Q&A

What does GREEN really mean?

Exploring the definitions and practices of environmental stewardship and sustainability

BY CHRIS BOLGIANO

An interview with Christie-Joy "C.J." Brodrick Hartman, executive director of the Institute for Stewardship of the Natural World, and Emily Thomas ('09), student representative to the ISNW Campus Accessibility Committee

Nature writer Chris Bolgiano interviews C.J. Brodrick Hartman, director of the Institute for Stewardship of the Natural World, and Emily Thomas, ISNW student leader.

BOLGIANO: What is the Institute for Stewardship of the Natural World — and why now?

HARTMAN: The institute was established in September 2008 as the result of recommendations by the Commission on Environmental Stewardship and Sustainability that President Linwood Rose inaugurated. The commission included students, professors, staff and community members, and was co-chaired by Maria Papadakis of ISAT and Towana Moore, associate vice president for business services. It was one of only a handful of commissions in the history of the university, which sent a clear message about President Rose's commitment to the environment.

There is growing evidence that we need to change our individual and institutional practices to assure the future health of our planet and ourselves. The institute will challenge the entire JMU community to think critically about our roles in the long-term stewardship of Earth. We will coordinate stewardship efforts across campus, which include promoting science and critical-thinking skills. We will recommend priorities. President Rose established five cross-divisional committees to guide the institute: awareness, education and research, policies and practices, operations, and campus accessibility — meaning everyone — walkers, bikers, bus riders and drivers.

THOMAS: We're looking at how many people drive by themselves, how many people utilize the carpool lot, how many people know we have a carpool lot, how many people take the bus. We'll use that data to hone in on how we can make positive changes and roll with the positive changes that we already have going on.

HARTMAN: Good point. I don't want to lose track of what got us here. Over several decades, many JMU citizens advocated for improved global and local environmental practices, and they received no personal gain for doing it — they were concerned individuals who were heard. And that history is tremendous for us to build on because it's what will be the foundation for JMU's commitment to the environment to be successful.

THOMAS: I want to stress that when we, as student groups, talk to our counterparts at other universities about the activities we could bring to campus, we run up against, "Your administration isn't going to want to spend the money, sustainability costs money, making efficiency upgrades costs money." We haven't found that. We've always had faculty members who are willing to talk with us and give us ideas.

BOLGIANO: Let's start with the institute's name: What does "stewardship" mean in an environmental context?

HARTMAN: Stewardship means that we have a responsibility for the care and management of our planet. For the institute, we defined sustainability as human and ecological health, social justice, secure livelihoods, and a better world for all generations. Thus, environmental stewardship can be viewed as one of several elements that support sustainability. We are interlinked with nature, and everything we do either affects or is affected by the ecosystem services nature provides — like clean air, clean water, fertile soil, diversity of plants and animals.

If we understand the scientific, political and social issues that surround our natural resources, we see that we do have responsibilities as individuals for choices that affect our own health as well as the health of our world.

BOLGIANO: Taking personal responsibility for one's own environmental impacts poses a big challenge for our consumerist society: How do you change behavior?

HARTMAN: Changing behavior is very difficult — not just for environmental stewardship, but in general. As an educational institution we have excellent resources to support us in this endeavor. Our role is already to produce enlightened citizens, people who question, who analyze. We want them to gain the knowledge and skills here to make their own personal choices for change, not just comply with our telling them something.

Going forward, the institute will facilitate bringing our resources together in forums where we can have informed dia-

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> CHRISTIE-JOY "C.J" BRODRICK HARTMAN, *executive director of the Institute for Stewardship of the Natural World*

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Competing to conserve

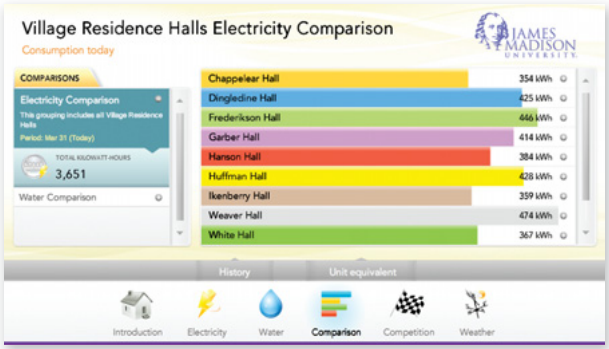
Students reduce energy use in Village Green Wars

BY MICHELLE HITE ('88)

And the winner is ... the environment. And some pretty cool students from Frederikson Hall. For the fourth year, students living in the nine Village residence halls competed to see who could create the biggest reduction in energy usage during Village Green Wars.

