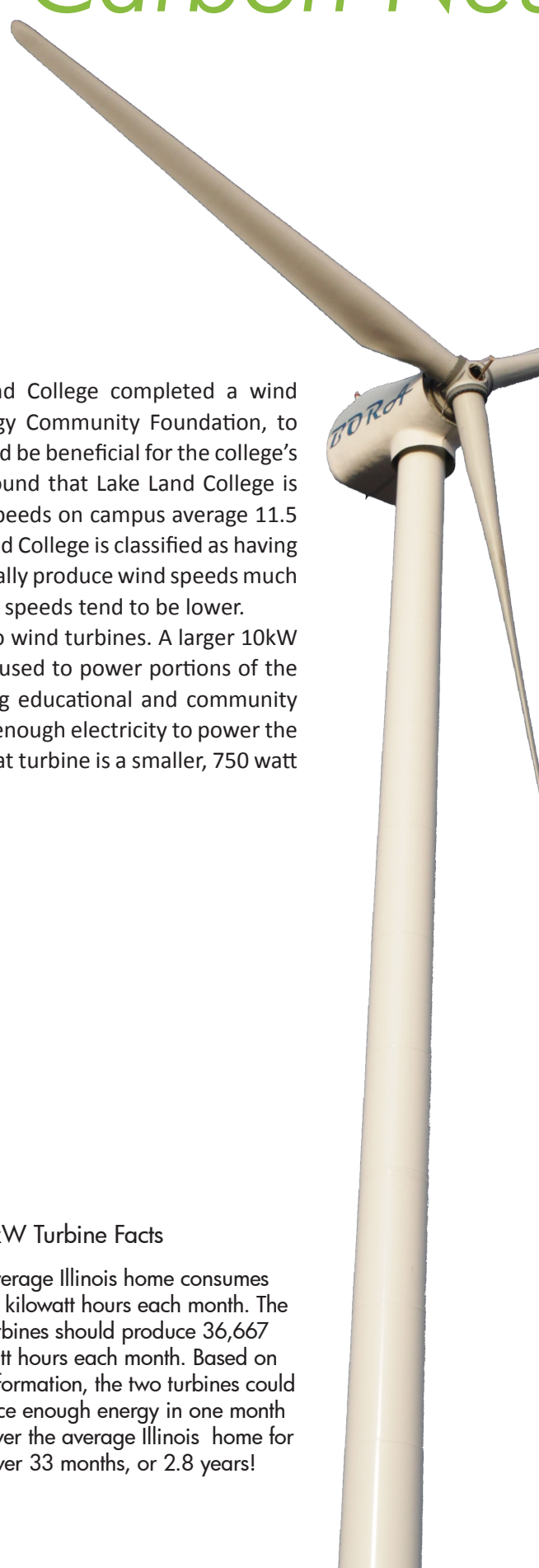
During the 2007-2008 academic year, Lake Land College completed a wind feasibility study, funded by the Illinois Clean Energy Community Foundation, to determine if harnessing wind power on campus would be beneficial for the college's sustainability projects. Through this study, it was found that Lake Land College is prime wind real estate in Coles County. The wind speeds on campus average 11.5 miles per hour, annually. With these speeds, Lake Land College is classified as having high, Class Two wind speeds. Winters in Illinois generally produce wind speeds much higher than 11.5 miles per hour, while summer wind speeds tend to be lower.

So, in 2009, Lake Land College erected its first two wind turbines. A larger 10kW turbine was installed near the West Building and is used to power portions of the 79,264 square foot building in addition to providing educational and community demonstrations. The 10kW turbine alone generates enough electricity to power the average Illinois home each month. Accompanying that turbine is a smaller, 750 watt turbine used for educational demonstrations.



The 10kW turbine on the Lake Land College campus generates enough electricity to power the average Illinois home each month!

### 100 kW Turbine Facts



The average Illinois home consumes 1,100 kilowatt hours each month. The big turbines should produce 36,667 kilowatt hours each month. Based on this information, the two turbines could produce enough energy in one month to power the average Illinois home for just over 33 months, or 2.8 years!



# utral Culture:

## New 100 kilowatt Turbines:

Lake Land College is proud to now have on its campus, two 100 kilowatt wind turbines, made possible by American Recovery and Reinvestment Act funding via the Illinois Department of Commerce and Economic Opportunity and a Community-Based Job Training Grant from the U. S. Department of Labor. To harvest as much power as possible from the high, Class Two speeds, Lake Land invested in two wind turbines that are designed to optimally capture the wind speeds on campus and turn them into usable energy. These turbines are expected to produce 30 percent more energy than any other Class Two turbine on the market today, potentially putting Lake Land College at the forefront of Class Two wind energy production.

The new turbines will offer students advanced training for large-scale turbine maintenance and energy production. They will also power buildings on campus with alternative energy, further reducing the cost of utilities for Lake Land College. Because Lake Land College officials and experts worked with the manufacturer to create customized turbines, it is projected that there will be a significant return on this investment of Class Two wind speeds, making these turbines a very affordable option for the college.

Each turbine is estimated to produce more than 220,000 kilowatt hours each year, thereby reducing the number of kilowatt hours of electricity needed by 440,000. The college estimates that the initial energy savings will be around \$44,000 annually.



### 100 kW Turbine Facts

- Each of the three blades on the turbines is 39 feet long
- Each tower was erected using two, 55 feet sections
- The overall height of each tower is 160 feet tall

The 100kW wind turbines are funded by approximately 18% of a \$2,542,762 CBJT grant from the U.S. Department of Labor. Funding from the DCEO is based upon work supported by the U.S. Department of Energy under Award Number DE-EE0000119.



## Solar:

Additionally with the hot and sunny Illinois summers, Lake Land College sought to couple its wind energy efforts with the power of the sun and installed solar panels throughout the campus. Currently there are 16 solar panel installations on campus – 10 hot water panels and six solar photovoltaic panels – which produce 200kW of energy each month. This is approximately one-fifth of what an average Illinois home would use monthly. Currently, the solar panel installations are powering parts of the West Building in addition to the Field House. However, the college is looking to expand its solar energy efforts to the center of campus in the coming years.

