SAVE MONEY.
CREATE JOBS.
REDUCE POLLUTION.

A report from the Grand Traverse Region by the

MICHIGAN LAND USE INSTITUTE

# THE POWER OF ENERGY EFFICIENCY

In support of Framework For Our Future

Some people do it to save money; others to be more comfortable. But whatever their reason, when homeowners or businesspeople invest in energy efficiency, they also strengthen their community.

MICHIGAN LAND USE INSTITUTE

The Michigan Land Use Institute is a nonprofit advocacy organization that protects the environment, strengthens the economy, and builds community.

We collaborate with citizens, government, businesses, and organizations to innovate models for resilience and prosperity.
mlui.org

**OCTOBER 2013**

# MORE EFFICIENCY MEANS MORE PROSPERITY

Energy efficiency puts our contractors to work; boosts local retail sales; keeps more of residents' hard-earned dollars in town; increases property values; makes the community more attractive; and by lowering overall energy demand, slows the rise of everyone's energy costs.

Two years ago, Traverse City started down that path. Its publicly owned utility, Traverse City Light & Power, teamed up with the Michigan Land Use Institute, SEEDS, the Department of Energy, Michigan Saves, and local contractors to launch TCSaves—a one-stop, wildly successful program that convinced a remarkable one in every five homeowners in the city to invest in their home's comfort and efficiency.

Track one of them down and they'll tell you how much cozier they are and how much money they're saving on utilities.

That success has many local leaders looking for ways to renew TCSaves' effective public-private partnership and extend it to every building in the city. In fact, even more local leaders are looking to the Northwest Michigan Council of Governments' Framework for Our Future project, which is seeking to regionalize the benefits of energy effiency.

Home and business efficiency are, in fact, big deals: Our buildings consume 40 percent of our nation's energy, and most of them are terribly inefficient—consuming two to three times more energy than similar buildings in comparable European climates. So there's plenty to be done here, and every advantage to doing it.

Energy efficiency is a terrific bargain. It's far cheaper than building a new power plant to provide the same amount of energy "generated" by efficiency. Projects pay for themselves even while creating jobs and strengthening the local economy.

*The Power of Energy Efficiency* introduces some of the people already making Traverse City—and some other places—"efficiency ready": homeowners, business people, contractors, officials, and experts with first-hand knowledge of just how well energy efficiency works.

**We hope their stories and this report inspire you to get involved, too, because attaining our vision will take lots of creativity, teamwork, and leadership. Michigan should be a leader in energy efficiency; our hope is to find a way to make it work for everyone—both Up North and around the state.**

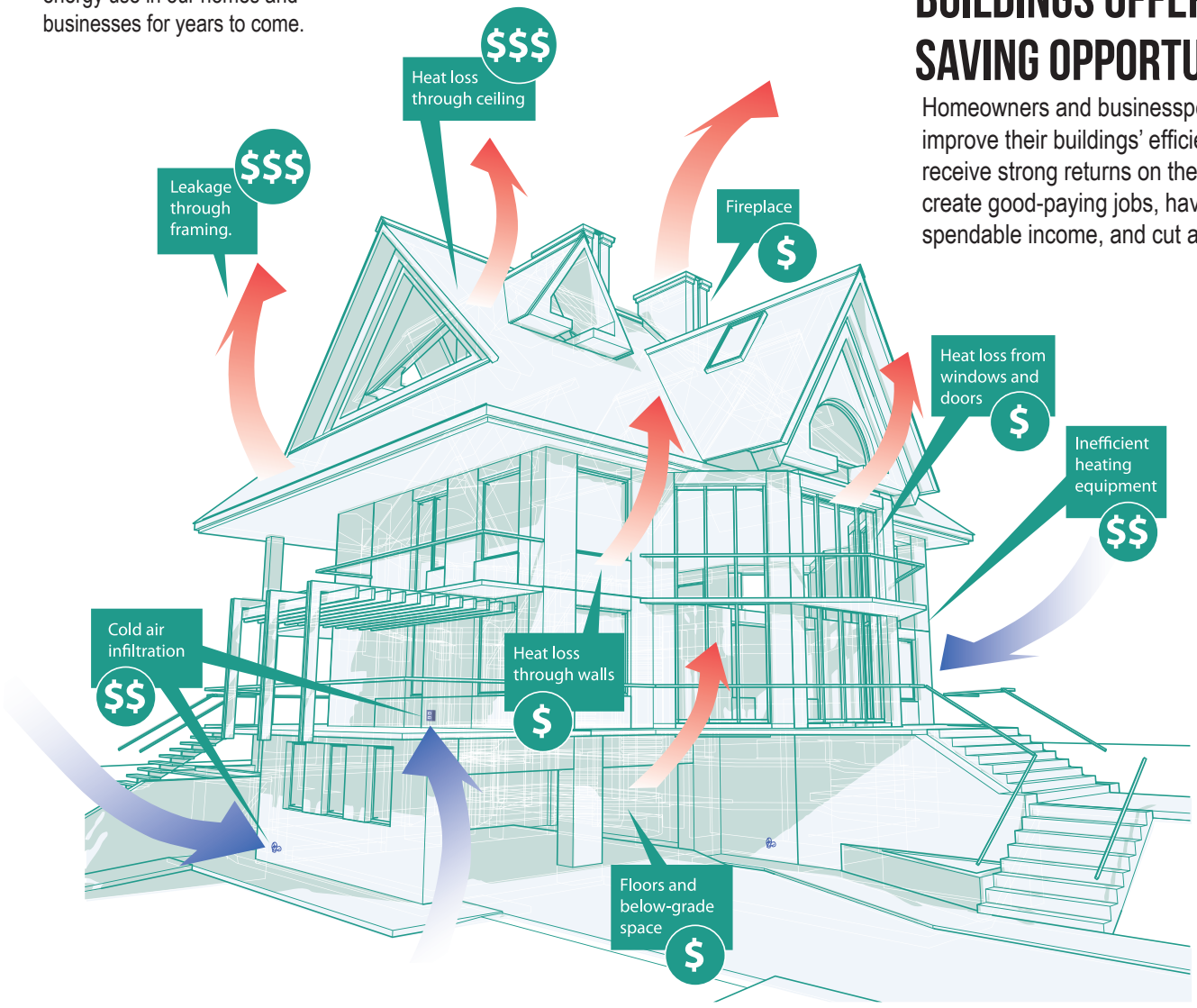
Light-emitting diode (LED) technology has evolved considerably in the past few years. Costs have dropped and the light quality has improved. LEDs last much longer than incandescent and CFL bulbs, but use only a fraction of the energy. It may be the leapfrog innovation that significantly reduces energy use in our homes and businesses for years to come.