Students living in Frederikson Hall won this year's competition, held March 23 to April 17, by decreasing their electrical energy use and water consumption by just over 10 percent.

This year, for the first time, students and administrators could see rates of energy and water consumption in select residence halls thanks to Building Dashboard, a Web-based application. Special meters, installed on the electric and water lines of all Village residence halls, supply data to the Dashboard Web site. With real-time information, Village residents can understand and respond to the ecological consequences of their daily energy consumption and make informed and educated decisions.



"There were energy reductions in every single hall," says Emily Thomas ('09), a student representative to the Institute for Stewardship of the Natural World and co-founder of the JMU Clean Energy Coalition.

"Village Green Wars and Dashboard are great ways to involve and educate students about environmental responsibility,'" says Maggie Evans, JMU director of residence life.

The competition was a collaborative effort among the JMU Office of Residence Life, the Institute for Stewardship of the Natural World, the Clean Energy Coalition and the facilities management division. M

DASHBOARD DATA

Students living in The Village residence halls competed against each other to reduce energy use during Village Green Wars. Thanks to Building Dashboard, students could make informed decisions on water and electrical use by logging on to the Web-based application and viewing energy use information in real-time.

logue. For example, in curricular and co-curricular training, activities, and the campus landscape itself. Really the key part is "informed." It's not jumping on a bandwagon; it's going to take some effort. Maybe we'll even find an alternative to the overused and abused word "green."

THOMAS: It is important to teach people how they are responsible because many don't realize the effects of what they do.

HARTMAN: We have to model the behaviors we desire. I set a standard not so much by what I say in the classroom but by what I do daily. And my students continually challenge me. I'm thinking, "Oh no, what's the setting on my washing machine?" when Emily talks about washing her clothes with cold water only. My hardest job is to reach those who aren't listening, many of whom are frustrated by associated fads and politics.

One area of common ground I've found is that human health and the environment are intertwined. We have an opportunity for environmental stewardship to be a uniting endeavor, and it is exciting to see people together who ordinarily wouldn't be in the same club or major. The Interfaith Coalition sponsored a panel on faith views on the environment, and we had diverse people talking and sharing a very common view on the environment and divergent views on other topics. When it comes to the environment, we're all sharing the same space. We need to consider environmental stewardship as us working together thoughtfully, as a team. And we need to bring our different perspectives to challenge each other and develop innovative solutions.

THOMAS: I agree. As an ISAT major, I view energy choices in a different light than my friends in the Earth Club who have an anthropology background. I talk about the science side, and they talk about how it affects people. One of the biggest debates is always nuclear power. It's not necessarily polluting, but it creates toxic waste that we don't know how to handle. There's mining for uranium, very similar to coal mining, which is not what Earth Club stands for – but maybe it's also an intermediate solution. We had people come up from where uranium is being mined and say, "This environmental destruction is not permissible for us. We need your help against uranium mining and nuclear power." But on the flip side, we don't have that much else that can give us that base load power right now. And then some members of the Earth Club say, "It is maybe better than coal; maybe we should support nuclear power." I think it's valuable to see a topic from so many different angles; you kind of push each other to open your eyes that much more.

BOLGIANO: It's widely reported that many young people lack a connection with the nat-

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"Everything works on paper," Bachmann says. But when students get in the lab, when they start building a design, they have a new appreciation for the difficulty of bringing a plan to life. On paper, nothing is moving, he says, and then with movement, suddenly this piece of metal is hitting that one or this screw can't be accessed. Students often have to drill through their projects to make an adjustment. These things never show up until they get into the lab. "When they get it, it's a little bit of an epiphany."

The lab is of special benefit to students enrolled in the new JMU School of Engineering. Unlike almost every other school where engineering students never build their designs — and if they do, not until their junior or senior years — JMU engineering students use it from day one, as ISAT students have done for a decade.