## Photovoltaics:

Sunshine plays a big role in energizing this campus. Specialized water heaters placed on the rooftop of the Field House provide much of the hot water used in the sinks of that building. These solar water heaters have a strong, glass top and a reflective metal interior containing a water tank. Solar radiation enters the heater and is trapped by the glass top and reflective interior. This action heats the water. Aside from a small electric water pump, this water heater has no moving parts and requires no other energy than the sun. This type of solar power is known as 'passive solar' or photovoltaic energy because it doesn't require or have moving parts.

### Passive Solar Facts

Above the southwest entrance to the Field House, there are roof-mounted solar panels. These panels provide more than 90 percent of the energy used for hot water throughout the building, including shower rooms. The installation includes 10 rooftop solar panels that power the closed loop solar domestic water heating system. The heater water is stored in two, 250-gallon storage tanks. The solar panels are one of a group of energy efficient steps the college has taken to result in more than \$30,000 in annual energy savings for the college per year.



## Daylight Harvesting:

The daylight harvesting system brings the outdoor lighting inside, allowing the college to reduce its dependence on traditional lighting sources. The results are amazing and provide ample light in the newly renovated Northwest Building! The system is created by DayStar Skylight Systems from Arthur, Ill. Here is how it works: Sunlight is gathered through the inverted parabolic dome and the rays are amplified by the ultra-reflective lining as they strike the ceiling lens. This highly concentrated light is then diffused in a heart-shaped pattern by additional sidelight panels, which increase the spread of light far beyond conventional products.

**Did You Know?**  
When people think of solar energy, most picture solar cells that make electricity. Solar photovoltaics or simply PVs use certain wavelengths or colors of the white sunlight to produce electricity. These wavelengths fall onto specially prepared silicon plates. If these plates are part of an electric circuit, a current will flow. In the future, Lake Land is planning to use PVs to power small pumps and to help charge future electric cars.





## Geothermal:

Lake Land College is the proud owner of one of the largest geothermal well fields in the nation! This final, campus-wide installation harnesses heat from the earth to heat and cool the buildings at Lake Land College. Through drilling wells an average of 300 feet deep, Lake Land captures the geothermal energy of the earth by pumping water into these wells. When the water returns from deep in the earth, it is about 58-60 degrees Fahrenheit. This water is then sent to the various campus buildings where heat pumps are located.

In the winter, a heat pump can extract the water's heat to help warm a building. In the summer, a heat pump pulls heat from the building to warm the water, which cools the interior. Lake Land uses

a large ground loop to carry the geothermal water between the main campus buildings and the well fields. During those few times each year when it is extremely warm or bitterly cold, the loop will carry the geothermal water to a heat exchange where a cooling tower or boiler further assists cooling or heating the water.

The medium used for heat exchange is an environmentally friendly glycol solution, very similar to the anti-freeze of an automobile.

The geothermal system was used exclusively in the West Building addition, and has been expanded to the majority of the buildings on campus. In the West Building alone, energy use is at least 50 percent less than before the geothermal system was installed.

### Geothermal Facts

The combination of geothermal and conventional heating and cooling is called a hybrid system and Lake Land is proud to be among the first institutions to use this system on such a large scale.











Children from the Child Care Lab at LLC learn about recycling and do their part to help the environment.



Thin client technology uses only 15 watts of electricity compared to a desktop computer that uses an average 85 to 150 watts to run.

## Recycling:

Lake Land College offers community members and employees an opportunity to easily recycle materials through a single stream recycling option. Large bins are available on campus any time for drop off. In 2009, recycling of solid waste on campus grew from 42 percent to 68 percent. By comparison, in the first year of the program, 1987, the college recycled 49 tons. At the end of 2011, that figure was 359.6 tons. The college also utilizes an electronics recycling program and offers this service to the general public twice a year. The college has recycled 7.5 tons of used electronics through this program.

## Energy Efficient Lighting:

Lake Land College has generated energy savings by upgrading lighting throughout campus. Most recently, lighting in the Field House, the Northwest Building and the Virgil H. Judge Learning Resource Center (LRC) was replaced when the buildings were renovated as part of the sustainability project on campus. The LRC lighting upgrades included the replacement of metal halide and mercury vapor lighting and the conversion of T12 to T8 and LED lighting. All lighting throughout the campus that has not yet been upgraded to efficient T-8 lighting with electronic ballasts is being retrofitted as part of the geothermal/HVAC renovations. When you walk into many classrooms on campus, the room is dark due to occupancy sensors that ensures lighting is not left on longer than is absolutely necessary.

## Thin Client Technology:

Technology equipment accounts for 33 percent of the electrical use on campus. A desktop computer uses 85 to 150 watts to run, compared to the Thin Client Device that uses 15 watts. The college plans to replace the 2,000 computers on campus with this technology for an expected savings of \$80,000 a year. The first Thin Client computer lab on campus opened in the Northwest Building in Fall 2009, followed by two new labs in the renovated Virgil H. Judge Learning Resource Center.



# ZEB Hall

Lake Land College opened the Net-Zero Energy Building or ZEB Hall on campus in July of 2013. The premise for the ZEB Hall project was to create a building that produces as much energy as it uses over the course of a year. The emissions and energy use for the building will calculate to zero, and therefore the building will leave no carbon footprint.

ZEB Hall will also be used as a live laboratory, where students will learn about and study the alternative energy systems that work to maintain a carbon neutral building. Sections of the building's energy system are visible through glass panes where students see first-hand the technology used to power the building and other buildings on campus such as the geothermal cooling and heating system.

Nine Lake Land students in an Architectural Supervised Occupational Experience class had the opportunity to receive hands-on training by building the structure's frame for this project, which was funded in-part by the Community Based Jobs Training Grant from the Department of Labor. The course was taught by Neal Haarman, building construction technology coordinator and instructor, who teamed with Morton Buildings, Inc. to offer practical experience to students.