This report, with expanded information and articles, is available online at **mlui.org/efficiency.**

## BUILDINGS OFFER MONEY-SAVING OPPORTUNITIES

Homeowners and businesspeople who improve their buildings' efficiency gain comfort, receive strong returns on their investments, create good-paying jobs, have more spendable income, and cut air pollution.




TCSaves, which helps homeowners cut energy costs and feel more comfortable, draws strong support from local leaders and residents.

# TC SAVES MEANS COZIER HOMES AND LOWER HEATING BILLS

"The efficiency upgrades raised our home's value by at least what we spent. Other nearby properties went down; ours went up."
– Paul Phillips

When Paul and Jennise Phillips purchased their home in a quiet Traverse City neighborhood in 2008, they knew they were buying some problems, too. The place was drafty, and its ancient furnace "sounded like a jet engine," overheating the first floor and leaving the upstairs an icebox.

But last winter, the Phillips family felt much cozier—and a bit more prosperous: Their heating bills fell dramatically.

Many Traverse City families have similar stories, thanks to an innovative, successful program called TCSaves.

The two-year program was—and is—good news for Traverse City: It kept local contractors and building-supply wholesalers busy. Now it's saving energy dollars for homeowners and keeping some of those dollars in town, rather than sending them to distant coalfields. The lowered energy demand is also lowering utilities' costs—and, ultimately, holding down rate increases—as well as reducing climate-changing greenhouse gases, raising property values, and polishing the town's image.

That's why some of Traverse City's elected, business, civic, nonprofit, and institutional leaders want to grow TCSaves into a permanent program that prompts city residents and businesses to invest in energy efficiency—and provides a model for other Michigan communities as electricity and heating costs rise.

Soon they'll have some help: State and U.S. Department of Energy personnel are analyzing data from Traverse City, 26 other Michigan communities, and hundreds of others around the country that conducted similar pilots using

# RAVE REVIEWS

"TCSaves put skilled contractors to work helping homeowners save energy, cut their utility bills, and boost their property values. It was a private-public partnership that was very good for our community, and I hope we can find ways to continue and expand that approach."
~Mayor Michael Estes

""It's a win-win program for Traverse City. Our home is more efficient, and the money we spent stays local."
~David Weeks, Traverse City

funding from the American Recovery and Reinvestment Act of 2009. They will figure out what approaches worked best to increase home and business efficiency.

But the locals are moving ahead, too, led by the Traverse City Area Chamber of Commerce, at least one Traverse City commissioner, Traverse Area Association of Realtors, SEEDS, the Michigan Land Use Institute, and a spate of local businesses and institutions.

In June 2012, 200 leaders attended a "Leadership Summit on Energy Efficiency." The summit presented MLUI's report, *Energy Efficiency and Economic Opportunity in Grand Traverse County*, and a keynote speech by efficiency expert Peter Garforth, who helped Holland, Mich., adopt a 40-year Community Energy Plan to sharply cut energy use for every building in town.

In December, a smaller group attended a half-day workshop with Garforth to discuss strategies for launching a long-term efficiency project for Traverse City. The group must fashion firm answers to two basic questions: Who should manage such a project, and how should it be financed?

Lessons learned from TCSaves will help find answers.

## Lessons in Teamwork

TCSaves offered quite a bargain: For only $100, homeowners received a customized home energy assessment showing how to make the house comfortable and efficient, plus installation of weather stripping, compact fluorescent lights, programmable thermostats and more.

Crucially, it offered access to 10-year, no- or low-interest loans for the recommended fixes—from tighter windows to better-insulated walls, to more-efficient furnaces.

The Phillips' experiences, and those of hundreds of other participants, indicate that TCSaves' quality control—requirements for a home analysis and special contractor certification—consistently produced satisfied customers.

Ultimately, however, what really made TCSaves click were strong teamwork and careful coordination among private, public, and civic entities:

- Traverse City Light & Power, the local electric utility, sponsored the two-year project, which used local, state, and national resources to reach close to 550 families.
- Thanks to state utility efficiency mandates, TCL&P and DTE Energy, the local natural gas utility, kicked in rebates.
- Two local nonprofits—SEEDS and the Michigan Land Use Institute—marketed and managed the project.
- Specially certified local contractors did the work.
- A Bay City credit union provided the loans.
- The federal government bought down interest rates using American Recovery and Reinvestment Act funds.

But on a more personal level, the Phillips' story illustrates how a well-done, properly financed program can quickly and easily help people save energy and money and enjoy their homes more.

## 'Find the Money for Everyone'

The Phillipses were already hoping to save money by downsizing when they moved into Traverse City with their three children.

"This house was appealing because of its size," said Paul, who manages outside sales for Grand Traverse Container Co. "It felt like we could keep it warm."

But it was an expensive place to heat. They caulked windows, hung heavy drapes in front of the largest ones, and replaced a few, too. But even with the thermostat set at 65 degrees, their heat bills remained stubbornly high—between $162 and $191 each January—for a 1,200 square-foot home with an unheated basement.

Then, as Paul put it, "all of those TCSaves signs started popping up" on their neighbors' lawns: "It spread like wildfire to what looked like every other house. It was easy to get introduced to the program and added in, so we applied."

The resulting six-page home energy assessment surprised them: There was adequate insulation in their first-floor walls, but there were leaks throughout

## Energy Savings Big Help to Low-Income Couple

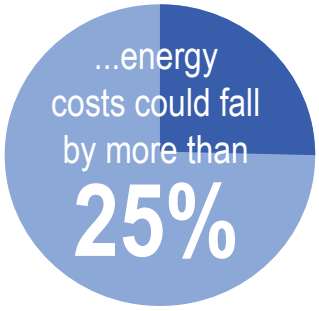
Ever since Nyla Caverly lost her factory job and her husband, Denny, had his pizza delivery hours cut, the Traverse City couple has struggled to pay their utility bills, which can be $250 a month. But they are breathing a little easier thanks to utility programs that cut energy use for income-qualified families and reduce overall energy demand—the basic goal of Michigan's 2008 utility energy optimization mandate.

Over the past year, to help meet that mandate, TCL&P provided the Caverlys with a high-efficiency refrigerator, and DTE Energy installed a high-efficiency furnace. Working through TCSaves, Michigan Energy Options assessed their home's efficiency and installed low-flow faucets and hot-water pipe wraps.