One of the first projects to come out of the Alternative Vehicle Lab, Bachmann says, was the Super Beetle. Then-ISAT-student Randall Morrison's ('06) uncle donated an old Yamaha motorcycle. "The students scoured the town and found an old VW Beetle," Bachmann says. "We saw potential in the old Bug. I bought it for $50." John Miller ('70, '83M) at Massanutten Technical Center donated an engine. To make floorboards, they cannibalized an old picnic table they hauled out of a dumpster. With the materials, students designed and built the Super Beetle. "$50, free and free. Pretty good," Bachmann says.

"A lot of times our students have no concept of money. ... They can propose pretty outlandish ideas," he says. "So, along with fuel economy, they are learning real lessons in how economic factors influence research, development and the implementation of new ideas."

The economic perspective is a significant part of the entire alternative fuels question and requires creative approaches. One such approach, Bachmann says, might be grid-to-grid power. He explains it this way: Suppose you charge your electric car through a wind-generated power plant (at a price) and drive to work. As it sits all day, the power dissipates — it's lost. What if you could plug it in at work and sell that power back to the grid while you're at work?

This kind of innovative thinking, Bachmann says, is why JMU's creative approach to the entire alternative fuels paradigm is so important. Anyone can build electric cars. The technology is there. But how do you get a majority of drivers to buy and drive them? "In 20 years, we'll run out of easy oil," Bachmann says.

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It's a complex problem with solutions that demand the best of science. But the best science — like a brilliant mind — is useless without the discipline of individuals to embrace it. Changing human behavior is the missing piece and perhaps the biggest challenge AFP faces is changing the culture *outside* the university. Take NASCAR, for instance. It's the most popular spectator sport in the country — drivers going fast in a circle. They're not concerned with fuel economy or environmental impact. They're interested in speed. Much of the same mentality exists for American drivers. They want to get from point A to point B quickly and comfortably. Only a fraction are more concerned with the environmental impact of their gas-powered cars.

This point of interface is where AFP hopes to have an impact. Bachmann puts it this way: "We're doing a different kind of research. … How society interacts with technology. What are the hurdles to overcome to get them (environmentally smart vehicles) into the mainstream?"

One approach they are taking is through alternative vehicle competitions, and the most important is the Society of Automotive Engineers, the most prestigious of the collegiate-adjunctive engineering societies. Two years ago, JMU petitioned SAE to allow the university to start a campus chapter. Without an engineering school, JMU's request required "flexibility" in SAE's decision. The allowance was granted and the chapter established. Now through SAE, JMU plans to make its mark on the entire collegiate engineering world.

Each year, SAE holds Baja SAE, an off-road vehicle competition that draws some 100 colleges and universities to each of three events. The competition challenges student teams to design, build, test, promote, race and market a vehicle that will handle challenging terrain and, sometimes, water. But there is no element in the current competition that addresses environmental impact, Bachmann says. So the JMU chapter is

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ural world, which is the second part of the institute's name. Do you see that at JMU?

HARTMAN: We do see that a lot of young people today are not spending as much time outdoors as children have historically. When I surveyed students in one of my ISAT 321 classes, they indicated that they spend a great deal of time indoors. Maintaining that connection with the outdoors is especially important for our students who will work in outdoor environments. There are also an increasing number of studies that indicate health is closely tied to interaction with nature. We have tremendous resources at JMU in terms of the natural world – for example, the arboretum, where a lot of professors take their classes. The JMU Farm is another and, of course, our surroundings like the Shenandoah National Park.

THOMAS: I love the arboretum and go through there as often as possible. At the right spots it's possible to get lost and pretend you're not in the middle of Harrisonburg.

BOLGIANO: Recycling may be the most immediate way that most people connect with the environment on a daily basis, and recently JMU competed in the National RecycleMania Waste Minimization Competition. How is the recycling program going?

HARTMAN: JMU recycling started about 20 years ago and employs 10 people. Most JMU employees have desk-side bins for common recyclables such as paper, bubble wrap, soda cans; and we have community bins that people use in the common areas. We have about a 35 percent recycling rate, and that's one of the highest university rankings in Virginia. Now it's time to take the next steps, to reduce and to reuse.