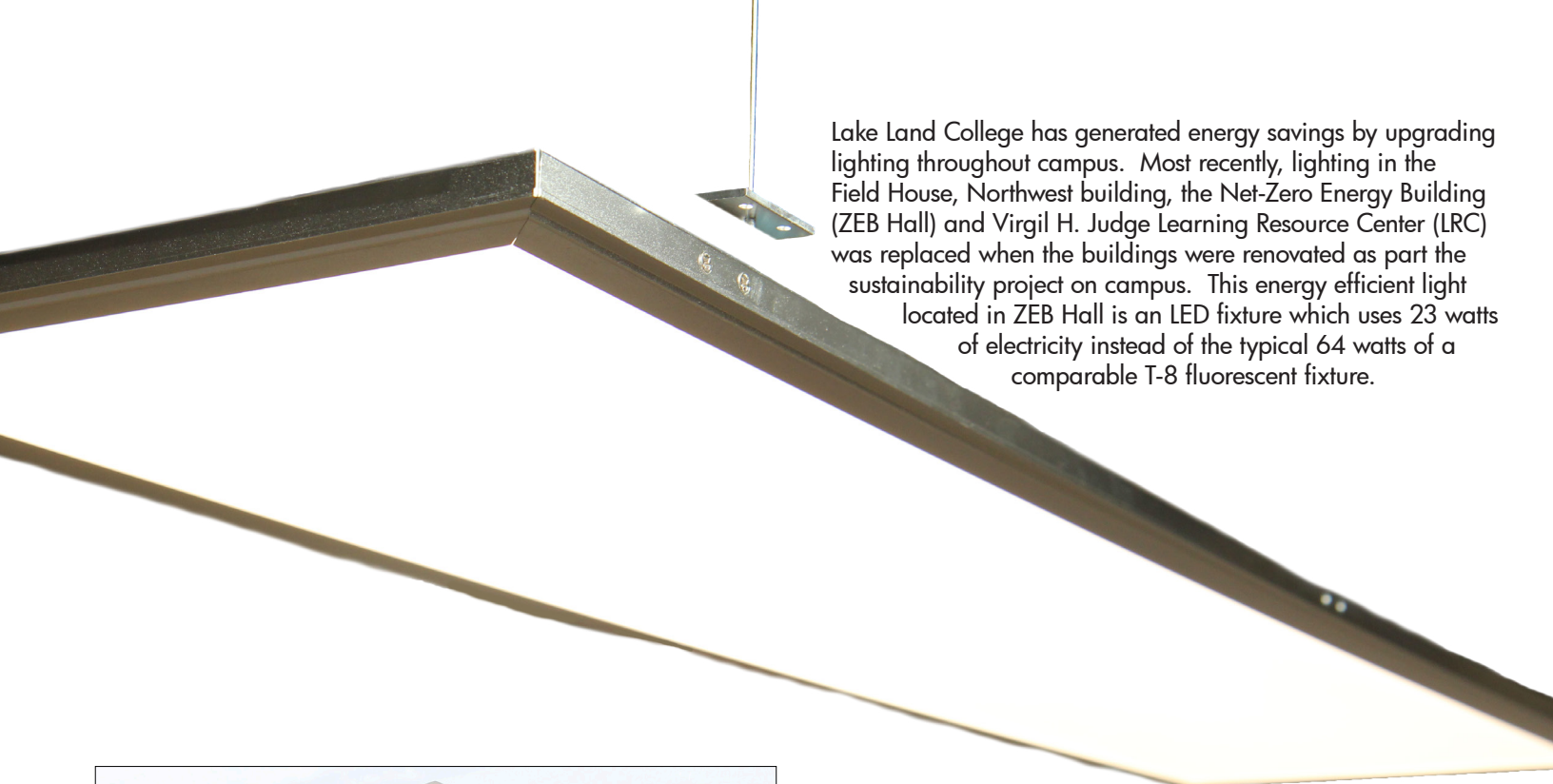
"This is the first time I've ever done new construction," said building

construction technology student, Brandy Wright of Columbia, Mo. "It's been great because there is real satisfaction in making something, especially a state-of-the-art structure like this."

To help off-set some of the general construction costs for the project, the Lumpkin Family Foundation awarded Lake Land College grant funding. According to Emily Ramage, director of Grants Development, the Net-Zero Energy Building project aligns with the Lumpkin Family Foundation's funding objectives in several ways including: creating a sustainable-learning environment where residents can gain practical experience learning how to incorporate renewable energies in their personal and professional lives; demonstrating leadership by taking initiative and developing curriculum that will raise awareness of renewable energy demands and train students for 21st century green-energy jobs; and facilitating the numerous regional partnerships that Lake Land has devised to move forward with this project.

In addition to a live laboratory, the ZEB Hall houses two departments – Human Resources and Communications and Creative Services.

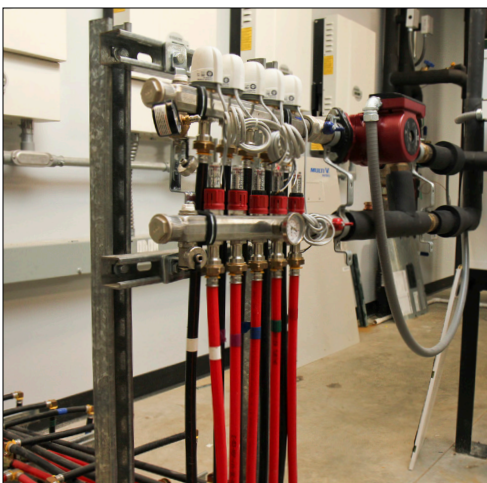
To learn more about the Envision. Educate. Engage. for a Sustainable Future initiative, contact Jeff Oder, director of sustainability at (217) 234-5368 or [joder@lakeland.cc.il.us](mailto:joder@lakeland.cc.il.us).



Lake Land College has generated energy savings by upgrading lighting throughout campus. Most recently, lighting in the Field House, Northwest building, the Net-Zero Energy Building (ZEB Hall) and Virgil H. Judge Learning Resource Center (LRC) was replaced when the buildings were renovated as part the sustainability project on campus. This energy efficient light located in ZEB Hall is an LED fixture which uses 23 watts of electricity instead of the typical 64 watts of a comparable T-8 fluorescent fixture.