It's too early to calculate exactly how many energy dollars the Caverlys will save each year, particularly since their energy assessment revealed the home still needs weather-stripping. All told, their energy costs could fall by more than 25 percent, saving them well over $500 a year.

"Even $10 makes a difference to me, especially in the economy we have today. It is hard to get by," Nyla said.

The community wins, too: retailers and contractors get busy; TCL&P and DTE cut operating costs; the need for utility bill subsidies dwindles; and greenhouse gas emissions fall.




the building.

Their assessor produced a $20,000 plan that included a new (and mercifully quiet) high-efficiency furnace, a high-tech water heater, attic insulation, four new windows and an entry door in the basement, basement wall insulation, foam sealing around foundation and attic rim joists, and a new sliding door-window unit.

"It seemed like a great thing, with the expertise and the zero-percent financing," Jennise said. "It seemed almost too good to be true."

Last spring's work cut this January's heating bill from a previous high of $191, in 2009, to just $68. Their electric bill hasn't changed, likely because their new water heater is electric, not gas, and their children now play in their newly comfortable basement, and, Jennise observed, "They turn on a lot of lights down there."

The Phillipses say that, even with a 2.9-percent loan, the rate for the second phase of TCSaves, they would "not have batted an eyelash" at doing the project, even though it would take years to earn back their investment.

"I like to think we are helping the environment, but it does also come down to what's the return on the investment," Jennise said. "But we knew we were wasting energy, and we are now much more comfortable. So it doesn't matter to us that it won't be an immediate payback."

A recent property assessment, however, showed that their payback has already arrived, whether they stay or sell.

"The upgrades raised the value of the house by at least as much as we put into it," Paul said. "Other properties around here were going down, but ours went up."

The couple say they felt "really fortunate" to have access to a no-interest loan but wonder, in an age where government austerity is such a strong trend, how the program can continue if it must rely on typical home-improvement lending rates in the future.

"I would like us to figure out how to find the money for everyone, because it is such a great idea," Paul said. ■

# PUBLIC-PRIVATE PARTNERSHIPS POWER BUSINESS EFFICIENCY


The comfortable office and lighting at Britten are the result of several recent, major energy efficiency projects.

"We hope that the savings these businesses experience will be injected back into the marketplace and help them grow and produce more jobs here."

– Laura Galbraith, Traverse City Area Chamber of Commerce

You'd never know it driving by, but tucked into a nondescript warehouse district just south of Traverse City is an office and production space so airy and dazzling that it would turn heads in the hippest urban enclaves.

It's festooned with riotously colorful commercial artwork of many shapes and sizes, from a big, burnt-orange Mayan sun-god banner and colorfully logoed flags, to wall-sized murals and beautifully rear-lit car ads—all produced by the company living there: Britten Inc. On sunny days the place must glow.

But even on a blustery January afternoon most of the building—except its warehousing and shipping area—is cozy: No cold spots; no noisy overhead heaters struggling to warm workers far below.

The comfortable digs and lighting are the result of several recent, major energy efficiency projects. They are making Britten's workers happy, but the firm's accountants are smiling, too.

"So far, we've seen a 7-percent drop in our utility bills," according to Dave Stapleton, Britten's operations manager.

Money-saving energy efficiency projects like Britten's are increasingly common both locally and nationally as businesses look for ways to boost their bottom lines.

The good economics of projects like Britten's affect more than the companies themselves. They employ contractors and tradesmen, increase sales for local material and equipment retailers, and capture saved energy dollars for recirculation in the local economy. But the projects require staff time, expertise and financing that many firms don't have.

"The biggest challenge was knowing what to do," said Josh McDonough, a Britten purchasing assistant who coordinated the firm's efficiency project.

Britten worked with two local nonprofits, the city's municipal utility, and a local business specializing in commercial energy conservation projects, while taking advantage of state and federal rebates.

Fortunately, Britten is located in Traverse City, which advocates consider an "efficiency ready" community: It is using local, public-private partnerships to help residents and businesses.

## Help Wanted—and Provided

McDonough and Stapleton worked with two local nonprofits, the city's municipal utility, and a local business specializing in commercial energy conservation projects, while taking advantage of state and federal rebates.

First SEEDS, a nonprofit environmental education and communications group that analyzes building efficiency for Traverse City Light & Power, evaluated Britten's lighting in two of its buildings, and the heating and cooling (HVAC) in one.

"SEEDS told us that our lighting was outdated and that our HVAC was really outdated," McDonough explained. "We gathered all of our bills; they had some software that made those numbers into graphs so we could see what was going on."

"So we reached out to Keen, who then just blew us away," he said.

"Keen" is Keen Technical Solutions LLC, a local, private firm specializing in energy conservation for businesses [See page 12].

As the project took shape, Britten turned to the other nonprofit, the Traverse City Area Chamber of Commerce, for its unique business efficiency loan program, which financed 40 percent of Britten's upfront costs.

"The project would not have happened as quickly without the Chamber's loan," Stapleton said. "[Owner] Paul Britten was very motivated by their fund."

## Hot Investments

With a budget in place, Keen managed the project—harvesting all of the incentives available from TCL&P, DTE Energy (the firm's natural gas provider), and state and federal programs; replacing old overhead light fixtures in two buildings with smaller but brighter models; and swapping the main building's big, outdated rooftop HVAC system for a state-of-the art unit.

"The old one was about as big as a school bus and nearly tipped the crane over," said McDonough. "The one they replaced it with was about the size of a VW Beetle."

With the smaller, feistier HVAC unit and new lighting, the company, one of TCL&P's top power purchasers, is set to see its bottom line grow.

"What's really great is the break-even point," McDonough said, referring to the time it will take for savings to pay back the cost of the new equipment. "It's 18 months for the lighting and five years for the HVAC."

That's roughly equivalent to earning, respectively, 66 and 20 percent per year on the investments. But some of the savings will be immediate, too.

"Just for maintenance," he pointed out, "the old HVAC cost $4,000 a year; so, with the new one guaranteed for five years, that's $20,000 saved right there."

The expected benefits also include the new HVAC unit's 50-percent-lower fuel and 20-percent-lower electricity consumption, even though it's far more effective than the old one in blowing warmth through the big, overhead, inflatable tube that channels air into the wide-open production area.

"Those on the production floor mentioned immediately that they could feel the heat better, and it seemed to be distributed really well," McDonough said.