RecycleMania is a way to promote waste minimization. The idea is simple: Carry your reusable mug and also save 40 cents at the dining hall instead of using disposable or even biodegradable cups. But it's a cultural change, which is challenging. We'll have our incoming class at orientation get a reusable bag as opposed to a plastic bag. Next, they will get their mug. Hopefully, they will see everybody use these. We'll be reaching out to make our citizens aware that this is campus culture, and it is what's expected. My hope is that our citizens reuse for so many years that when they leave it would seem wasteful to practice a different behavior.

Last fall we did a trash sort where three buildings dumped their trash on the CISAT lawn, and 40 of us sorted through it to see how many recyclables were there. Recycling was anywhere from 10 percent of the trash in one building to 50 percent in the other. Later, we surveyed our 40 volunteers who bravely did this; it was a cold, cold day and it was not a pleasant aroma ...

THOMAS: It was not pleasant.

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Be JMU 'eco-WISE'

Individual actions support a sustainable future

BY CHRISTIE-JOY "C.J." BRODRICK HARTMAN

Remember Kermit the Frog's lamentation (circa 1970s): "It's not easy being green." Although today's green, which symbolizes environmental consciousness, differs from Kermit's reference, the statement, "It's not easy being green," is applicable to today's environmental challenges. Population growth, climate change and fossil fuel consumption are among myriad factors that necessitate we re-examine, and perhaps reinvent, our approach to fundamental systems such as energy. Despite the frequent headlines we read, "Ten tips to save the Earth in five minutes a day," Thomas Friedman is correct in his national bestseller, *Hot, Flat and Crowded:* "There is no easy button we can press to make the world green."

Given the magnitude of the changes needed, it can be unclear what impact individual actions can have. For an example of the large-scale cumulative effects of individual actions, let's look at bottled water. In the 1970s, "bottled water" meant a water-filled thermos. Three decades later, billions of dollars flow through the bottled water industry. "In 2006, the equivalent of 2 billion half-liter bottles of water were shipped to U.S. ports. ... Only about 13 percent of the bottles we use get recycled. In 2005, 2 million tons of plastic water bottles ended up clogging landfills instead of getting recycled," according to the Natural Resources Defense Council.

Relatively simple measures by individuals can have a positive impact and contribute directly to a healthier people and planet. The challenge is that what "green" is can be elusive. For example, organic T-shirts are popular. But what is the balance of effect if those are made under unfair trade standards and shipped from overseas creating emissions and fossil fuel consumption?

The answers are not simple.

JMU's environmental stewardship effort specifically focuses on environmental literacy, critical thinking and personal behavior change. We strive to be "eco-WISE:" wary, investigative and scientific in our approach, and environmental stewards in our actions. Individual actions, like those below, support large-scale, fundamental changes that are needed to ensure a sustainable future. M

WAYS YOU CAN BE JMU ECO-WISE:

- Conserve energy. Manage your energy use by turning off and unplugging small appliances, upgrade heating and cooling systems, change the thermostat a few degrees, seal and insulate your home, and consider renewable energy systems. Take advantage of energy tax-credits.
- Preserve natural resources, including water and ecosystems. Practice water conservation. Minimize chemical use, especially in your yard. Compost food and yard waste.
- Buy locally produced products. Purchase foods from local farms. Consider the life cycle of manufactured products, including production, transportation and disposal effects.
- Minimize materials consumption and effects. Practice the five R's: rethink, repair, reduce, reuse and recycle. Use reusable items versus disposables.
- Walk or bicycle; use public transit or carpool. Purchase a fuel-efficient vehicle.
- Challenge yourself and others to learn more at **www.jmu.edu/stewardship/involved.html**.

✱ Members of the Institute for Stewardship of the Natural World Executive Council contributed to this article: Jerry Benson, Randy Mitchell, Mack Moore, Towana Moore and Susan Wheeler.

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HARTMAN: ... and I said, "How has this changed your behavior?" Our volunteers reported their roommates were now recycling and minimizing waste. The experience really affected the other people our students come in contact with. They talked about how they shared their trash sort experience at the family Thanksgiving dinner and got their family members to participate.

BOLGIANO: That leads naturally into a discussion about food, which is one of society's greatest energy expenditures. How does the institute approach food issues?

HARTMAN: One of the successes at JMU is the environmental efforts of our dining services. The waste oil is converted into biodiesel fuel. Dining services went tray-less the beginning of this year to save wash water and energy. JMU is looking at composting and several of the dining halls already have pulpers, but unlike the composting I do in my backyard, this is a large endeavor for a campus to compost all its food waste. So we're probably looking at a model similar to what they're doing with the waste oil, which is an external company processing it.

