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Educated and tech-savvy, could alternative energy and sustainab

By Anna Claire Vollers

The timing is finally right for alternative energy and sustainability. U.S. government funding for clean, renewable energy research and development is flowing like never before, green jobs nationally are growing at double the rate of all jobs, and the current playing field is wide open for anyone - and any city - to jump in and take a leadership role.

Why not Huntsville?

After all, the city has been here before. On March 12, 1976, renowned rocket scientist Dr. Wernher von Braun stood before a group of politicians and academics in a room at the U.S. Senate building in Washington, D.C., to give a speech on the future of solar power.

America had just been through an oil crisis, and interest in renewable energy was high. His space achievements by then highly lauded, von Braun's health was failing - he died the following year from cancer - but he felt strongly enough about solar energy and the role Huntsville could play in its development that he gave a five-page speech that included a plea for a proposed Solar Energy Research Institute in Huntsville.

Von Braun concluded his speech by saying, "All I can say is, Huntsville helped give you the moon and I do not see why Huntsville cannot also give you the sun."

"We were way ahead of the curve 30 years ago in Huntsville," says David Christensen, who was sitting in the room when von Braun spoke. He'd joined the von Braun team in 1956, kicking off more than a half-century of work in the aerospace and energy fields.

Christensen began working for the University of Alabama in Huntsville in the early 1970s, first with a pilot environmental program and later in energy research.

"It started really building up when the Department of Energy and NASA got heavily involved," he says. By 1980, through a DOE contract between UAH, NASA and IBM, "we were managing solar buildings all over the country, and monitoring them. Huntsville was a nerve center for every solar building in America."

The program lost steam in the early 1980s after the oil crisis eased and a new administration came into office. The institute never made it to Huntsville. Today, Christensen is working with UAH to catalogue his extensive files on Huntsville's solar research and development.

Ever since the Saturn V rocket blasted Apollo astronauts to the moon and put Huntsville on the map, the Rocket City has had a strong national presence in aerospace and defense. But little has been publicly known about the role von Braun saw for the city in the 1970s or about its seminal involvement in solar technology.

DIVERSE AND EDUCATED

In addition to aerospace and defense, today Huntsville benefits from the rise of information technology a couple of decades ago and the recent blossoming of a biotechnology sector. The city also has a key strength in the concurrent rise of a highly educated, technology-oriented workforce needed for those industries.

"As a community, we have the most engineers and the most degreed professionals per capita than anywhere else in the United States. That makes us a thinking community," says Mayor

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Tommy Battle. "As a thinking community, we've got to be one that sustains all of our resources, that uses our resources as wisely as possible, and is also a leader in that."

That's why Battle says it wasn't long after he took office that he asked Huntsville's community and business leaders a question at the heart of the city's future: "Can our engineering expertise in space, science, propulsion, missile defense and everything else – can that transfer over to energy? The answer is yes. Very easily."

Today's innovations in energy creation, conservation, transmission and storage demand a nimble, adaptable high-tech workforce. Adaptability could be one of Huntsville's most marketable qualities.

"We adapt to the different end users," says Hal Brewer, president of engineering firm Intuitive Research and Technology Inc. "This town is not just a propulsion technology town, like you would think. We're not just a ballistic missile defense town, like we could have been. Whatever comes in, we assimilate that technology, and we adapt to it very quickly."

He points to Huntsville's IT revolution a couple of decades back, led by homegrown telecom giants Intergraph and Adtran, and the recent biotech boom fueled by the HudsonAlpha Institute for Biotechnology.

"(Those technology sectors) have been absorbed, and all of a sudden, we're rolling with it," Brewer says. "This town is in a good place right now, because of all the money that is spent on technology and all the high-tech companies we have here. Whether it's putting a man on the moon, whether it's building ballistic missile defense, or whether it's helicopters and aviation, this town adapts."

Now, with the Obama administration's increased emphasis on funding for research into clean, sustainable and renewable energy technologies, new opportunities for Huntsville could be on the horizon.