The improved lighting also saves money while providing better illumination throughout the visually oriented company's design and production areas.

According to Stapleton, Britten intends to spend the savings strategically.

"Paul says he's extremely excited by the savings, which he wants to invest either in our workers or in more efficiency," he said.

## Village Voices

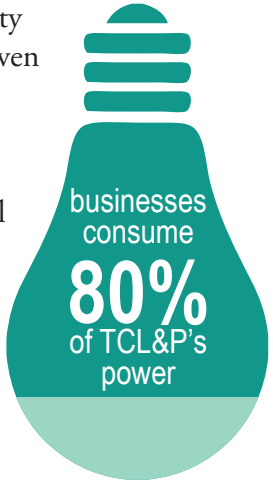
Britten's project demonstrates what many efficiency advocates say: It takes a public-private effort to get significant numbers of companies to launch similar efforts.

It starts with state-sponsored efficiency mandates for utilities, like Michigan's "energy optimization" rules, and succeeds when there are nonprofits and private companies able to analyze, design, finance, and implement projects.

TCL&P created the incentive program that Britten used thanks to Michigan Public Act 295. The 2008

"energy optimization" mandates in the act require electricity and gas utilities to help their customers cut energy use. Given that businesses consume about 80 percent of TCL&P's power, working with them is crucial to meeting the Act's requirements.

TCL&P offers up to $15,000 in rebates to commercial customers to help pay for efficiency improvements. Britten's project was ambitious enough to earn the entire amount.




The municipal utility's Jessica Wheaton says the program is quite popular.

"We've exceeded our goals every year since the beginning of P.A. 295," she said. "Our commercial customers are definitely interested in seeing those savings; they are really excited about it. We definitely want businesses to participate," she added. "Energy efficiency will play a bigger and bigger role as old generation sources go offline."

## Takin' Care of Business

But, as is typical with many businesses, Britten did not want to tie up too much of its own cash. The Chamber offered a solution.

Laura Galbraith, of the Chamber, said that word spread quickly when her organization began providing 3-percent loans for efficiency projects to TCL&P commercial customers.

"The response to our efficiency loan program absolutely surprised us," she said. "We did not go out with a full-force marketing campaign. But as soon as we announced it, we had deals in the pipeline, including Britten's. It was very exciting."

The Chamber loaned out its entire initial $50,000 revolving loan fund in a matter of weeks, to just three companies. So the Chamber asked TCL&P for a $50,000 grant to replenish its drained loan fund. Just before the holidays, TCL&P agreed, and response to the program remains strong.

"If we could increase the funding," she added, "there are enough projects out there that need it." Galbraith said that, even though the statewide, nonprofit Michigan Saves program is now coordinating a privately capitalized business efficiency loan program, the Chamber will maintain its own efficiency loan program.

"We hope that the savings these businesses experience will be injected back into the marketplace," she said, "and help them grow and produce more jobs here."

Keen co-founder and president Tim Pulliam said interest in his company's energy efficiency work is soaring and Keen has grown tremendously since its 2008 launch. But lack of expertise and financing often stop projects before they start.

So, as Keen did for Britten, the company typically "puts together an entire package," Pulliam said.

"We bring everything it's going to take, from the idea of what to do, through funding, the actual work, and the energy guarantee, so they feel safe." ■

## Small Businesses, Big Successes

The U.S. EPA has lots of stories about small businesses that are now glad they "went big" on efficiency projects.

- The A.O.K. Body Shop, in Philadelphia, invested almost $8,000 in lighting, thermostats, space heaters and staff education and earned back its investment in 1.4 years.
- Thomas Mott Homestead Bed & Breakfast, in Albert, Vt., spent $60,000 on new insulation, windows, wiring, baseboard heating and boiler, lights, and shade trees for its 170-year-old house and saves $10,000 a year, for a six-year return on investment.
- Vic's Market, in Sacramento, put $144,000 into lighting, freezers, compressors and deli equipment. It now saves $48,000 a year, for a three-year ROI, and sees a 15-percent sales boost due to a much more attractive facility.

Find more success stories on the Energy Star pages of EPA's website.

## The Path to Communitywide Efficiency

- Michigan sets efficiency goals for state's utilities
- Utilities offer efficiency incentives, like free LED bulbs, bounties for old appliances, major cash for commercial-scale HVAC swaps.
- Government, nonprofits, lenders, investors, and/or energy service companies provide long-term, low-interest capital for home- and business-efficiency loans.
- Funds are identified for education, contractor selection and training, marketing, building analysis, project management, quality control.
- Utility, local government, or lender administer the loans.

# EFFICIENCY WORK KEEPS CONTRACTORS BUSY

Gary Bazzett, of James Anderson Builders, conducts a home energy assessment as part of the successful TCSaves program

"There are a lot of good people in the industry here. There's definitely the beginning of a wave that we are all part of."

– Rody Valpey, Michigan Energy Options

It's just past dawn on a mid-February morning, and not much is stirring in a snow-covered neighborhood near Traverse City's downtown. But Gary Bazzett is moving like a man in a hurry.

Bazzett chugs back and forth between his station wagon and the small, elderly home he's inspecting. He measures windows and walls, surveys the building's red-brick exterior, pokes around in the cramped and cold basement, peers inside the furnace, shoves his head through a tiny trap door into the attic, and asks the homeowner lots of questions.

Bazzett has a tough job; as a home-energy assessor for TCSaves, he routinely invades claustrophobic spaces in century-old buildings that most people would rather avoid. But he has to understand what's going on inside ancient brick walls, raised long before people worried about energy costs, indoor air pollution, or greenhouse gasses.

"A hundred years ago, they didn't care" about saving energy, Bazzett said. "That's why I don't look at these as horror stories today. They end up being success stories."

Bazzett is one of more than a dozen home energy assessors, contractors, and workers from three local companies who've sparked that success. For two years they made the city-sponsored pilot home-efficiency program tick. They've made more than 550 Traverse City homes—a remarkable 20 percent of the town's owner-occupied residences—more comfortable and affordable.

The success stories—and the jobs and savings they produce—could multiply dramatically if some Traverse City civic, business, and elected leaders find a way to expand TCSaves into a permanent, communitywide program.

*Energy Efficiency and Economic Opportunity in Grand Traverse County*, a June 2012 study by MLUI and SEEDS, found that cutting energy use for all residential and half of all commercial and public buildings in the city and surrounding county by 25 percent over 15 years would, on average, provide 76 jobs each year, and over 30 years save more than $200 million in energy costs.