THOMAS: I really love the stickers in the dining halls that say, "The oil used to fry your food will be made into biodiesel." It's cool to hear people talking about it in line.

HARTMAN: One of the most interesting dining advances this year was a farmer's market on campus once each semester. The dining hall already buys 200 locally grown products. Also, the new east campus dining hall is our first LEED-certified building [Leadership in Energy and Environmental Design green building rating system].

THOMAS: I use the campus farmer's market and really enjoy the fresh fruits and vegetables. Learning about sustainability has definitely made me stop and think. If I have a choice between two different oranges, I'm going to pick the oranges grown a little bit closer rather than down in South America.

BOLGIANO: Reducing energy use – like eating local foods instead of those transported long distances – has become a major national strategy. How does the institute approach this issue?

HARTMAN: We will recommend targets, establish benchmarks and work closely with facilities management staff, who have historically been progressive, to implement specific actions. Facilities management already mulches and reuses about 90 percent of campus plant material; very rarely does it get bagged up to leave campus. There are timers on many lights, and they have low-energy lighting.

One of the most interesting new things JMU has installed is a Web-based system

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"VCC is very active in educating landowners about all options for conserving and restoring their properties," says Eckman. One choice is placing land in a conservation easement, with a landowner retaining ownership but conveying certain rights to a qualified land trust, government or agency. A typical easement, negotiated with the landowner, restricts development that would impinge upon the land's beauty or natural resources, but allows farming, hunting and timbering. Landowners can take advantage of Virginia's generous tax incentives for land conservation.

In June 2008, at the annual conference of Virginia land trusts — hosted by VCC — Gov. Tim Kaine reiterated his goal of setting aside 400,000 more open-space acres by 2010. By spring 2009, there were nearly 330,000, thanks to help from VCC and many groups around the state.

With its partner agencies, the Valley Conservation Council's efforts have helped landowners conserve hundreds of farms, mountain forests and historic lands in the region, including several unique properties along waterways. Limiting development is a first step, but restoring natural functions of the region's green infrastructure is the ultimate goal. VCC's easement in Purcell Park, just south of the JMU campus, will protect the restoration of natural bends in a section of Blacks Run. Another urban easement protects the human health and the environment at a Superfund site being cleaned up in Front Royal.

Anyone who returns to Harrisonburg after a few years away knows the area is still growing fast, says Eckman. VCC takes a proactive approach to facing new development. "We know people are moving to the area," he adds. "We will continue to grow, and that's not necessarily a bad thing. Where that growth happens and the design it takes will make a huge difference in the quality of life for people in the valley."

To encourage smarter growth, VCC annually recognizes significant development projects in the region with its Better Models for Development Awards by highlighting sensible projects that protect natural or historic resources while still accommodating new growth. Many projects in downtown Harrisonburg have won awards for reusing historic buildings in new and novel ways, bringing more people into the core of the community.

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>
> JOHN ECKMAN ('82)
> *Valley Conservation Council executive director*

VCC has been able to draw personnel from Harrisonburg as well, enjoying a surprising run of JMU graduates in the last two years. "All of us arrived from very different experiences," Eckman points out. "It's good to see JMU grads feeling so connected to this place."

An English and political science double-major, Eckman earned a master's in environment and community at Antioch University. Prior to VCC he taught earth science, helped run The Little Grill restaurant, and worked for 10 years at The Mountain Institute, an international conservation organization.

An environmental policy major at North Carolina's Warren Wilson College, Jill Templeton earned her master's in public administration at JMU after several years of working in nonprofit organizations. She also gained research experience through her fellowship with JMU's Institute for Infrastructure and Information Assurance.

VCC's summer 2008 intern Corbin Davis ('07) watched changes both in Harrisonburg and his hometown, Staunton, where VCC is housed on historic Barristers Row. The ISAT and geographic sciences major is completing a master's in urban and environmental planning at the University of Virginia.

Kim Tinkham ('01), a native of Rockingham County, worked with VCC and continues her interest in education and history in the area. She is thrilled to be raising her children in such a "beautiful place. If you love a place, you want to stay there and care for it," she says.