"Everybody sees the same thing, no secret here," says Cole Walker, broker with United Properties and a member of Mayor Battle's Green 13 Council on Green Sustainability. "It truly is going to be the biggest economic opportunity of modern history. Healthcare and defense are the two largest businesses now, and energy is bigger than both of them."

With Huntsville's talent and technical know-how, Walker thinks there's no reason why the city shouldn't leverage its resources so its companies and educational institutions can get a share of federal sustainability research money.

"Ultimately, the DOE could be the new NASA," says Walker, but he thinks the city will have to be ready to make its best case in the scramble for funding.

"Defense didn't just land here; it had to be fought for," he says. "It's been a battle for years and years to always win and bring (industry and government agencies) here, and Huntsville won it through fair competition to prove that we are better. That's only going to continue, but you can't just expect it, because Denver and Austin and Silicon Valley, they see the opportunities, too."

An advantage for Huntsville is that as a town it can understand the national security aspects of clean energy research and development.

"Right now (the United States) is strategically vulnerable," says Rex Geveden, president of local engineering firm Teledyne Brown. "The people who have oil on planet Earth are generally

Lt. Col. (Ret.) James Boschma, president of Boschma Research Inc., left, and Scott Hurst, chief engineer, demonstrate the company's curtate-motion cyclo-turbine, which can be placed in shallow rivers and streams to generate electricity without polluting or harming the environment.

actually built a turbine and tried it out, and it worked quite well; we were surprised."

With renewed national interest in green power sources, Boschma formed Boschma Research Inc. last year to focus on development of the cyclo-turbine.

At Intuitive Research and Technology Inc., company officials are taking a new look at a large contract that helped get the company established. It was a project with the Department of Defense to reduce energy consumption on military installations west of the Mississippi River, and was completed just two days before Sept. 11, 2001.

"We thought that was going to be a good business base for us," says Brewer, the company's president, "but then 9/11 came around and everything went to homeland security. So it's kind of been on our back burner, but about a year ago we dusted that off and started to market it again."

In the realm of startup companies, Donna Lamb, interim executive director at Huntsville technology incubator BizTech, gives the example of a client who's been in the nuclear industry for 30 years but has an idea for a solar project he says is different from other technology out there. He just didn't have the resources to develop it before.

"Now," Lamb says, "he's getting some interest from both residential and new construction, low-income housing - where they've got some grant money opportunities - and commercial. He's formed his company and he's going after a provisional patent right now."

BizTech is seeing an increase in green startups, and is cultivating these clean tech companies through initiatives like the renewable/sustainable energy boot camp to be held this fall for entrepreneurs.

UAH's recent partnership with Oak Ridge National Laboratory and other major research labs is another boon for area energy research capabilities. The consortium formed by that partnership will tackle advanced research projects for the DOE, including alternative fuels development. Huntsville's deep ties to the DoD, NASA and the military are also sources of contracts and grant money for development of renewable and sustainable clean energy technologies.

TECHNOLOGY TRANSFER

As a tech-savvy city, Huntsville benefits from the green revolution through its openness to technology transfer. Veterans of high-tech companies are spinning off new technologies more than ever, while established firms look hard at commercial applications for technology originally developed for agencies like NASA and the DoD.

"It's a multibillion-dollar market," says Carina's Newkirk, "so companies that are in business to make money are

looking for ways to diversify. I think there's a real opportunity for us to take advantage of the marketplace in North Alabama and the extraordinary workforce here."

Larger, more established firms have defense- and aerospace-developed technologies with direct applications for commercial energy use. For example, CFD Research Corp. (CFDRC) is developing a biofuel cell for the Army that converts glucose into electrical energy. It's an environmentally clean, long-lasting biobattery that could one day power pacemakers through the glucose in human blood.

New ideas and technology transfers can proceed more rapidly to market because of companies already in Huntsville who make it their business to turn ideas into hard products. Says Geveden of his company,Teledyne Brown Engineering, "We're in a position to, as we always say, take the sketch on your cocktail napkin and convert that into hardware. If someone wants to make a wind turbine or some other kind of alternative energy system, we can actually analyze, design and manufacture it."

