Energy Upgrades Help Homeowners and the Environment

by Jon Harrod, President, Snug Planet

Fundamental changes in our nation's energy system are impacting Tompkins County. In the last few months, a final decision to shut down the coal-fired power plant in Lansing and a heated controversy over a proposed wind farm in Enfield have captured local headlines. Meanwhile, drops in the cost of photovoltaic panels and ambitious community initiatives have led to a proliferation of rooftop solar systems. Electric vehicles, while still rare, are being seen with increasing frequency, and the network of charging stations is growing. The shift away from fossil fuels toward renewable generation and electric vehicles are critical to Tompkins County's goal of an 80% reduction in carbon dioxide (CO2) emissions by 2050.

Top: Snug Planet crew repairing and insulating ductwork in the garage.

Bottom: A new furnace provides safe, efficient heat.

Less visible, but also essential to this transition, is the work of making existing buildings more efficient. Energy use in residential and commercial buildings accounts for about 40% of our county's emissions. In most of our building stock, which dates from the early 1800s to present, there are large opportunities to cut energy use and costs. Done correctly, efficiency improvements also bring other benefits, including better comfort, cleaner indoor air, and increased resale value. A project Snug Planet recently completed illustrates the way that efficiency work delivers multiple benefits. The customers, a family of six, purchased a raised ranch-style home on the outskirts of Ithaca about two years ago. In their first winter, they found that the house was uncomfortably cold, especially in the bedrooms over the garage and near the overhang at the front of the house.

Snug Planet's Sarah Cox, a Building Performance Institute-certified analyst, conducted a thorough assessment of the building, including an infrared scan of insulation, an air leakage test, and checks on the heating and hot water systems. She quickly identified the causes of the comfort problems: skimpy insulation in the attic and over the garage, large air leaks through the overhangs and the attic, and a disconnected duct to one of the cold bedrooms. Sarah also noted other improvement opportunities: a 25 year-old furnace, a water heater that spilled exhaust into the laundry room, and a recirculating kitchen fan that did nothing to remove cooking odors or moisture. She put together a comprehensive plan to upgrade the insulation, seal the air leaks, fix the ducts, replace the furnace and water heater with safe, modern equipment, and upgrade the kitchen fan. Taken together, these improvements are projected to reduce energy bills by about 30%.

The next step was bringing the cost of the project within reach. Working through the New York Home Performance with Energy Star and EmPower NY programs, Snug Planet identified income-based incentives and grants that covered more than half the cost. They also applied for support from the Finger Lakes Climate Fund, which went toward the required water heater upgrades. The Climate Fund, which allows donors to offset their carbon emissions, provides grants to local income-eligible households for efficiency projects. The size of the grant is based on the projected lifetime emission savings of the project, in this case 61 tons of CO2. The customer's portion of the cost was financed by a 15 year, low-interest loan. The anticipated energy savings—about $550/year—nearly cancel out the loan payments.

(continued on page 7)

Commercial solar Q&A with Melissa Kemp

continued from page 3

Q: Let's talk about system components. In addition to the panels themselves, what are some of the other parts a typical commercial customer will need to have installed? And what sorts of space requirements do these have?

A: The space required for on-site solar system components apart from the panels is minimal. Typically there are inverters to convert the solar DC electricity to grid-compatible AC electricity, the equipment for remote cloud-based monitoring of the facility, and the electrical switchgear equipment for connecting back to the utility. Most of this can typically be located on the roof, outside, or in an inside mechanical space.

Q: What sort of O&M (operations and maintenance) is required for these commercial installations?

A: All commercial-scale installations typically involve O&M service. Depending on the type of financing, some projects have O&M included and others have it as an additional service a customer selects. O&M typically includes regular production monitoring and analysis, immediate response to any facility issues, regular annual preventative maintenance and quality assurance review, and then repair or replacement of components if ever needed.

Energy Upgrades Help Homeowners and the Environment

continued from page 4

Once the financing was in place, the Snug Planet team, led by crew chief Jake Benjeyfield, completed the project in about a week. The customers reported immediate and dramatic improvements in comfort. The bedrooms over the garage are now comfortable, the furnace and water heater are venting safely, and a new kitchen fan is pulling cooking smells out of the house. Repeating the air leakage test when the work was complete, Sarah documented a 50% reduction in air leakage. Snug will be following up with homeowners after a full winter has passed to see if their energy savings line up with our projections.

This project, one of dozens that Snug Planet will complete this year, illustrates the multiple benefits that efficiency improvements offer. Through a carefully chosen package of upgrades, occupants get improved comfort and better air quality. Equity and resale value increase, and reduced energy bills help to pay for the improvements. The work also protects the environment by reducing CO2 emissions and other impacts of fossil fuel extraction. Energy dollars stay local, creating living-wage jobs.

The residential programs that made this project possible have been in place for more than a decade. Within the last few months, an innovative commercial efficiency program called PACE (Property Assessed Clean Energy) has launched in Tompkins County. PACE, which finances cost-effective improvements through a surcharge on property taxes, provides a way for businesses and non-profits to undertake ambitious upgrades without impacting their cash reserves or ability to borrow.

The energy landscape in Tompkins County is changing in ways big and small. As the transition toward a greener, more renewable system accelerates, energy efficiency—and the multiple benefits it offers—has an important role to play.