Students studying building construction technology at Lake Land College got hands-on experience framing the Net-Zero Energy Building. Pictured here in the front row, from left are: Mitch Bily, Mattoon; Tom Longbons, Tonica; Darren Chupp, Arthur; Brandy Wright, Columbia, Mo.; Jerry Malek, Galesburg; Myles Louthan, Mattoon; Nathan Slattery, Morris; Adra Baldwin, data employment assistant; and Linda Von Behren, associate vice president for workforce development. In the back row, from left are: Zack Coon, Sullivan; Neal Haarman, building construction technology coordinator and instructor; Thomas Bingham, Sullivan; James Willms, Watseka; Cody Ellis, Rossville; Kevin Potter, Morton; Jay Wetterhus, Morton; Steve Elliott, Fairfield; and Ron Sanderson, special projects coordinator.



## Pipes

The pipes coming out of the floor in the live lab of ZEB Hall are part of the in-floor radiant heating and cooling system. There is PEX (cross-linked polyethylene) tubing installed along the interior perimeter of the building. PEX piping is an alternative to traditional copper piping for some installations. This piping helps to warm or cool the concrete floor depending upon the season and is tied to the building's heat pump system. Since heat rises, this radiant heating is superior to most other heating systems in heating the room, keeping a person's toes warm, and is very energy efficient.



# Forget the love bug; Lake Land

The story of the Lightning Bug all started when John Wright of Marshall bestowed a 1972 Volkswagen Super Beetle upon the Lake Land College Foundation. While college president Scott Lensink saw the car's potential, he admitted he didn't at first know what the college would do with the classic automobile. The power train was operable but very weak and the chassis was severely corroded. The value of the car was about \$3,200.

However, the "bug" initiated one of the most exciting alternative energy projects on Lake Land's campus. Several instructors converted the former clunker from gas to electric. The project was a partnership with Mid America Motorworks in Effingham.

The vehicle was originally designed to travel a range of 50 miles at 50 miles per hour before needing to be refueled or plugged in to recharge. So far, tests have proven that the car will travel 61.7 miles on a single charge and can achieve a speed of 66 miles per hour.

## Lightning Bug Facts

The Lightning Bug runs on 16 Trojan T-105 batteries which are six volts each. This combination of batteries has an estimated power pack of 13.9 kilowatt hours.



# nd College has the *Lightning Bug!*

The instructors that worked on this project are:

- + Michael Beavers, electronics engineering technology instructor
- + Alan Clodfelter, industrial technology instructor
- + Bob Davidson, retired machining and welding instructor
- + Gary Lindley, electronics engineering technology instructor
- + Brian Madlem, automotive technology instructor
- + Kevin Miller, automotive technology instructor and coordinator





# Green workshops, community

Lake Land College strives to educate its constituents about the importance of pursuing sustainable energy efforts. To this end, the college reaches out to area schools to spread the word about green technologies to area youngsters. The college also hosts a plethora of sustainability workshops open to the public. Some of these workshops include: Basic Photovoltaics, Introduction to Wind Systems and the Home Weatherization Workshop, to name a few. Further, organizations like the IBEW Journeyman use Lake Land College facilities to observe live examples of multiple electrical installations during lineman classes.



Joe Tillman, renewable energy instructor and coordinator, assists fourth grade student Jasmyne with cutting out her wind turbine blades during the National Youth Science Day at Lake Land College.

# outreach and education



Fourth grade students Riley and Josie completed their team turbine with rectangular shaped blades which produced 2.0 volts of electricity.

## Children build turbines for National Youth Science Day at Lake Land College

Lake Land College, in coordination with the University of Illinois Extension, Unit 19, hosted the 2011 4-H National Youth Science Day.

During this fourth annual nation-wide event, 75 students from Cumberland Elementary School became scientists for the day and conducted an experiment called Wired for Wind. For the experiment, students designed, engineered and built model wind turbines, and figured the best location for a wind farm in Illinois by calculating wind speeds and classifications throughout the state.

"This nation-wide event is designed to engage hundreds of thousands of American youth in a single science experiment focusing on a very important issue facing our global community – renewable energy," said Dana Homann, University of Illinois Extension youth educator.

Instruction was led by the Lake Land College technology division including Tim Van Dyke, technology division chair and civil engineering technology instructor; Joe Tillman, renewable energy instructor and coordinator; Jeff Oder, director of sustainability; Mark Dyer, training coordinator; Mike Beavers, electronics engineering technology instructor; and Scott Rawlings adjunct technology instructor.

"Today you all will become scientists in renewable wind energy systems," said Dyer, in his opening remarks to the students. "We will identify the problem, find and evaluate

possible solutions, tweak our models to get maximum energy production and decide on a location best suited for turbines."

According to fourth grade student, Alex, he has been learning many different aspects about renewable energy in his science class in preparation for the national science experiment.

"We've been learning how you can make electrical energy out of lots of different things, like water, wind and even the sun," said Alex.

Various blade designs were created by the students including triangles, feather-like shapes and even blades with serrated edges.

"Part of science and engineering is letting your mind explore the possibilities," advised Oder to his scientists. "There is no one way to design a blade, so the options are endless."

According to Dyer, as the students wrapped up their projects by the end of the day, students said they were more interested in renewable wind energy more than ever.