But even at its current, much smaller scale, the program is providing good paychecks and job satisfaction.

Bazzett said he enjoys "being able to offer practical solutions to things some people see as insurmountable.

"I just left a home we worked on where utility bills have dropped 45 percent from last year. They like that, but what they really like is that the house is now extremely comfortable."

His zeal may be one big reason TCSaves earns so many rave reviews for the comfort, cost savings, and work quality these efficiency mavens provide.

"It would be my wish to create a sustainable model for TCSaves that everybody wants," Bazzett said. "It's through energy efficiency and conservation that we are going to make a sustainable difference."

## 'An Eye-opener'

The firm most associated with TCSaves is Bazzett's employer, James Anderson Builders in Traverse City. Two decades before "home energy efficiency" became a common phrase, owner Jim Anderson studied the emerging field of building sciences, solar and wind power, composting toilets, and Buckminster Fuller's pioneering designs.

When TCSaves was taking shape, longtime local building efficiency expert Max Strickland urged him to get involved.

"I said, 'No, Max, I don't think so,'" Anderson recalled. "It was a government program and I was sure I wouldn't fit."

But Strickland was undeterred.

"He just wore me down," Anderson said. "He pointed out that the goal was to use government funds to develop efficiency-marketing models that could be used by the private sector for self-sustaining programs that draw in entrepreneurs.

"That did intrigue me," he admitted, "and so I reluctantly said yes, jumped in with both feet, and I think we've managed to entertain some modest success."

Even with close to 30 years of efficiency work under his tool belt, Anderson said TCSaves still offers plenty of good lessons.

### Good Jobs, Widespread Savings

A report published in 2012 by MLUI and Traverse City-based, nonprofit SEEDS, *Energy Efficiency and Economic Opportunity in Grand Traverse County,* found that a 15-year project that cuts energy use by 25 percent in all residential buildings and half of all commercial and public buildings in Grand Traverse County makes good economic sense. The project would, with a 4-percent interest rate, require a $262 million investment and provide an average of 76 direct jobs each year. It would, over 30 years, not only pay back all investments, but also save an additional $212 million in energy costs for homeowners, renters, businesses, and taxpayers.

"I've learned you can't assume anything when you go into a home," he said. "It's almost like doing an archeological dig. We put on our jump suits and really check it out. We've located gas leaks, gas appliances back-drafting carbon monoxide into living spaces, unsafe electrical installations…a lot of things like this. It's been an eye-opener."

## Catching a Wave

Rody Valpey works for another TCSaves efficiency contractor—Michigan Energy Options, a statewide nonprofit that has provided efficiency education and services for more than 30 years.

MEO opened its Traverse City office just as TCSaves began recruiting and qualifying contractors. Valpey said the town is a good place to be for efficiency work.

"I can feel it," he said. "Before, when I worked with other contractors, there was always this sense of competition. Today it's more of collaboration. There are a lot of good people in the industry here. There's definitely the beginning of a wave that we are all part of."

Anderson thinks that, for the wave to continue, it's important that contractors who declined to get involved in TCSaves take a second look.

"The things we've learned about air sealing, appliance safety, the whole remodeling thing—this is information that should be shared with other builders so they can do a better job, too," he said. "We can be a team."

Meanwhile, he added, the good word on TCSaves is spreading beyond the town's borders.

"People talk when they have good experiences," he said. "So now we are doing a large job next week in Suttons Bay, thanks to one of our previous efficiency customers." ■

# EFFICIENCY MANDATES DRIVE ESCO SUCCESS

Last year Cone Drive used less electricity than it did in 2008, even after adding three shifts of solar gearbox production and new, automated assembly, cutting, and grinding equipment.

Six years ago, Tim Pulliam was frustrated.

He could see that there was a lot of interest in the science and practice of energy efficiency, but few people were actually following through and making their homes and businesses more efficient.

"Everybody was talking energy audits," Pulliam recalled, "but only 1 percent were acting. I thought, 'That's stupid! Let's not do any more audits; let's do action plans.'"

Those action plans must have been real doozies.

Today, Pulliam and partner Steve Morse operate Keen Technical Solutions, a $5 million-a-year business in Traverse City that helps companies save millions of dollars by using less energy. Keen's website ticks off the grand total of the energy dollars it's helped its customers save so far—and the total is well past $33 million.

Keen is an "energy services company," or ESCO, and its success is not unique: ESCOs form a hot business sector that's growing by more than 10 percent a year.

"Our industry grew right through the recession, even though it crippled so many companies," said Donald Gilligan, president of the National Association of Energy Service Companies, a trade organization with close to 100 members.

Pulliam credits Michigan's "energy optimization" (EO) standards, enacted the year he and Morse launched Keen, as a key to their initial, shoestring-powered success. He said similar standards in dozens of other states aided the firm's rapid, coast-to-coast growth.

The standards require utilities to help ratepayers collectively cut energy use—typically 1 to 2 percent a year—by offering things like free home-energy assessments and cash rebates to companies to help finance large projects.

"They came at the perfect time," Pulliam said of the EO-driven utility rebates. "Now you have your utility validating these measures and offering rebates. They helped spark an entire industry that we built this business around. It simply was not

on everybody's radar five or six years ago."

Jessica Wheaton, Traverse City Light & Power's marketing and community relations coordinator, said her municipal utility is glad to have companies like Keen working in its service area.

"ESCOs are experts in the field," she said. "They typically have a clear understanding of what the local utility companies offer for programs and incentives, and they are able to walk customers through the entire process, from outlining the energy efficiency upgrades that should be made to actually implementing the upgrades."

That meshes well with the goals of community leaders who like the idea of using efficiency to boost local businesses' bottom lines, keep local skilled tradesmen busy, and cut climate-changing greenhouse gas emissions.

But the experience of Keen's first customer—Cone Drive Operations Inc., a longtime Traverse City business that makes gear assemblies—revealed that it may take more help from local, state, and federal agencies to make sure efficiency programs can help the entire business community save as much energy as possible.

## Beyond Low-Hanging Fruit

Pete Ostrowski, Cone Drive's environmental health and safety manager, said his company sees strong economic returns from its initial, Keen-managed efficiency investments. Savings from new, high-efficiency lighting covered their initial cost in under two years. Cone Drive then had other contractors install a new chiller and compressors.

The result: Last year the company used less electricity than it did in 2008, even after adding three shifts of solar gearbox production and new, automated assembly, cutting, and grinding equipment.

