Q&A: Doug Newman; Energy Research Leader

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Newman is with the Gas Technology Institute in Illinois, the key player in the selection of Chula Vista to house the National Energy Center for Sustainable Communities. He is executive director of the institute's research arm in that field. Newman has served in a number of senior career posts in the federal government and as a business consultant and entrepreneur. He was interviewed April 12 while in Chula Vista for a series of briefings on the center.

Tell us about the National Energy Center for Sustainable Communities.

The selection of Chula Vista for the siting of the National Energy Center for Sustainable Communities actually began indirectly about three years ago, when the San Diego region was selected to represent the United States in an international competition for sustainable urban systems design. Through that process, the Gas Technology Institute became familiar with the city of Chula Vista. At about the same time we generated a contract with the U.S. Department of Energy to help it provide assistance to the international community in sustainable energy development and use.

There are institutional, physical and geographic assets that in our calculation made Chula Vista unbeatable. Institutionally, you've got a community firmly committed to developing itself in a sustainable fashion that's expressed in public policies, in municipal processes and systems that have been put in place, that express that very firm commitment. You have obviously a community of citizens that are supporting the elected officials and pursuing these policies and processes. You have private developers here developing a physical asset in sustainable community building. Otay Ranch, McMillin and Otay Land Companies are prime examples. You are bringing in universities willing to collaborate with one another. And then finally a geographic asset, not only being in California as a leader in the field of cleaner energy development, but the proximity to an international border.

Tell us about the Gas Technology Institute.

The Gas Technology Institute is the nation's premier natural gas technology research development firm. It goes back 60 years. Now, we also work in hydrogen, coal gasification, fuel cell technology and the generation of energy locally within communities.

Sustainable communities are about more than energy, right? You're also trying to make sure a community doesn't outgrow its water supply or its traffic network, for example?

Right. If you think about it, every municipal system and every economic enterprise activity within a city is made possible by the use of energy. By focusing on energy and its efficient use and energy conservation, you will necessarily make more efficient use of all of the other resources.

How is energy use tied in to saving water?

Energy is necessary to pump water into the locale in the first place. Enormous amounts of energy are used to treat water through municipal wastewater facilities. By using less water, you will necessarily use less energy. And when you use less energy, you are reducing the impacts of energy production distribution on the environment.

Are the people involved in this discipline highly trained engineers, chemists, physicists?

All of those but as well with our focus on community development, it also involves those involved in planning, economic development, real estate, finance, marketing. Our research is really applied research. We are looking to optimize the use of existing proven technologies that can be used today to make a difference. We're also going to be looking at energy policy research that will enable us to identify institutional, legislative, regulatory barriers and market barriers to the deployment of these technologies in community development.

The center doesn't have a physical building yet but it is already running with some ongoing research programs. Are the people spread out in different locations?

They are. SDSU's Center for Energy Studies, under Dr. Alan Sweedler, is the administrative home for the National Energy Center at this time. The center will remain at San Diego State University until the permanent facility is built in Chula Vista. GTI will provide staff assistance to SDSU. The research projects themselves will involve the collaboration between researchers at UCSD as well as other UC campuses and universities across the United States and potentially around the world through the Global Energy Network that this national energy center will serve as the secretariat to. This center has the responsibility under our partnership with the U.S. Department of Energy to develop similar national centers around the world.

So initially there won't be any great influx of personnel?

Not initially. But as the facility is actually built, there will be a complement of 15 to possibly 25 full-time employees.

Biotech started locating on Torrey Pines Mesa near UCSD and today you see giant pharmaceutical companies with facilities in San Diego to be close to the research. Is something similar likely to happen with sustainable community development?

We're counting on that. Our agenda is to conduct the research and to find ways to make the research and the enhanced technologies available to the marketplace through public/private partnerships. So that is one reason the Otay Ranch and the extremely forward thinking planning around it was so appealing to us. Also, we see here an unbeatable opportunity for real estate development to be done the right way. This is really extraordinary because you've got three developers that are at the absolute top of the game in sustainable development. Otay Ranch Company, developing Village Two. The Corky McMillin Company, developing the Eastern Urban Center. And Otay Land Company, developing Village Nine. We have about a million dollars worth of research focused on those three communities now.

What makes their designs so extraordinary?

They're all smart-growth oriented, first to respect the natural environment, to take advantage of natural lighting and air flows, and they are oriented toward transit systems. They are creating walking communities, communities where within a quarter-mile you can walk to a transit system. And on a scale from one to 10, I would say these builders are very close to the 10 mark right now.

The research center has land, seed money and willing developers. But how do you meet your goal of raising $10 million?

Many industries have a natural affinity to want to support the development of such a center and the creation of a community-scale technology park around it, which in itself will be the city of Chula Vista. The independent philanthropic community. Then finally governmental organizations.