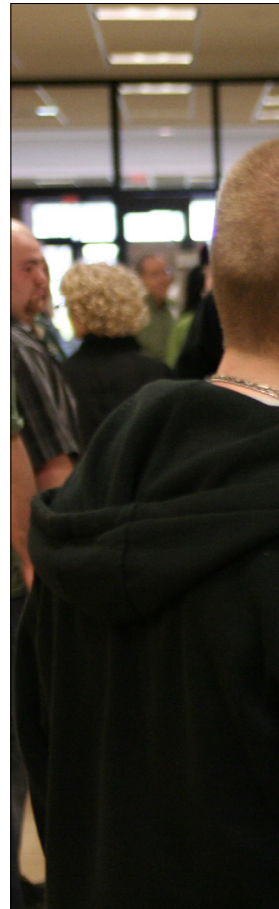
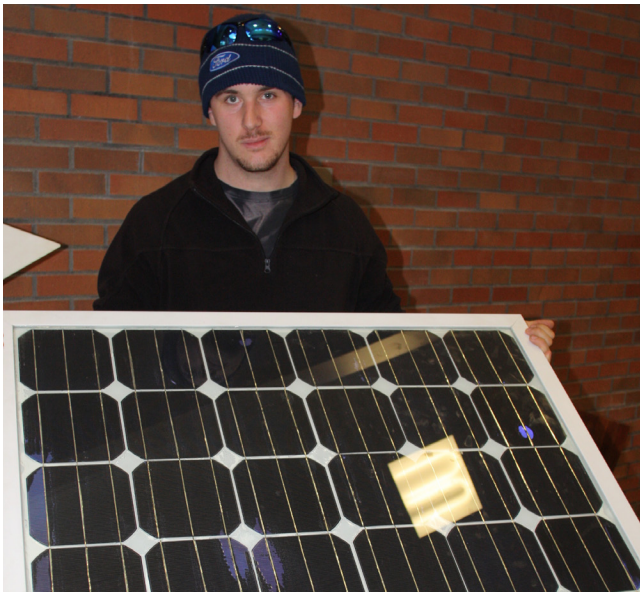
4-H seeks to assist youth in acquiring knowledge, forming attitudes and developing life skills that enable them to become caring, competent and contributing members of society. For more information on this experiment or other 4-H programs contact your local University of Illinois Extension office. For more information about the Lake Land College technology division and its renewable energy endeavors, visit: [lakeland.cc.il.us/public/sustainability](http://lakeland.cc.il.us/public/sustainability).



# Energy Innovation Conference



Each year, Lake Land College hosts the Energy Innovation Conference. The conference host various breakout sessions related to sustainable and innovative energy practices including geothermal heating, solar and wind energy, technician and job training, sustainable industry information and projections, bio-mass, sustainability and green businesses. In recent years, conference has also attracted non-energy related sustainable practices such as gardening, landscaping and paperless marketing. Conference topics are designed to introduce consumers to sustainable practices in addition to meeting the interests of contractors, educators, business owners, facility managers and farmers. The conference is free and open to the public.







# Grant Funding

Lake Land College has formed numerous partnerships and received local, state and federal funding support for pursuing clean energy and energy improvements. The college is grateful to the many organizations that are supporting the *Envision. Educate. Engage. for a Sustainable Future* initiative through grant funds. In 2007, the college began a wind feasibility study with funding from the Illinois Clean Energy Community Foundation, which confirmed that during the spring, autumn and winter seasons, campus winds peaked at high Class Two to lower Class Three wind speeds. Grant funds procured from the Illinois Department of Commerce

and Economic Opportunity and the U.S. Department of Labor were used to purchase and install two, 100 kW turbines to harvest such winds. Local funding from the Lumpkin Family Foundation allowed the college to install the two smaller turbines for immediate student education.

A Community-Based Job training Grant provided by the U.S. Department of Labor allowed Lake Land to develop a comprehensive 21st Century Green Job Technology training program. This program uses the college's alternative energy features to provide hands-on, alternative energy training to students, and targets dislocated and unemployed workers and incumbent workers in fields

such as HVAC, electrical engineering, automotive, building construction and power generation.

The Association of Illinois Electric Cooperatives, Illinois DCEO, the Illinois Clean Energy Community Foundation and a congressional appropriation through the U.S. Department of Energy awarded funds to the college to continue work on the hybrid geothermal closed loop heat pump system that provides HVAC needs for the main campus, as well as the installation of energy efficient lighting upgrades in many campus buildings. The table on page 19 recognizes the various grants that aid Lake Land College in pursuing carbon neutrality.



Tim VanDyke, division chair for technology reads a meter that measures wind speeds on campus. Through the wind feasibility study, it was determined that LLC has high Class II wind speeds.


Fiscal Year	Funding Agency	Grant Program	Award Amount	Description
2013	Illinois Green Economy Network	Renewable Energy Program Grant Subcontract	\$225,000	Support the installation of 100 kW mounted photovoltaic solar arrays
2013	Illinois Clean Energy Community Foundation	Renewable Energy Program	\$419,956	To support the installation of 200 kW of mounted photovoltaic solar arrays
2010	U.S. Department of Labor	Community Based Job Training Grant	\$2,542,762	Development of Green Job Training Program and related equipment, including a 100 kW Wind Turbine
2010	Illinois DCEO	ARRA Thermal Efficiency Program	\$280,000	Portion of geothermal installation in three campus buildings
2010	Illinois DCEO	ARRA Community Renewable Energy Program	\$500,000	Purchase and installation of 100 kW Wind Turbine
2010	U.S. Department of Energy	Congressional Appropriation through Tim Johnson	\$1,332,100	Northwest building upgrades to include HVAC and electrical, lighting, and plumbing systems along with the removal of asbestos
2009	Illinois Clean Energy Community Foundation	Energy Efficient Lighting Upgrade	\$28,974	Lighting replacements across campus
2009	Illinois DCEO	Renewable Energy Resources Program Solar Energy Rebate	\$10,000	Field House Solar Thermal System
2009	Lumpkin Family Foundation	LLC Wind Energy Project	\$94,175	Training equipment & materials for wind and solar technician courses, including a 10kW turbine on 90-ft. tower and 800W student-built turbine on 50-ft. tower
2008	Illinois DCEO	Legislative Add-on	\$15,000	Eastern Region Center Renovations in Marshall, requested by Rep. Eddy
2008	Assoc. of IL Electric Cooperatives	GeoAlliance Program	\$45,000	Fitness Center Geothermal System
2007	Illinois Clean Energy Community	Feasibility Study Funding	\$30,000	Wind Feasibility Studies for Turbine Installation
	<b>TOTAL TO DATE:</b>		<b>\$5,522,967</b>	

The 100kW wind turbines are funded by approximately 18% of a \$2,542,762 CBJT grant from the U.S. Department of Labor. Funding from the DCEO is based upon work supported by the U.S. Department of Energy under Award Number DE-EE0000119.

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# Community garden offers area residents

A woman, Debbie Hines, stands in a community garden plot. She is wearing a floral shirt, white pants, and a white visor. She is surrounded by rows of corn plants and zucchini plants. In the background, there is a large field of corn and a line of trees under a clear sky.