Ostrowski said rebates from TCL&P, which helped cover the cost of the new equipment, made the projects "no brainers." Cone and Keen are now considering next steps to save even more energy dollars. But there's a catch.

"Today we are into the stuff that Keen says has longer paybacks," Ostrowski said. "That's more than we can spend. Our finance people are saying, 'Get it down to three years and we'll listen to you.'"

Businesses use significantly more energy than homes—TCL&P serves about 8,500 homes and 3,000 businesses, but sells 80 percent of its power to the businesses—so helping companies like Cone Drive take next steps is crucial to cutting energy demand, which puts downward pressure on utility rates. But while Ostrowski and Pulliam are highly complimentary of TCL&P's rebate program, which helped the city-owned utility stay ahead of its state EO goals, they would like to see the utility expand the program. Right now, it operates on a first-come, first-served basis and limits rebates to $15,000 per company, per year.

"We're looking at eight different projects with Tim to prioritize," Ostrowski said. "He's laid out costs, rebates, savings, and return on investments; it's between 3.6 and 5.8 years, so it would be nice to offer rebates to get us down to three years."

Wheaton confirmed that TCL&P's commercial customers show "great interest" in the rebate program. In 2012, TCL&P paid local businesses close to $200,000 in efficiency rebates from its general fund, rather than from an on-bill EO surcharge, used by many other Michigan utilities.

Currently, there is no public discussion about surcharging to expand the fund's current reach; given TCL&P's 11,500-member customer base, a $2 monthly surcharge would slightly more than double available rebate dollars.

## Pay Now or Pay Later

Pulliam sees the challenge differently, however.

He tells his efficiency customers: "You need to stop thinking about what it's going to cost. It's costing you more not to do anything. You can continue to send that extra energy money away, or you can unlock those assets that are in your old equipment. We can provide the capital if that's an issue. But, every day you don't act, you are wasting money."

Like most ESCOs, Keen gets its upfront capital back by taking a cut of the client's saved energy dollars. The company also has a full-time employee who figures out rebate opportunities that the local utilities are offering—and how best to use them—as well as how to take full advantage of state and federal tax incentives.

Pulliam is optimistic about the future of his company, ESCOs in general, and what efficiency can add to a community's, or a nation's, economy.

"I think it is a huge market," he said. "Companies are starting to understand that the greatest cost lies in taking no action. Between state, local, and federal programs, with various loan funds, and our own funding mechanisms, every day there are more reasons for people to say 'yes' to efficiency." ■

# IN SEARCH OF FINANCING FOR EVERYONE

In Traverse City, Gov. Rick Snyder visited the newly cozy home of the Kushman family, who used a TCSaves zero-interest loan to finance their major efficiency upgrade. Snyder praised the teamwork among federal, state, and local agencies, nonprofits, and construction companies that handled the work—and financing.

"Anybody that's a stakeholder in the community ought to be approached about creating this fund. We can't talk about this project without knowing how we make it affordable for a lot of people."

– Mark Eckhoff

Ron Hurd is seeking angels—the financial kind, that is.

Hurd is a founding member of the Northern Michigan Angels, part of a newly formed network of two-dozen groups, dubbed As Local As Possible, that are looking for opportunities to bring investment dollars back into the community and put them into local businesses.

The Angels and the rest of the network are not operating a charity; they expect a decent, if not heavenly, return on their investments.

"We are very much more on the entrepreneurial side," he said, "and have an underlying interest in local companies that will be sustainable."

That's why Hurd is fascinated by an idea some Traverse City leaders are discussing: a long-term, communitywide efficiency project that retrofits most buildings to sharply cut their energy use. "What attracts me most is that it is one of the few things where we really know what the rate of return will be," he explained. "Trying to invest in a local business can be really, really difficult. The energy efficiency project might be a good staring point for communitywide investing, using the dollars to support businesses and residents who want to save on energy costs."

But profiting on home and small-business efficiency investments could prove difficult, too. TCSaves, Traverse City's highly popular, residential energy efficiency program, illustrates why.

## Praise, Problems, and Partnerships

The two-year TCSaves campaign persuaded about 550 of the city's homeowners to spend $100 for home energy assessments, programmable

thermostats, compact fluorescent light bulbs and more. It also convinced 58 participants to take out a total of $617,000 in low- or no-interest loans—with rates bought down by federal funds—to "deep retrofit" their homes with things like high-efficiency furnaces and extensive re-insulation.

TCSaves is praised by most people it touches. But the pilot program made a crucial discovery: People want to make their homes more comfortable and cheaper to live in, but it takes a careful combination of attractive loan rates, tax incentives, and utility rebates to persuade them to act.

Hurd is not sure where that leaves his Angels; he knows that turning even a modest profit on small, long-term, low-interest loans is difficult. And he, for one, doesn't like public dollars paying down interest rates.

"I'd much rather see if we can do it ourselves locally, not with some overarching gift from the feds," Hurd said. "My sense is that, structured correctly, energy efficiency investment could probably pay for itself over a reasonable period of time, without government funds."

Bank and credit union officials, a Michigan Saves [see next page] program manager, and the American Council for an Energy Efficient Economy note, however, that driving demand for energy efficiency is very challenging without some sort of help like the kind of public-private partnerships powering Michigan Saves and TCSaves.

So efficiency programs likely require partnerships—whether with the feds, state agencies, municipalities, state or local bond-based revolving loan funds, or local utilities. That seems particularly true for projects aimed at entire communities.

The math is plain: While home-scale efficiency projects pay steady, predictable dividends via significantly lower energy bills, the low rates and long terms that customers desire make it difficult for investors to make money.

## Banking On It

Mark Eckhoff is the former market president of Traverse City's Fifth Third Bank. He supports a long-term, communitywide efficiency program, agrees that typical bank or credit union loans wouldn't work, and finds it "completely understandable" that two local lenders took a pass on TCSaves, even with public dollars covering the interest.

"If you make an $8,000 loan, even at 5 or 6 percent, that's just $400 a year," he explained. "By the time you do all the necessary things to book the loan, it doesn't leave much for the credit union's members, let alone a bank with shareholders."

People with large homes, lots of equity, and strong credit can get a standard home equity loan for an efficiency project and make the numbers work, he added. This is because the rates are lower and the terms are longer than with an unsecured loan, like the ones offered through Michigan Saves. But these loans can be time consuming and require home equity, something many borrowers don't have.

A better solution may be finding an investor that is not concerned about investment return.

