

UK Based Innovations Have Application in the Merrimack Valley

The British Are Coming! The British Are Coming!

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Last month, one of our Innovation Valley team members, Seth Itzkan, took a jaunt “across the pond” to get a closer look at some of the world’s most futuristic examples of energy-smart housing, farming, and industrial management – all of which may soon be coming to a block, field, or business park near you. As you know, the Merrimack Valley is a formative mill region, surrounded by farms, and in need of adequate housing for young, skilled workers. Any development strategy that can support both rural and high-tech industries while helping to entice the next generation of breadwinners will go a long way to broadening our economic outlook.

Fortunately, help is on the way. One if by land. Two if by sea. Three if by hybrid.

For starters, take a sip of some Earl Grey tea and clear your throat for these terms: “ZED,” “ZEF,” and “NISP.” No, they aren’t characters from the next Bug’s Life film. They’re acronyms for the innovations that are going to impact our region, and you’re likely to hear more of them.

ZED stands for Zero Energy Development, or, to be more precise, Zero (fossil) Energy Development. This refers to housing/condominium complexes that are “carbon neutral,” that is, they are entirely energy self-sufficient. They can accommodate all their energy needs, including electricity, heat, and hot water, through fully sustainable means. Yes, they exist, and no, they aren’t straw huts in Tahiti. They are marvels of modern design and the premier example is a 100-unit complex south of London known as BedZED, for Beddington Zero Energy Development.

Seth went to investigate this innovation and talk to its architect, Bill Dunster. The findings were impressive. At the heart of its design are state-of-the-art technologies for solar power, heat exchange, rain water retention, and combined heat and electricity generation (CHP). Some of these are designed and patented by Bill Dunster himself. A few of these interesting morsels include super-insulated construction, south-facing living rooms, grass roofs, integrated solar voltaics, and of course, parking lot power outlets for electric vehicles.

The full spectrum of innovations is available from the BedZED website and from the Bill Dunster Architects websites. The key points are that they are practical to cold weather climates, they’re modern, they work, the residents are happy, and, from a business standpoint, they’re viable.

Complimenting the ZED concept is that of a ZEF. Can you guess what that means? No, it’s not Zack Eyes Felicity, it stands for Zero Energy Farming, or again, to be more precise, Zero (fossil) Energy Farming. Like a ZED, ZEFs are fully functioning, modern farms that are “carbon neutral.”

All farming functions, including the use of vehicles and fertilizers, are achieved through sustainable means. There is no net CO2 production. Traditional farming practices are highly fossil fuel intensive. The escalating cost of fuel and fertilizer is one of the principal challenges to the small farm. As everyone agrees that the quality of local produce is superior to factory farmed alternatives, if energy costs could be ameliorated the local farms could remain competitive. This would help preserve both our quality of life and our economic diversity.

Where is there a modern zero energy farm that has practical lessons for New England? Well, nowhere just yet. But the emerging contender is in a town south of London, right near our friends at BedZED. Zero Energy Farming is part of its strategic vision and the feasibility studies and groundwork are already in progress. The farm is called Commonwork. It is a 500 acre, 260 cow, organic dairy farm. In its 25 years of operation, the farm has produced over 45 million liters of milk.

Commonwork is already a leader in energy efficiency, but its goals are higher. Within ten years it intends to implement a smorgasbord of energy innovations that will make the farm not only carbon neutral, but a net energy provider. These technologies



BedZED - Beddington Zero Energy Development. Used with permission, Bill Dunster Architects.

include wind turbines, solar panels, and most importantly for their purposes, biodigesters and carbon-neutral biodiesel. By their calculations, a herd of 300 cows can produce enough biodigestered methane to generate over 150,000 kWh of electricity, or 150 megawatts per year. (Just think how many Nintendo boxes that will run?) The same methane can also be the source for

hydrogen fuel cells that would produce green electricity and water.

Now you’re wondering, are ZEDs and ZEFs complimentary?

You bet they are. When you link the Zero Energy Development with the Zero Energy Farm, you begin to get what Bill Dunster refers to as the ZED Quarter, a region of a city that is truly sustainable. The tie that binds the two together is transportation, and that’s where the electronic vehicles in BedZED come in. The entire system thus becomes carbon neutral.

When asked about his vision of a sustainable city, Bill Dunster told Seth the key is to first create a ZED Quarter. Demonstrate a single area that combines farming, residency, and transportation in a

carbon neutral mix, and you’ve created the magic trifecta for sustainability. That’s what the BedZED and Commonwork Farm communities are attempting south of London, and of course, we had to imagine how that would play out here in the Merrimack Valley. Could such a scheme be created between, let’s say, Silsby Farm and a new state-of-the-art renovation at Bradford College?

Finally, we turn to “NISP.” What on Earth could that mean? The answer is National Industrial Symbiosis Program. The key part of that phrase is, of course, its gooey core, Industrial Symbiosis. This means getting industries to work in consort so that all their resource and energy streams are complimentary – improving efficiencies, saving dollars, and enhancing regional competitiveness. In essence, the industrial performance of a region begins to act as a single entity, and its potential far exceeds the sum of its parts.

On the day after visiting BedZED, Seth went to downtown London to have a chat with the people running the London region of the UK’s national Industrial Symbiosis effort. Over a nice cup of hot tea, Seth learned that the key to the program is two-fold. First, outreach. A comprehensive communications campaign educates London business owners about the opportunities. Second, computer matching. Like a dating service, a computer program with hundreds of resource flows helps to identify complimentary pairings. The NISP effort is only a few years old, but is already taking off around the country.

So, what’s the tally? Cutting edge housing developments, zero energy farming, and collaborating industries. Can these innovations work in the Merrimack Valley? If so, hang lanterns from the steeple. The British are coming!

Any development strategies that can support both rural and high-tech industries while helping to entice the next generation of bread-winners will go a long way to broadening our economic outlook.

The Innovation Valley initiative seeks to help stimulate economic growth and quality-of-life enhancements in the Merrimack Valley. Every month we will report on innovative businesses, practices, and ideas that are helping to make Merrimack Valley the place to be. Look for our article in print media and online at www.ivalley.org.



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