Debbie Hines harvests zucchinis from her community garden plot at Lake Land College. For Hines, this is the first opportunity she's had to tend a garden.

From hobbyists to sustainability enthusiasts, Lake Land College's Community Garden offers a plot for all level of gardeners to test out their green thumbs.

During the summer of 2012, Lake Land College piloted a sustainable agriculture community garden, adding another initiative to the list of existing sustainability efforts at the college. To do this, the college looked to students, employees and area residents, alike, inviting everyone to participate in this unique opportunity. For its first year, the garden sent home fresh produce with nearly 30 gardeners.

"Where I live, out on Lake Mattoon, there are too many shade trees to have a viable garden," said Diane Anderson of Neoga. "So, when I heard Lake Land was doing a community garden, a few of my neighbors and I decided we had to get in on it."

So, Anderson and her husband Dick along with two other couples from their neighborhood took responsibility for nine plots. They planted tomatoes, green

beans, popcorn, peppers, onions and squash.

"We participated in the garden for a variety of reasons," explained Anderson. "Primarily, we wanted to help bring about a sustainable food source for the community. While the drought left us with a smaller harvest, we initially had a goal of sharing with the local food bank and our other neighbors."

Anderson said that along with the location of the food plots, the college provided fertile soil and an unlimited water supply.

"Between our neighbors and ourselves, we tended our plots regularly and were out watering at least once if not twice a day," said Anderson. "The college was very helpful and gracious to supply the soil and water because without the water supply, it would have been a disastrous harvest."

While they had a minimal harvest because of the 2012 drought, the Andersons still took home plenty of fresh vegetables that they boiled and froze for use all winter long. Anderson said that she likes to preserve her harvest in





# chance to cultivate green thumbs

individualized servings so she can do anything from adding a small side dish to a meal or make an entire pot of vegetable soup.

Anderson said that she also met other gardeners with whom she shared ideas and methods for gardening, especially tips for keeping plants alive during the dry summer.

“One of the gardeners I met out at the plots gave me a few tips on using recycled materials like newspaper and straw to create a mulch that would help keep moisture in the ground for the plants,” explained Anderson. “Tending a garden gives you a new appreciation for cultivation and harvest, and for farmers who depend on those crops to earn a living.”

For Debbie Hines, human resources assistant at the college, tending her plots at the community garden was the first opportunity she ever had to grow fresh produce.

“I’d never had a garden before and thought it would be fun,” said Hines. “It was really exciting to pick that first round of vegetables.”

For Hines and her husband Jay, who helped her maintain her two plots, they used a lot of their produce to make fresh summer salsa.

Like the Andersons, the Hines said they spent plenty of time watering the garden over the summer because of the excessive heat, but that won’t deter them from maintaining plots again this year.

“We had corn, green onions, green

**“The college was very helpful and gracious to supply the soil and water because without the water supply, it would have been a disastrous harvest.”**

**– Diane Anderson, Neoga**

peppers, pepperoncinis, tomatoes and zucchini and we’re looking to expand our plots to include a few more items next year – maybe radishes and eggplants,” Hines said.

To tend a plot at the Community Garden, there is no charge and participants are welcome to plant whatever fruits and vegetables they prefer. To reserve your plot for the next growing season, contact Jeff Oder, director of sustainability at (217)234-5368.





# Educational Opportunities: N

Lake Land College currently offers courses in the sustainability field and received a grant for state-of-the-art equipment and materials to provide students with hands-on learning in emerging Green Job Technology fields such as building, retrofitting, solar, wind power and smart grid technologies.

Lake Land College is leading the nation in creating an energy independent campus and green courses and programs that meet the career demands of the growing sustainability field. A student in one of the college's new green courses or programs will experience training on industry equipment and instruction in:

- Solar energy/photovoltaic systems
- Wind power including four educational wind turbines
- Energy efficient construction & weatherization
- Sustainability
- Smart grid technology
- Renewable & alternative energy
- Bioenergy

Green Jobs cover a wide spectrum of opportunities from training in wind energy maintenance and the actual development of renewable energy sources, to jobs that support lifestyles of health and sustainability. The programs are delivered in a flexible format to meet the demands of those seeking to upgrade skills, those unemployed or those who are passionate about this field.

## Future of Green Jobs

Lake Land College's faculty is creating programs and courses that meet current technical demands as well as the business side of the growing sustainability field. The programs span from learning technical skills, installing renewable energy systems and servicing equipment to gaining business knowledge to run sustainable offices, handle sales or market new renewable energy products and services.

Future courses and programs will include training in low-impact, energy efficient construction techniques, integration of digital networks in home construction, training in SCADA, wind energy, smart grid operation, renewable/alternative energy, energy efficiency, weatherization, resource sustainability, solar thermal applications, bioenergy and site assessment for renewable energy.

Three new certificates and two degree programs that have been developed will provide opportunities to specialize in green technology, earn an associate degree, or prepare for additional training at a four-year college or university.



# low and Future

## List of Green Courses & Electives @ LLC

- EET 065 Home Technology Integration
- EET 068 Photovoltaic Systems
- EET 070 Photovoltaic Technician
- WND 040 Introduction to Wind Technology
- WND 041 Wind Technology Maintenance I
- WND 042 Tower Rescue and Competent Climber
- TEC 057 Introduction to Renewable Energy
- TEC 058 Alternative Energy
- TEC 059 Weatherization Technician/Installer
- TEC 061 Solar Energy
- TEC 062 Solar Thermal Applications
- TEC 063 Electric Power Distribution
- TEC 064 Bioenergy
- TEC 065 Energy Efficiency
- TEC 066 Resource Sustainability
- TEC 067 Smart Grid Introduction
- TEC 068 Special Topics in Renewable Energy
- TEC 069 Site Assessment for Renewable Energy \*
- CAD 063 Wind Energy Design \*

*\*Awaiting approval from the Illinois Community College Board*



Stay up-to-date with all things green at Lake Land College!  
Visit: [www.lakeland.cc.il.us/as/tec/sustain/index.cfm](http://www.lakeland.cc.il.us/as/tec/sustain/index.cfm)!