So a visitor to Chula Vista, whether it's a researcher or city planner, will be able to go out to Otay Ranch and see a home that shows best practices, even if it is doubling as a sales office?

Exactly. It should be a sales office promoting the market viability of these models. So that other developers, other public officials, planning officials, private development community folk from around the nation and ultimately around the world will be able to come here and see how a community can be built in a sustainable fashion and make good economic sense in a vital local economy at the same time.

How much regulatory change or incentives will be needed?

There's no question there will need to be incentives, the removal of certain disincentives that are inherent in current legislative and regulatory processes. This center will focus directly on institutional barriers.

What kinds of things will we see in the commercial buildings that we wouldn't see in residential?

Clearly in a commercial structure you have the opportunity for what's known as distributed generation, that is generation on site as opposed to energy that is brought in through the grid. That's both electric power and thermal energy. The approach can combine the cooling, heating and power systems.

Is there any reason why a major commercial building can't be energy self-sufficient over a period of time?

Right. That's the concept of a zero energy building. A zero energy building is the ultimate goal that the U.S. Department of Energy, the California Energy Commission, and other state energy research and development authorities across the United States are attempting to achieve and are experimenting with now. The zero energy building is essentially a building that in the span of one year will produce as much energy as it uses. During certain parts of the year, they will use more energy than they produce, and in those instances they will draw from the grid. During other parts of the year, they will produce far more energy than they use, and that will go back to the grid. The facility for the National Energy Center will be built as a zero energy building.

If someone buys a home 10 years from now from say McMillin or Otay Ranch, what will they see in that house that they might not see today?

First, they'll see that the envelope or shell of the building is completely oriented to take advantage of natural airflows and lighting. Second, they're going to see a lot lower energy bills because they're going to get certain amounts of energy from renewable resources. In this region, three renewable resources (solar, geothermal, wind) are in great abundance. Over the next 10 to 25 years, the systems for the delivery of that energy will make it far more affordable and reliable in this region. There will also be bioenergy products available as well. They'll find the end use appliances in their homes far more efficient. Also, they will as well have in their homes products that perhaps they lease rather than own that are recycled by the original product manufacturer. We have a 12-minute video on future homes. These residents will find they are living in places with much more vital connections with their neighbors, with their local commercial centers, just by virtue of where things have been situated in the urban landscape.

Similar to Heritage Town Center where you have mixed use, senior units, close proximity to Rees Stealy Medical Center, a community center across the street, public transit?

That's right. Transit-oriented development. Mixed uses. Liberal placement of parks. Walkable communities. A range of housing options, that's an important concept. Not everyone wants to live in one style of housing.

Is this research independent of what forms of energy become more commonly used in the future?

Yes in that these communities are being designed around principles that will make more efficient use of any energy resource. They're also being designed to reduce the necessity of having a vehicle to move through your daily life.

Will these practices be applicable in older areas such as Pacific Beach or Hillcrest that are undergoing transformations?

Yes, in fact many of the design features that are being examined in the research that we're doing for new community developments will be transferable to the redevelopment and enhancement of existing communities. Much of the research we are conducting on the eastern side of Chula Vista we expect will be fully relevant to the enhanced development of the existing western sections of the city.

Chula Vista has been trying to attract a four-year university, and city officials and others believe this research center will be the springboard to making that happen, with a number of educational institutions locating on the Chula Vista campus site. Do you share that view?

Absolutely. In fact, we're counting on it. The university park and research center complex was one of the most attractive aspects of locating this center in Chula Vista. We will be relying on university-based researchers collaborating together. The prospect of some Mexican universities establishing satellite programs in a shared campus is extremely exciting to us. The National Energy Center will be a catalyst for collaboration between local universities, universities across the rest of the state and across the nation.

How soon do you expect the center's permanent home to be ready?

We anticipate beginning at least preliminary design concepts by this time next year.

How will the center be administered?

The National Energy Center will be established as an independent nonprofit research organization here in Chula Vista.

SDSU is providing the administrative home for it now, but when the facility is complete the center will relocate as an independent organization.

To summarize, there will be a network of centers around the globe but this is the only national center in the United States?

That's right. We fully intend that this center will be not only a place of research but of symposia that are produced here, and training, and Web broadcasts. The center will attract people from around the world. The city will function not as a living laboratory as some have suggested, but it will function as a community scale model of sustainability.

Your distinction is that a laboratory is experimental and a controlled environment but this will be an existing, functioning community?

Precisely. When we talked about living laboratories, we think about tall guys in long, white lab coats and things bubbling away in beakers. Unproven things. What we're talking about doing here is showing how existing technologies, proven technologies can be put to creative use to make a better bottom line as well as a better building and a more livable community. These are very practical initiatives. This will be a showcase. This will be a place to come and see, to check, to touch, to feel, to operate systems that will work where you live, too. For visitors to understand concepts that can be taken back home.

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