MOVING FOWARD

There's enough interest among Huntsville's entrepreneurs and established firms in renewable energy and sustainability that Ruchi Singhal, director of a company called Renewable Energy Outreach (REO), has been working with local companies to apply for the federal energy dollars coming down the pipeline. She sees Huntsville's experience with government contracting as a big plus for the region.

"People in industries here in Huntsville know how to work with federal government," she says. "They know how to handle those contracts and do research on that basis. Those (industry) partners are unique in that they already understand the system."

On the government level, Mayor Battle's Green 13 task force has already

DAVE DIETER

David Christensen, a former NASA contractor worked with Dr. Wernher von Braun on space and solar projects, as well as working on the Redstone, Jupiter and Saturn programs and is currently designing a new rocket he hopes NASA will consider. He holds a model of a design he calls Twin Pack, which would carry four space station modules in one launch. The design approved is in the foreground. In the middle is a model of his 1986 design of Shuttle C.

held several meetings and has moved ahead on prioritizing and planning its next steps.

"We've got all the tools to make the sustainable industries that are already here (into) a bigger platform of our industrial base," Battle says. "The important thing now is just keeping a focus on it. That's one of the reasons we started the Green 13, to look at what we can do to become more sustainable as a community ... but also what we can do to work in the sustainable industry fields. That goal is one that could provide a whole future for a lot of Huntsvillians."

Green 13 members like Walker and Singhal are working toward creating a business community coalition to consolidate information and provide resources to companies, small businesses and entrepreneurs looking to work in renewable and sustainable energy fields. Currently in planning, the coalition would also help foster partnerships among Huntsville-area businesses and educational institutions interested in research opportunities. Such connectivity is important to progress, Singhal says.

"People are working in pockets, but we've really got to pull them all in," she says. "I think within a year we'll have it all figured out. The movement is there already, and we actually have to move quicker rather than slower, for funding reasons and for momentum.

"Timing is everything. In four years, I don't know what's going to happen, so we need to establish ourselves as people who can handle this energy issue. Then in four years, if a new administration comes on, we're set."

INVESTING IN THE FUTURE

Community leaders in government and business think the torch for Huntsville's future in renewable energy and sustainability should be lit in two crucial areas: education and passion.

Mayor Battle says an overall green mission needs to be adopted by indus-

try, city departments and the average citizen for the city to become a model for clean energy technology development.

"What has to happen is, you've really got to see our culture in this town become green-minded like Austin is green-minded or like San Francisco is green-minded," adds the Green 13's Walker. "Generally the public is supportive, and most people are thinking it makes sense to be conservation-minded. The way you make it happen faster is by having an educational mobilization."

He and others want to see more educational and research opportunities in the area's universities and colleges.

"If you're going to ultimately grow a bunch of jobs," Walker says, "you've got to have the educational infrastructure to do it. When von Braun came here, he requested money to grow UAH's educational structure to train all these people in aerospace and propulsion (which) allowed him to grow NASA and put a man on the moon."

He wants to see something similar happen with the area's institutions of higher education — UAH, Alabama A&M University, Oakwood University, Calhoun Community College, J.F. Drake State Technical College and others — so that Huntsville becomes known for turning out the nation's top talent in clean tech.

From the business perspective, the movement also needs champions. Teledyne Brown's Geveden says HudsonAlpha is a good example of what can happen when a few dedicated people focus their efforts toward growing an entire high-tech sector.

"I think it's pretty clear that the reason we have an emerging and important biotech capability here is because there are three or four people who were passionate enough to make it happen: Lonnie McMillian and Jim Hudson and others," Geveden says. "I think it's going to take three or four really passionate business and government and academic leaders to put something together and (grow Huntsville's clean tech sector), put some investment behind it. Maybe get some help from the state or federal government to seed it."

The green tech business coalition that is in the works should get off the ground by next year. Singhal says she hopes it will help companies looking to develop clean energy technologies link up with other local companies working on compatible projects.

One of the coalition's biggest benefits, though, could be in helping identify funding sources.

"In the end it always boils down to business case," Geveden says. "Alternative fuels, alternative energies have to get to the point where the business case closes." ■