What's it like to grow up in the valley and watch urban sprawl emerge over a lifetime? "I'm not going to cry over what has already happened," Eckman notes. "While it is frustrating to see the loss of great farmland, we still have much to cherish in this region. Wherever you choose to live, we all need to make sure we leave a legacy for future generations." M

*Learn more at www.valleyconservation.org

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called Dashboard in The Village's nine residence halls. Students can see their electricity and water consumption in real-time. These metered systems show tangible and immediate feedback on how we are impacting our planet and our pocketbooks. Students are learning that little changes can have a large impact. *[See Page 31]*

THOMAS: During our first Village Green Wars, we posted little reminders like "Take shorter showers" in the shower stalls and "Turn me off when done" above the sinks. We noticed huge savings. One of my favorite events was the No Drive Day to encourage the use of alternative transportation. Everyone was very excited to take the bus or carpool or walk, and not only to do that, but to tell their friends that they did. It was a source of pride. Our first year we had a 14 percent increase in bus ridership.

HARTMAN: We're really seeing some benefits of No Drive Day in combination with general awareness of the environmental stewardship movement as well as the fuel price fluctuations. Right now about half of our student body uses alternative transportation, taking the bus, bicycling or walking to campus. We're seeing a 21 percent increase over the last few years in overall ridership *every day.*

BOLGIANO: And JMU has been a pioneer in using alternative fuels in its vehicles, hasn't it?

HARTMAN: I was fortunate to come here when Cally Oglesby, a visiting scholar, was exploring biodiesel. She and four students, known as the Biodiesel Boys, were working with facilities management making their own biodiesel in a homemade reactor and running it in a modified engine, a process not well known at the time. Cally convinced JMU to adopt commercial biodiesel because the experiments in the lab had been so successful. I was co-director of the Alternative Fuels Program for several years and had the opportunity to work with Harrisonburg, Roanoke and other areas that ended up adopting biodiesel. Our Alternative Fuels Program collaborated with Virginia Tech to disseminate our experience via an extension paper, and we did a series of workshops around the state. In Harrisonburg and on campus we run a blend of up to 20 percent biodiesel, known as B-20. There is a significant difference in emissions coming out of the tailpipe. Building and grounds folks who are exposed to the emissions say they feel the improved health effects. *[See Page 32]*

BOLGIANO: One of the main goals of reducing energy use is reducing greenhouse gas emissions linked to climate change. President Rose is a signatory to the American College and University Presidents Climate Commitment, which has very specific goals and timetables. Where does the institute fit into that commitment?

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'It doesn't matter if you can create the most efficient vehicle on the road if people won't drive it.'

CHRIS BACHMANN, *director of the Alternative Fuel Program*

petitioning SAE to change the parameters of the competition to include an environmental plank.

If they succeed, JMU will have substantially shifted the entire nation's collegiate emphasis on alternative transportation to environmental sustainability and changed the dialogue to include environmental impact in vehicle construction.

Still, the greatest challenge looms — changing the behavior of the American consumer. Much of the technology research done on campus is done in light of this dilemma. No matter how successful a program is, Bachmann says, "none can meet current consumption. We have to use less energy. We have to shift our thinking." And that is perhaps the most challenging aspect of alternative fuel research — and the one where JMU is clearly taking a leading role.

"We're not like R1 schools," Bachmann says. Plenty of schools and companies can create the technology, but JMU is working hard to change the perception and the acceptability of environmentally responsible vehicles. "It doesn't matter if you can create the most efficient vehicle on the road if people won't drive it." That's JMU's challenge and where AFP is making its mark.

"We need to reach a new audience," Bachmann says, and education and outreach are huge components of AFP. Engineering professor Rob Prins agrees. He is developing a bicycle competition for high school students. While most high-school students don't have the funds to re-engineer cars, they can attack the problem of creating an electric bicycle. Prins hopes that students will build their bikes and bring them to JMU to compete with other high-school students. (See Page 64.)

Strictly separating one program from the next, one department from another, is impossible at JMU because of the dynamic exchange and generation of innovative ideas. There are no ivory towers here, no sanctuaries of knowledge untouched by students. It is an unfettered and unmatched collaboration of professors, students, staff members, alumni and community members — all working toward a sustainable world. M

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HARTMAN: The institute is coordinating that effort with strong support from facilities management. We have brought in external expertise, that of O'Brien and Gere consultants, to help guide us through the process of measuring our baseline greenhouse gas emissions. We anticipate a report this summer. The point of the emissions inventory is benchmarking – we will have quantitative data, so we will know where to focus our energies.

