

TABLE OF CONTENTS

- Letter from Sustainability Council Chair.....1
- University Achieves Award for Sustainability Program2
- Curriculum & Research3
- Waste Reduction.....3
- Dining Services.....3
- DUing Something Innovative4
- Natural Fueling Stations...4
- Energy Reserve Fund.....5
- Net Zero House.....5
- Deutsche Bank Micro-finance Class.....6
- Contact Us.....7

www.du.edu/green

Celebrating Our Gold Award and Continuing Our Gold Standards

Members of the DU Sustainability Community,

I am delighted to announce that DU has earned a gold rating in AASHE's Sustainability Tracking, Assessment & Rating System (STARS). As many of you know from previous communications, STARS is a transparent, self-reporting framework for colleges and universities to measure their sustainability performance. The STARS framework is intended to engage and recognize the full spectrum of colleges and universities in the United States and Canada—from community colleges to research universities, and from institutions just beginning their sustainability programs to long-time leaders in campus sustainability practices. STARS encompasses long-term sustainability goals for already high-achieving institutions as well as entry points for institutions that are taking first steps toward addressing sustainability on their campuses.

As you have likely gathered, this is a big deal! The great strides we have made are the result of the collaborative efforts of many hard-working, passionate members of our community, and I would like to thank every one of you for your tireless dedication. Additionally, I would like to extend a special thank you to the individuals who put countless hours into compiling and submitting our STARS report. I encourage everyone to spend some time perusing the University's full submission, which is available online at <https://stars.aashe.org/institutions/university-of-denver-co/report/2011-07-20/>, to learn all about what we are doing to make the DU community a more sustainable place to work, live, and learn. You will also find a number of highlights from the report in this special edition of the DU Green Pages.

With that, I will close with a simple call to action. The gold STARS rating is a remarkable accomplishment, one we should be tremendously proud of, and yet there is still much work to be done. I hope you will all join me in celebrating our success and also in continuing to strive for the lofty goals ahead.

See you soon!

Fred

Federico Cheever
Professor of Law and
Associate Dean for Academic Affairs
Sturm College of Law



University Achieves Award for Sustainability Program

By Chase Squires, originally appeared in DU Today

The Association for the Advancement of Sustainability in Higher Education (AASHE) has given DU a Gold Award for the University's ongoing sustainability efforts. DU is one of 13 schools nationwide to achieve gold recognition.

AASHE's Sustainability Tracking Assessment and Ratings System (STARS) awards points in three main areas: education and research, operations, and planning and innovation.

STARS is the only system of its kind that involves public reporting of comprehensive information related to an institution's sustainability performance. STARS provides institutions with a standardized assessment tool that allows evaluation of the progress toward sustainability, covering 139 environmental, economic and social indicators.

The University of Denver has been building on its commitment to sustainability since 2007, when Chancellor Robert Coombe signed the American College and University Presidents Climate Commitment. The action led to the establishment of the DU Sustainability Committee, which is comprised of students, administrators, faculty and staff.

The council developed a sustainability plan and a commitment for DU to become climate neutral by 2050.

"The University is delighted to receive the recognition of a STARS gold rating. It is the result of months of diligent data collection and review, and it is a powerful validation of our continuing efforts to achieve carbon neutrality by 2050," Coombe says. "We know there is much work ahead. We are incorporating sustainability in our educational program at both the graduate and undergraduate levels and we continue to monitor

and reduce our greenhouse gas emissions and reduce waste. We have a long-term commitment to achieving our environmental, economic and social sustainability goals."

Social sustainability is a key component to the STARS program, emphasizing not just environmental sustainability but also social efforts that ensure economic and social equity so that everyone can take part in a global process.

Fred Cheever, associate dean of DU's Sturm College of Law, is a founding member of the DU Sustainability Council and its current chair. He says the award is the result of a collaborative effort.

"STARS is the most comprehensive assessment of university sustainability efforts developed so far. It deals with every aspect of how we practice and teach sustainability," Cheever says. "DU's gold rating is a testament to the work of literally hundreds of members of the DU community who have invested their time and effort to help us all live and teach our best values."