"It has to be some sort of community foundation," Eckhoff said. "Anybody that's a stakeholder in the community ought to be approached about creating

## Community Efficiency: Setting the PACE

Many small businesses want to cut energy costs, but can't employ ESCOs, which typically work on larger scales. So upfront financing is often a challenge. But "Property-Assessed Clean Energy" financing—PACE—can help: Businesses tap into a public or private bond to pay for the project, and the loan is placed on the business's property tax assessment. With proper project scaling and long-term, low-interest loans, energy savings cover most or all of the increased assessment, preventing a large jump in the monthly budget. The loan stays with the property if it's sold. Currently, Ann Arbor and Southfield are operating commercial PACE programs. Learn more about PACE at **michpace.org** and **leanandgreemi.com.**

## Efficiency's Secret Sauce?

Would homeowners and businesspeople order up efficiency retrofits if they could pay for them on their utility bills? What if those bills, including the loan repayments, were lower than before the retrofit? Some American utilities, be they private, public, or member-owned, are using or testing this concept—called on-bill financing. It requires very cheap, long-term capital, such as a utility reserve fund, and expansion of the utility's mission to provide—or to finance and manage, either directly or through a third party—energy assessments, retrofits, and quality control. Careful project design is a must, so that a project's savings exceed their monthly payback requirements. Seeing home and business budgets fall even as a building's comfort and efficiency rise—and the utility blows past its efficiency goals—seems too good to be true, but it can work well. On-bill financing pleases pocketbooks; eliminates pricey, new, base-load generation; cuts air pollution and climate-changing greenhouse gas emissions; and even boosts property values.

## LOW RATES, LONG TERMS, EXPERT GUIDANCE

Michigan Saves assists home, business, and public building efficiency projects by connecting owners with certified efficiency contractors and favorable loans. Its technical and financing expertise makes upgrades easy and affordable for many; so far, 3,000 people have received $24 million in loans. Visit **michigansaves.org.**

this fund. We can't talk about this project without knowing how we make it affordable for a lot of people."

Karen Browne, president of the TBA Credit Union, in Traverse City, said local financing is highly desirable, even crucial, for such a project, yet she's unsure whether her organization could chip in. It depends on more than just interest rates.

"What is more concerning is the 10-year term for such a low fixed rate," she said, referencing the Michigan Saves Home Energy Loan term. "That is a risk, because if interest rates go back up, many institutions can't afford to hold onto loans like that. What could help would be a guaranteed payment if the rates do rise—perhaps from the government."

Genisys Credit Union, based in Auburn Hills, Mich., is one of eight Michigan-based credit unions that participate in the Michigan Saves Home Energy Loan Program, and is the only one that serves the Traverse City area. Lori Daniels, the firm's development manager, said the interest buy-down and loan loss reserve Michigan Saves provides, using state and federal funds, convinced the company to get involved.

Now, with just four defaults among Genisys' 1,200 efficiency loans totaling $10 million, Genisys wants to expand its stake.

"Our marketing manager just reached out to Michigan Saves for some help marketing the program to our membership," Daniels said. "We just hope the volume continues for us," she said.

## Views from the Front Lines

Sally Talberg, who was the program design and review manager for Michigan Saves and who now serves on the Michigan Public Service Commission, said with its low default rate and new borrowers paying 7 percent, the program is stable, with a $18.8 million portfolio and about $1 million in new loans each month. But the staff also thinks about new ways to meet the interest rate challenge.

"Our goal is to make it easy and affordable for people to make energy improvements, so of course we would love to offer lower rates," Talberg said. "They do seem like good loans, and so there's big interest in continuing the program.

"But in residential efficiency loans," Talberg added, "there is just a tremendous transaction cost, given the size of the loan. Even if it's free money—'here's a million bucks to create this efficiency fund'—someone is still going to have to bear the cost of administration.

"But we are always talking internally about ways to improve the program," she said, "We also meet regularly with our authorized lenders and discuss improvements, including lower rates."

However, experts at the nonprofit American Council for an Energy Efficient Economy, which routinely consults for governments and utility companies, emphasize that, while low interest rates are key to community efficiency programs, they are not silver bullets.

"There are so many other necessary elements that can't be paid by the spread on the loans," said ACEEE Senior Fellow Marty Kushler. "Somebody has to pay for things like energy assessments, marketing, publicity, quality control, incentives, rebates, management…all the pieces of a well-rounded program."

Kushler said that "somebody" is likely the local utility. ACEEE Senior Economic Analyst Casey Bell agreed that utilities—particularly publicly owned ones—need to be involved. She said partnerships are crucial.

"We often see the most success with local governments and utilities partnering," she said. "It helps to have a municipal utility or a co-op, because they can be more flexible."

She pointed to so-called "on-bill financing"—monthly loan repayments are attached to the customer's monthly utility bills. This is working with a number of utilities around the country, she said. She added that in some places nonprofit "community development financial institutions"—or CDFIs—are teaming up with local credit unions and banks for local projects.

Hurd would like to take it one step further and involve hundreds, perhaps thousands of people investing in a community-style "bank."

"It could be totally private, but backed by public underwriting," he said. "That could be a good deal. I want individuals who live here to have skin in the game, and for the community to be well aware of who's making the loans, who's getting them, and how it benefits the community."

But whether that approach would pay enough to attract a large host of angels remains an open question. ■

# COMMUNITIES MOVE ON BREAKTHROUGH ENERGY PLANS

Officials in Guelph, Ontario, knew energy demand from 20,000 more homes could be met either with more generation and distribution infrastructure, or with efficiency and widespread renewables. (Photo: David J. Sullivan, Wikimedia Commons)

"There's no expectation of anything happening tomorrow, but we now have a vision and a goal and a plan to implement changes over time. That is what will get us to our desired destination."

– John Morrill, Arlington Energy Manager

Loudoun County, Va., boasts a completely solar-powered "park and ride" transit stop equipped with car recharging stations. Nearby Arlington County is planning to use waste heat to warm a neighborhood.

Guelph, Ontario, now has 250 homes with their own solar panels. And citizens in Holland, Mich., are figuring out how to finance energy retrofits for 90 homes.

These communities see that it's time to replace business-as-usual with breakthrough energy innovation. And, given that they each have used the same consultant, Garforth International LLC, an energy efficiency specialist, it's not surprising they share a basic set of principles as they design community energy plans (CEP) that aim to boost their competitiveness, prosperity, and quality of life.

But each is taking a somewhat different path to improving their energy future.