# Future Green Projects

## Sustainability Center:

Lake Land College is in the process of developing a virtual Sustainability Center. For the college, the center will provide a one-stop source for information and training focused on sustainability concepts, including, but not limited to, energy incentives, energy efficiency and conservation, renewable energy technologies and techniques, green collar career development and training and green building practices. The college hopes to accelerate campus awareness in addition to community awareness about sustainable living practices by offering this resource.

*Portions of this section were excerpted from "Creating a Sustainability Center," IGEN Best Practice Package, 2011*







## Green Space on Campus:

The college's holistic approach to sustainability includes the use of green cleaning chemicals, natural weed control products, single stream recycling, prairie grass plots and harvesting rain water for irrigation, to name a few. Below is a list of how Lake Land College is taking its sustainability efforts beyond energy production.

- **Acreage** – Lake Land College has more than 70 acres of green space on its campus. This green space is dedicated to a Frisbee golf course, walking trails, ponds and native prairie grasses. While walking the grounds of Lake Land College, it is not unusual to see wildlife such as toads, birds, pheasants or the occasional deer.

- **Miscanthus giganteus and bio fuels** - The college is experimenting with growing and maintaining plants that can be used for bio fuels. A plot of *Miscanthus giganteus*, better known as Miscanthus has been planted to represent the ongoing research being conducted toward the development of alternative fuels. Miscanthus is perennial, requires no nitrogen supplement and produces huge amounts of potential energy. Products from this plant can be burned for heat and may eventually be used to produce ethanol and other bio fuels.

- **Prairie Grasses** – The grounds of Lake Land College are sprinkled with native prairie grass plots which have been restored not only to enhance the beauty of campus, but to bring native species back to the area. Eventually, there will be more than five acres of prairie grasses on the 308-acre campus. These areas are self-sustaining, so chemical applications and mowing will no longer be necessary. Besides these environmental benefits, the prairie grass areas will reduce erosion, sustain native plant species that have become rare and provide important habitat for a multitude of birds, butterflies and other indigenous wildlife.





# Lake Land College now electric vehicle charging station site

Lake Land College is now the proud owner of a Class Two Electric Vehicle Charging Station.

The charging station, which is open for public use, was funded by the Department of Labor's Community Based Jobs Training grant.

According to Jeff Oder, director of sustainability at Lake Land, the charging station will be used as a tool for students studying alternative and sustainable energy at the college in addition to being used as a public charging station for those with an electric vehicle.

"Anyone who lives in the area or who is passing through and needs to charge their vehicle is welcome to stop by and use the station free of charge," said Oder.

The charging station uses a J1772 standard connector and 240 volts of electricity to charge most electric vehicles like the Focus, Leaf, Volt or Prius Plug-In. Based on battery size, it takes four to six hours of charging time for a vehicle battery to become completely charged.

The charging station at Lake Land is powered by two alternative energy sources – a 100 kW wind turbine and solar installations affixed to a nearby roofing structure.

The charging station is located on the northwest side of the West Building on campus in Mattoon.

The electric vehicle charging station funded by approximately 0.003 percent of a \$2,542,762 CBJT grant from the U.S. Department of Labor, awarded in 2010.

For more information about sustainable energy practices at Lake Land College, visit: [www.lakeland.cc.il.us/tech\\_division/green\\_jobs/index.cfm](http://www.lakeland.cc.il.us/tech_division/green_jobs/index.cfm).



Jeff Oder, director of sustainability at Lake Land College is pictured with the college's electric vehicle charging station, which is powered by a nearby 100 kW turbine and solar panel installations.



# Dual axis panels installed

During the summer of 2013, Lake Land installed dual axis solar panels along the south side of the Vo-Tech building. Commonly referred to as sunflowers, the panels are a 20kW array sitting on dual axis trackers. The panels and trackers are American made. The dual axis panels have exceeded expectation, producing 15,000 kWhs since being installed in June 2013. On sunny days, the panels are at 100% production. During cloudy days the panels produce around 12 kWhs per day and on sunny days they produce 120 kWhs per day. Each machine contains a small computer and drive that gives them the date and hour. The panels then use that information to automatically move and track the location of the sun. The panels move every three minutes.





# Join Us

As we brave this new frontier, we realize we need partners to move forward. Being an innovator often involves knowing who to bring along on your journey.

- If these initiatives sound exciting to you...
- If something sparks a passion in an area you've always wanted to investigate...
- If you are an expert in this field...

## Please Join Us!

In our efforts to reduce our carbon footprint, we hope to create a model that will inspire organizations across the Midwest to take the first step.