Linda Kosten, DU's assistant provost for planning and budgeting and a Sustainability Council member who helped coordinate the reporting of scores of contributors, says the drive for STARS gold began in 2009, when DU committed to climate neutrality.

"We spent a lot of time working from the STARS framework to develop real, structured data to support our reporting," she says. "This is really a tool for institutions to develop ideas on how we can continue to improve."

Her colleague on the council, geography Assistant Professor Rebecca Powell, says securing a gold

award surpassed her expectations. "It was truly rewarding to see how many people came together and contributed. And then when we collected all this data and stood back, we realized how far we had come as an institution," she says. "This is a great starting point. The framework of STARS gives us an organization a structure and helps us start planning for what's next."

Sustainability initiatives on campus have included the campus-wide implementation of single-stream recycling, food composting in residence halls, lighting retrofits, a vehicle fleet running on compressed natural gas, bike sharing, an undergraduate minor in sustainability studies, the addition of "green" parking spaces that reward drivers of cleaner running vehicles, and the purchase of carbon offsets and energy derived from wind turbines and other sustainable sources.

DU received points for innovative social sustainability programs including Daniels College of Business initiatives in microfinance and the construction of a net-zero energy house — a home that draws no net energy off the power grid.

AASHE is an association of colleges and universities working to create a sustainable future, with a mission to help higher education lead the sustainability transformation. Some 280 colleges and universities across the country have submitted or are working on STARS reports.

STARS[®]
SUSTAINABILITY TRACKING
ASSESSMENT & RATING SYSTEM

Curriculum & Research

Did you know that DU currently offers 231 sustainability-focused courses and 937 sustainability-related courses? That accounts for nearly 20% of all DU courses in the 2010-2011 academic year—quite an impressive share! Even more impressive is that fact that sustainability-focused and -related courses span across 54 of DU's 78 departments.

We define sustainability-focused courses as those which concentrate on the concept of sustainability, including its social, economic, and environmental dimensions, or focus intently on one area. Additionally, sustainability-focused courses must examine an issue or a topic using sustainability as a lens. Students within these courses should develop a grounded understanding of the concepts of environmental, social, and/or economic sustainability, as well as the ability to think critically about the real-world application of these concepts.

Sustainability-related courses, on the other hand, are those which incorporate sustainability as a distinct course component or module, or concentrate on a single sustainability principle or issue. Students within sustainability-related courses are expected to build knowledge about a component of sustainability or develop an understanding of basic concepts related to sustainability in the context of a specific academic field of study.

You can review a full inventory of DU's programs, departments, and courses with sustainability components on our website at <http://www.du.edu/green/dudoing/curriculumandresearch.html>. You can also view information about whether each course is considered sustainability-focused or sustainability-related and which aspect(s) of sustainability (environmental, social, and/or economic) it emphasizes.

Waste Reduction

Waste reduction efforts at DU are among the most significant initiatives undertaken to address sustainability. The AASHE STARS reporting uses 2005 as a baseline year from which to demonstrate improvement in this area. In 2005, DU reported that 4,621 tons of waste was disposed of as garbage and 0 tons of waste was recycled. This year, however, only 974 tons of waste was disposed of as garbage and 502 tons were recycled.

These numbers show a clear commitment to recycling across campus, and they also demonstrate a significant decrease in overall waste. This is particularly impressive given that the number of on-campus residents, commuting students, and University employees has dramatically increased since 2005.

One key factor in our waste reduction success was implementing a comprehensive, single-stream recycling program on campus. This program was launched with the simple mission of providing a convenient, safe and cost-effective recycling program that is made available to as many people as possible. While it began primarily as an office and residential program, you can now find recycling receptacles all over campus!

Look for these statistics to improve even more drastically as we expand recycling and composting programs across campus, and continue to encourage conservation and responsible usage.

Dining Services

Food and dining services at DU represent an incredible opportunity to address sustainability in meaningful way. There are many initiatives in place to address this important aspect of sustainability, and it will be a key priority for the Sustainability Council this year.