BOLGIANO: What kind of measurements will the institute use to mark progress toward sustainability?

HARTMAN: Benchmarking, which includes measurement, involves all natural systems, not just emissions. Benchmarking campus water consumption, water quality, materials use, waste minimization and attitudes of citizens is something the ISNW committee members are working on.

THOMAS: Our campus accessibility committee is looking at a bicycle compatibility index, because to ride a bicycle safely you have to have bike paths, locks and easy access to buildings.

BOLGIANO: "Sustainability" is a complex issue, and determining what is truly green can be a challenge in itself – witness the current controversy over corn ethanol versus nonfood biofuel. How will the institute approach conflicts over what is or isn't truly "sustainable?"

HARTMAN: First, through dialogue. We purposefully recruited people for our committees who may be on the end of the spectrum that says, "Global warming is highly exaggerated," because we want everybody's voice included. Of the 100 people on the five committees there are professors, students and staff members from a variety of jobs. In terms of the ethanol, these are complex problems that require analysis to understand the environmental economic-social repercussions. One of the common tools is cradle-to-grave analysis, where the full product cycle is accounted for. We try to put together scientific, peer-reviewed research papers that use such techniques and represent different ends of the spectrum.

JMU also has rich course offerings related to sustainability across a variety of majors, minors and graduate programs. Students can immerse themselves in these issues in the Madison Eco-Community in Hoffman Hall. Students living there focus on the environment, and the residence hall itself is a model of green living. *[See Page 34]*

BOLGIANO: Reaching sustainability is so challenging that it surely will take many years. What is your long-term vision for the institute?

HARTMAN: I want JMU to be Virginia's model of community metamorphosis into a healthy human-ecological system. JMU citizens will be environmentally literate, and an ethic of conservation will be a JMU community member's hallmark. The campus will be a low-impact, living laboratory developed through cross-divisional collaboration.

Environmental stewardship will be integrated into the institutional and individual decision-making process as a core value.

JMU will offer environmental courses and programs to underserved groups, and the campus' environmental stewardship efforts will grow together with other JMU initiatives to address the two other dimensions of the triple-bottom line of sustainability: economics and equity.

BOLGIANO: Emily, you'll soon be entering the world of work. What do you hope to do?

THOMAS: I'd like to work with alternative fuels, either in research and development or in education and outreach. I'd really like to work with a city government and do a lot of the same outreach efforts that we've done here. And I'd like to go to graduate school. JMU has set me on the right path toward what I want to do. It's taught me how to learn, and I've been exposed to a bunch of ideas I didn't know about and experienced a lot of things, not just going to conferences or classes, but also working with a group. It's made me see the cradle to grave, or cradle-to-cradle way of thinking, and that's very much how I think about things now. M

About the Interviewer Chris Bolgiano, faculty member emerita, worked for 31 years at Carrier Library while homesteading in the Appalachian Mountains and learning to write about it. As a freelance writer she has written travel and nature articles for the *New York Times, Washington Post, Sierra Magazine, Wilderness, Audubon, American Forests,* and many other publications. Three of her five books have won awards, and she describes a sixth book as "a community service project that documents a short history of a small place, namely my own rural neighborhood." Her occasional op-eds are syndicated by the Bay Journal News Service, and she appeared as a talking head in all four episodes of the recent PBS documentary special, *Appalachia, A History of Mountains and People.* Learn more about Bolgiano at www.chrisbolgiano.com.

About the Experts Christie-Joy "C.J." Brodrick Hartman is executive director of JMU's Institute for Stewardship of the Natural World. Since coming to JMU in 2002, the integrated science and technology professor has helped write grants which landed some $2 million for transportation and air pollution research. Read more about her in the Bright Lights section on Page 20.

Emily Thomas ('09) is the student representative to the ISNW Campus Accessibility Committee. The integrated science and technology major has helped further campus environmental efforts. She coordinated JMU's first No Drive Day during her freshman year, and the event has become an annual effort. An Earth Club member, Thomas also attended Yale University's climate conference. Read more on Page 30.