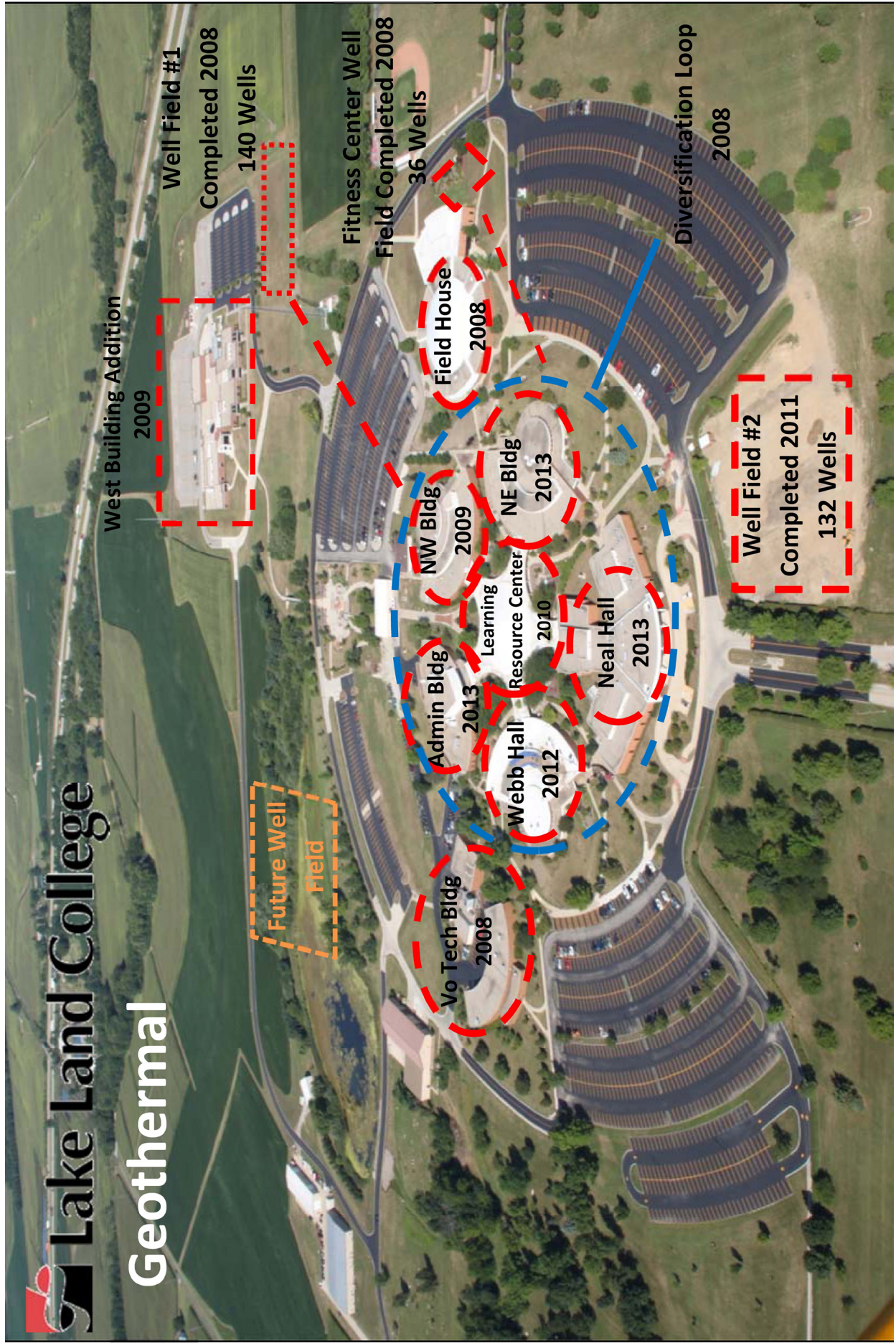
For more information on how to join  
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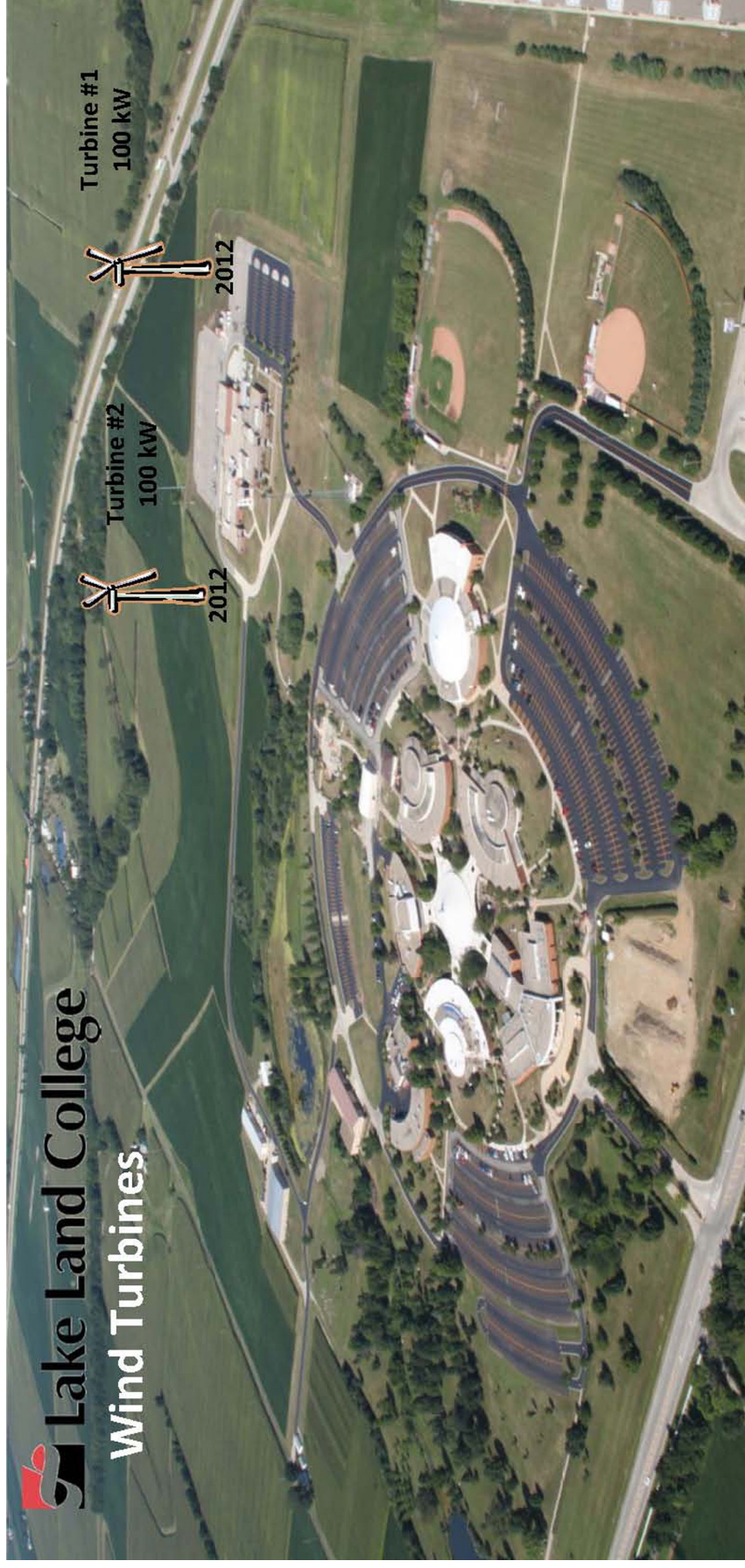
# Notes







# Sustainability Master Plan for Lake Land College





*This photo was taken  
at the South pond  
on the Lake Land  
College campus.*

*Snap this QR code to visit  
the Lake Land College  
Facebook page*