Currently, 24.4% of all DU food expenditures meet one or more of the following criteria:

- Grown and processed within 250 miles of campus
- Third-party certified (USDA Certified Organic, Marine Stewardship Council Blue Ecolabel, Food Alliance, Fair Trade)
- Grown on a farm that operates as a cooperative, has a profit sharing policy for all employees, or has a social responsibility policy covering union or prevailing wages, transportation and/or housing support, and/or health care benefits for all employees.

Additionally, DU's residence halls operate tray-less dining programs, offer vegan dining options for every meal, and uses trans-fat free soybean oil in meal preparations.

DU is also conscientious about managing food waste on campus. We employ pre-consumer and post-consumer composting programs and donate approximately 700 pounds of excess food per month to the Colorado Food Bank of the Rockies. Finally, we have sold approximately 1300 mugs as a part of DU's reusable eco-mug program. By offering discounted refills, we are striving to reduce the number of disposable coffee mugs on campus.

In the 2011-2012 academic year, the Sustainability Council plans to create a new committee dedicated to identifying and implementing sustainable dining initiatives.

DUing Something Innovative

The AASHE STARS framework includes an opportunity for institutions to earn up to four points reserved for new, extraordinary, unique, ground-breaking, or uncommon outcomes, policies, and practices that greatly exceed the highest criterion of an existing STARS credit or are not covered by an existing STARS credit. True to pioneer style, DU was awarded all four points in recognition of our natural gas fueling station, energy reserve fund, RECM's net-zero house, and Daniels College of Business' Deutsche Bank Microfinance course.

DUING SOMETHING

Innovation Point #1: Filling up on Campus is a (Natural) Gas

By Chase Squires, originally appeared in DU Today

DU's facilities management department is living up to the University's "Pioneer" spirit by installing what's believed to be the first compressed natural gas (CNG) vehicle refueling station on a Colorado university campus.

The natural gas "pump," a fueling station for a growing fleet of maintenance and other vehicles that run on natural gas, offers DU a cleaner and less-expensive way of powering vehicles. And unlike building a gasoline station, which requires a storage tank, the natural gas station draws from the underground pipes that crisscross the city already.

"We've got a good story to tell in what we are doing about carbon emissions," says Allan Wilson, DU's director of building services. Wilson introduced drivers to the station Sept. 3.

A cleaner environment

Building on a \$180,000 grant from the Denver-based Strategic Environmental Project Pipeline (StEPP) Foundation — a nonprofit dedicated to a cleaner environment and clean energy — DU converted a dozen campus vehicles to use natural gas, although the vehicles can still run on gasoline when needed.

The University has gone on to convert three more vehicles on its own, at a cost of about \$12,000 each, and is planning to convert at least two more in the near future. Since 2007, burning natural gas instead of gasoline has kept more than 9.5 tons of carbon out of the atmosphere and cut fuel costs by at least \$12,000, Wilson says.

With the new pump station, which draws gas off existing lines and compresses it in a holding tank for rapid

dispensing, DU departments can run vehicles at the equivalent of paying \$2.25 for a gallon of gasoline.

"The synergy here of environmental and financial is what makes sense from my view of the world," Wilson says. "That's real sustainability."

First in Colorado

According to the U.S. Department of Energy's list of CNG fueling stations nationwide, DU is the first university campus in Colorado to build a station. Judy Walton, acting executive director of the Association for the Advancement of Sustainability in Higher Education, said a quick search turned up a few schools elsewhere in the country with fueling stations, and none in Colorado.

DU isn't alone in seeing the benefits of natural gas. Nationally known oilman and entrepreneur T. Boone Pickens is promoting natural gas vehicles on his Web site as part of a plan to clean the environment and cut American dependence on imported oil.

"Natural gas is the cleanest transportation fuel available today," Pickens writes in his plan for energy independence.