## First Steps toward Success

Loudoun County started pursuing a CEP in early 2009, when Dale Medearis, a Northern Virginia Regional Commission staffer familiar with Garforth, recruited Loudoun and Arlington officials for a presentation by its founder, Peter Garforth.

Wowed by Garforth, Loudon officials worked with the regional commission's energy and environmental planning staff, hired Garforth with American Recovery and Reinvestment Act funds, and produced a CEP in 2009.

Arlington officials also worked with the regional commission and Garforth and, on New Years Day 2010, announced a CEP process involving 30 stakeholders and invited residents' help developing the plan. A draft appeared the following year; county commissioners vote on an extensively vetted final version soon.

Guelph launched its process in 2006 after Ontario's provincial government designated it a growth area. Officials knew energy demand from 20,000 more homes could be met either with more generation and distribution infrastructure, or with

efficiency and widespread renewables.

"That offered us opportunities for community energy," explained Robert Kerr, Guelph's community energy manager.

Led by a mayor who taught sustainability at the University of Guelph, the town staged two years of community workshops and presentations that "engaged hundreds of individuals, three- or four-dozen institutions and their constituents, who ultimately signed off on the plan," Kerr said.

Holland's CEP emerged from a city-appointed sustainability committee. Members saw the big savings generated by the city's own conservation measures, and asked the council to hire Garforth to suggest a citywide plan.

## Different Folks, Different Strokes

Although the four CEPs share points, their goals and emphases differ.

Loudoun would cut its county facilities' fossil-fuel use through efficiency and solar power deployment. Beyond government, however, the plan is strictly voluntary, suggesting tighter state-based building codes to cut energy use in new structures by 30 percent and by 25 percent in old buildings. Loudoun will cut consumption in its own new buildings by 30 to 50 percent and use solar power to meet 25 percent of peak energy demand on hot, air-conditioned days.

Arlington set very high goals—a 55- to 60-percent cut in energy use for all buildings, both residential and commercial; extensive waste-heat-driven district heating; a whopping 160 megawatts of solar power; and a broad public education effort.

Guelph immediately implemented tough new provincial building efficiency codes to meet energy demand as the city grows. It requires efficiency labeling for buildings, moves toward renewables, gets 30 percent of its electricity from generators that share waste heat, uses solar power for 40 percent of summer peak cooling demand, and shares heat throughout the city.

Holland also aims high, calling for cutting energy use by 30 to 60 percent in every building; labeling every buildings' efficiency; modest amounts of solar and wind power; and sharing waste heat with businesses, institutions, homes, and an enlarged downtown "snowmelt district."

But what kind of progress have the four communities made?

## Step by Step, toward a Breakthrough

Loudoun County Energy Manager Najib Salehi says that the county's park-and-ride facility uses net metering to cut its power bill to zero. The data center drastically cut its energy use, saving $29,000 a year. Also, the county uses geothermal energy in five new buildings and boasts nine facilitiess that are gold or silver "LEED certified"—i.e., among America's most efficient. Loudoun also spent $1.1 million to analyze and retrofit seven older buildings that accounted for 40 percent of its overall energy use. And Salehi's energy committee of county department heads has so far figured out ways to cut demand by an additional $128,000.

Arlington County is evaluating a redevelopment project in Crystal City that includes efficiency upgrades, district heating and cooling, and some use of solar power. State law prevents Arlington from requiring building efficiency labeling, but it labels its own facilities as part of an outreach plan; so far, three companies have followed suit. Planners have confirmed there's adequate commercial rooftop space for the CEP's 160 solar megawatts. But until the county fully approves the CEP, officials concentrate on aligning its goals with Arlington's "smart growth" master plan and existing LEED program.

In Guelph, officials are entrenching their CEP as deeply as possible in the municipal culture. The city is moving quickly on renewables projects because of Ontario's feed-in tariffs, which pay profitable rates to solar or wind power developers. Guelph awaits approval of 30 megawatts of solar power, plus 30 megawatts of gas-fired generation that would send waste heat to nearby neighborhoods. The two projects would provide one-quarter of the city's average daily energy demand.

Holland now has five pilot CEP projects. Beyond home efficiency, citizen task forces are working on district heating for several neighborhoods, shared industrial energy services, commercial efficiency facilitation, and public education. Last year Holland dropped building a coal-fired power plant in favor of constructing a gas-fired unit, and signed 37 megawatts of wind power contracts.

Such dramatic shifts—the coal plant was a very controversial issue—are unusual for CEPs, however. As Arlington Energy Manager John Morrill put it, "There's no expectation of anything happening tomorrow, but we now have a vision and a goal and a plan to implement changes over time. That is what will get us to our desired destination." ■

# TRAVERSE CITY CAN BE A LEADER

Community members and future residents break ground on new, energy-efficient affordable housing in Traverse City.

TCSaves showed that a well done, public-private, residential energy efficiency program can reach many homeowners, make them more comfortable and lower their utility bills, produce good-paying jobs, keep more cash in the local economy, increase home values, and make financial sense.

With more than 550 TCSaves participants feeling cozier at home and reassured about their energy costs—and with some local businesses boosting profits thanks to their own, locally financed efficiency investments—Traverse City has proven itself an "efficiency ready" community. It now has enough happy homeowners, smart businesspeople, skilled efficiency entrepreneurs, and forward-thinking officials to crystallize support for a communitywide energy efficiency project that enables most of the region's homeowners and businesses to reap efficiency's rich rewards.

So it's time to take the next step: combining modest, local-government action with significant private investment and employment to make the region a paragon of sustainable economic growth. Traverse City Light & Power agrees: In partnership with MLUI and SEEDS, it is launching another phase of TCSaves, available to all homeowners the utility serves, in early October. And, more broadly, the Northwest Michigan Council of Governments, in concert with The Grand Vision's Energy Network, will release its Framework for the Future, looking at community approaches to energy efficiency throughout the entire region. Clearly, northern Michigan is beginning to plug into the power of energy efficiency.

With some leadership from local civic, business, government, and utility leaders we can design and implement a program that allows participants to cut their energy use by at least 25 percent over 15 years—without making individual, upfront investments. Our 2012 study, *Energy Efficiency and Economic Opportunity in Grand Traverse County,* indicates that reaching all homeowner and half of the city's businesses and institutions would annually employ about 76 people and, over 30 years, save $212 million on local energy bills while also entirely paying for itself.

Of course, launching such an endeavor will require creative thinking and doing. But its rich rewards—and the model it would provide to the rest of the state—make communitywide energy efficiency an idea whose time has come. ■

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