A safe effort

Like any new technology, making end-users comfortable with the developments takes time, Wilson says. Fueling is slightly different. Users connect a nozzle to a nodule protruding from the front of the vehicle. But efforts have been made to make the experience as much like a regular gasoline fill up as possible, including the use of a retro-fitted gasoline pump. And while the tanks are often

located inside the cabin space of a vehicle, they are reinforced for safety.

"A lot of people don't realize, it's the same fuel that's heating your home and your family. It's an extremely safe fuel," says Chris Kielty, a service technician with FuelTek, the company that helped DU establish its fleet and fueling center. "It's extremely cheap, and it's great for the environment."

The tanks are built tough, and if there were to be a leak, natural gas dissipates, rather than emitting heavy fumes that accumulate in one place and explode, like gasoline. FuelTek President Wes Biggers says natural gas is far less explosive than gasoline and in most cases it's hard to even ignite.

Drivers should hardly notice a difference when operating the converted vehicles. They start the same way and run the same way, Wilson says. The one drawback for the converted vehicles is a limited range on natural gas, hardly a problem for vehicles that rarely venture off campus.



A DU staffer fills a campus vehicle with compressed natural gas (CNG). DU was one of the first universities in the nation to install a CNG filling station on campus. Photo: Jeff Haessler

Innovation Point #2: Energy Reserve Fund

In 2009, a regenerative funding mechanism or Energy Reserve Fund was established for the purpose of supporting ongoing energy conservation initiatives and the reduction of our carbon footprint. An initial investment of \$1.9 million, an amount which was the result of FY2007 & FY2008 utility savings from previous years conservation projects, was made to establish the fund.

The Facilities department is required to perform an initial analysis to determine the scope, cost and savings potential of each identified conservation initiative. A request for funding along with a project description and estimated cost and payback is then forwarded to The Office of Business and Financial Affairs for approval. Upon final approval, a fund number is created based on the budget request and for project tracking purposes.

The input of faculty, staff and students is taken into account by Facilities in the development of energy conservation initiatives proposals prior to submission for funding. The difference between the utility budget and the actual utility cost for the fiscal year is transferred to the Energy Reserve Fund with the intent the funds will be used for future energy conservation projects. One third of the available Energy Reserve Fund can be applied to projects in a single fiscal year.

The average return on investment on over \$400,000 of projects completed through the end of FY10 is currently 65% and the University's annual carbon footprint has been reduced by 1771 MeTCO₂ as a result of these projects funded by the Energy Reserve Fund.

Innovation Point #3: Net Zero House

The University of Denver's Residential Practicum Class has partnered with Oakwood Homes, LLC for over 15 years to give students an opportunity to become actively engaged with real-world construction management processes. This partnership recently produced Oakwood's first net-zero energy home.

Project Manager, John Cheney, notes that the design process began a year ago, with the decision to build a net zero energy home using the most cost effective materials and assemblies to achieve an energy efficient building envelope. This varies from most similar projects because cost is typically not a major priority, so more expensive materials can be used to insulate the home and reduce air leakage. By starting with energy efficient building principles in the design of the home, the class was able to plan ahead for inexpensive (or free) insulation materials.

Usually an expensive spray foam insulation is used to reduce the environment's impact on the house's indoor temperature, but the Residential Practicum Class needed to identify an alternative method of preventing air leakage through the attic, walls, windows, and doors. To accomplish this, they designed the exterior plywood sheathing sheets to meet at pre-determined locations to prevent gaps, and then taped the seams to make the shell of the building virtually air tight. A similar method was used in the attic to prevent air leakage through lights and wire penetrations. Next, the group designed the walls of the house to increase the amount of insulation they could hold, while also decreasing thermal conduction through the wood components. These walls are more than three times thicker than a typical new home, so the most cost-effective insulation could be used in high quantities.

Such innovative construction techniques, in combination with energy efficient windows, an air source heat pump, hot water heater, and compact fluorescent light bulbs throughout, resulted in a home that is projected to use

90% less energy than an average existing home, and 60% less energy than a new home built to code.

Cheney also explains that because the heating and cooling requirements were so low, ground source geothermal was able to be done much more economically with a very innovative technique.

Typically, placing the pipes in the ground to use the earth natural relative heat (and cool in the summer) in a geothermal system is very expensive. This is because wells have to be drilled or a large area has to be excavated to allow the required amount of pipe to be placed, even on an average sized home. Because of this house's lower heating and cooling needs, the length of pipe needed was far shorter, and therefore could simply be placed around the basement foundation. Also, since the ground was already excavated for the basement, the class was saved from significant expenses inherent to most geothermal methods.

Finally, the average-sized photovoltaic solar panel array installed on the home provides enough electricity in one year to produce more energy than the all-electric home and its occupants will consume, making it net-zero energy. Not only will the future homeowner have zero energy costs, but the incrementally higher purchase price of the home makes economic sense for one of the first times in American history. The total added price for the net-zero option is an additional \$30,000. When added to a 30 year mortgage at current interest rates, this adds approximately \$150 per month to the homeowner's mortgage payment. Considering monthly savings of as much as \$180 in utility expenses, the Net Zero House is providing savings from day one. This home is certainly innovative in terms of the energy efficient design system, but it is also an affordable option for home buyers, which is a true innovation.

Innovation Point #4: Deutsche Bank Microfinance Class

The Deutsche Bank Microfinance Class at DU's Daniels College of Business has been named to the Forbes.com list of the 10 Most Innovative Business School Classes.

The list includes courses from business schools around the country that “appeal to a different kind of student — one who increasingly looks to do good while also doing well.”

Students in the Daniels class work directly with managers from Deutsche Bank's Global Commercial Microfinance Consortium to evaluate loan applications from microfinance institutions (MFIs). MFIs borrow from Deutsche Bank's \$80 million fund and use the money to make small loans — some as low as \$50 — to individuals and groups in rural villages.

“The idea of microfinance has been around a while, but we're now finding that larger financial institutions are getting involved, in addition to not-for-profits,” says Professor Mac Clouse, who teaches the course. “The idea is taking hold that you can earn a rate of return as well as provide benefits to the poor”

The Daniels-Deutsche Bank partnership was established five years ago when Daniels Professor and Dean Emeritus Bruce Hutton was leading an inter-term course to New York. The group met with the director of Deutsche Bank's microfinance division. The director was so impressed with the DU students and their questions that he invited Hutton and the University of Denver to join as the Bank's only academic partner.

The students in the class — which is capped at around 20 graduate students — receive a set of loan applications from MFIs. Following a set of criteria provided by Deutsche Bank, the students research the applying organization, compile information about the economic and political environment in the region; talk to people from the finance, human resource and IT side of the MFI and examine past successes to determine their suitability to receive a loan.

After conducting initial research, the class then travels to the MFIs location during spring break in order to conduct on-site due-diligence. Student

groups have traveled to Cambodia, Uganda and Kenya to meet the MFIs and visit local borrowers.

“In Cambodia, we traveled an hour and a half to a village to meet with a woman who had used her loan to buy a net to catch fish to feed her family and sell to different people in the village. Another had used the loan to buy seeds,” Clouse says.

“The students can see and hear from the borrowers that it really does make a difference to them,” he says. “They can see how microfinance can provide a real benefit to the poor of society — you can make a difference by approaching a problem from a business perspective.”

The class takes place in the last part of DU's winter quarter, over spring break, and the beginning of spring quarter. Students must apply to the class, and they are responsible for covering their own travel costs and a course fee.

Clouse says the course appeals to students who are interested in business from an international perspective. In the past, students have been drawn from the Daniels' International MBA program, the Sturm College of Law and the Josef Korbel School of International Studies.

“It's an opportunity to combine lending and social entrepreneurship in a way that can change people's lives,” Clouse says.



Students from DU's Daniels College of Business traveled to Bangladesh for their Deutsche Bank Microfinance class.



Congratulations to the University of Denver for earning the AASHE GOLD STARS rating!



**The Sustainability Council would especially like to thank the following members
of the DU community for their contributions to the University's STARS reporting:**

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