

Sustainability *and* The Putney School:

A New Rallying Cry for What We've Been Doing The Past 72 Years



POWER BY SOL: THE FIRST PHOTOVOLTAIC SOLAR ENERGY PANEL WAS INSTALLED ON THE GRAY HOUSE CABIN OVER 15 YEARS AGO. TWO OTHERS, NOYES AND KEEP/NEW BOYS (SHOWN HERE), ALSO GET ENOUGH SUN FOR SOLAR PANELS THAT PRODUCE ENOUGH ELECTRICITY FOR INTERIOR LIGHTING.



Jim Taylor, Plant Manager

Jim built the first-ever house in Vermont that featured super-insulating 2x6 studs in lieu of standard 2x4s.

“My goal was a zero-energy house,” says Jim. He didn’t quite achieve that goal, but working on the engineering puzzle of low-impact living is still one of his favorite things to do. Jim joined the school in 1985 and has been chipping away at Putney’s energy use ever since.

First to go were all the incandescent lights. “The first fluorescents were awful,” says Jim. “Hard to install and much too weak.” But he persevered and now all overhead lighting is high-efficiency fluorescents. “They take a moment or two to warm up, but then they’re fine,” says Jim. And the bulbs last for years. “Now you can turn on all the campus lights and the energy drain is about that of running a clothes dryer.”

Fifteen years ago Jim and his crew fitted the first photovoltaic solar panel to the Gray House cabin to power the lights. Panels were added to two other cabins and the remainder work on propane, because the tree canopy precludes solar access. Two windmills and a photovoltaic array power the lights in the KDU and literally turn the energy meter backwards during off hours, feeding energy back into the grid and reducing Putney’s power bill. A sun-tracking solar array powers the lights in the ecology lab of the Reynolds Building. Many of these solar additions were parts of Project Weeks past.

Approximate
Percentage of
4-Year Seniors Who
Have Witnessed
or Assisted in a
Livestock Birth: 100

Solving the problem of keeping the aesthetics of our white clapboard campus intact while cutting down on energy loss, Jim has replaced the high-maintenance wooden boards with vinyl siding backed with a 1", high R-value insulating foam. Many complained about the use of vinyl, but most of us have yet to notice the change because the visual part is unchanged. And our heating oil bill is still within reason, aesthetics notwithstanding.

Nearly all of the single-pane windows have been replaced. We now have argon-filled, low-E models. (That's low-emission—lets sunlight pass easily, but not heat. They have nearly the same insulating capacity as the walls they're mounted in.) "You have to balance all of these improvements with the price of oil," says Jim. "When it was a nickel a gallon, single-pane windows and minimal insulation were cost effective. But things have changed." Whether it goes to heating oil or tuition relief, it's all the same money.

Sometimes you can't save an old building, but you can make a high-tech, sustainable structure that looks like it fits in. For instance, did you know that the old music wing was bulldozed and rebuilt two years ago when the Michael S. Currier Center was finished? The plan was to renovate the wing into four classrooms and an English department office. But when the renovators got down to the studs, the tops were rotted to the point of instability from leakage of the old flat roof. So down she came, and up went a super-insulated replica with 2x6 studs; argon-filled, low-E windows; cork, bamboo and ceramic flooring; and insulated vinyl siding. Oh, and this one has a peaked roof that offers dry storage for the Main Building offices in addition to better rainwater management. The new wing is now called the New Wing, in honor of Putney trustee, Bill New (much to his merry punster delight), who chipped in much of the expense.

This year, Jim and his crew have replaced inefficient steam boilers with new oil furnaces and circulating hot water heaters in Old Boys, Leonard's Keep and the Milk House (which houses two to three faculty and staff). That leaves three to go, including the one at Lower Farm. And there's been some talk of experimenting with biodiesel as a home heating fuel in at least one of the remaining buildings—pending feasibility and cost.

As a result of our most recent energy audit, which utilized thermal imagery to find heat leaks in 30 buildings (as opposed to the visual inspections we received in 1990), we've embarked on a roof capping project that includes insulating, sealing and installing vapor barriers. Jim estimates the payback on investment at about three years or so. Sooner, if the price of heating oil continues to rise.

Other ongoing physical plant ideas and projects include:

- n Centralizing clothes laundering to reduce dryer use (more room to hang clothes)
- n Installing more automatic light switches (even though light use is a drop in the bucket, it's a visible way to show people we care about conserving energy)
- n A possible Project Week on designing and installing a solar hot water pre-heater on the roof of Old Boys
- n Installing an energy monitoring display and signage in the Post Office to illustrate our KDU windmill and solar cell use

Number of
Gallons of Milk
Produced Yearly:
60,000-70,000

APPROPRIATE SINGING: WE'RE NOT SURE HOW MUCH CARBON DIOXIDE IS PRODUCED BY SING, BUT WE'RE WILLING TO GUESS THAT IT'S WORTH THE GREENHOUSE GAS EXPENDITURE FOR WHAT WE GET BACK IN COMMUNAL ENERGY TO TURN OFF LIGHTS, CLOSE WINDOWS, RECYCLE TRASH, AIR DRY CLOTHES AND COMPOST KDU SCRAPINGS.



SUN-O-CART: BRYANT DOSSMAN '07 DISPLAYS A SOLAR-POWERED MODEL CAR HE BUILT DURING PROJECT WEEK. CAN THE FULL-SIZED VERSION BE FAR OFF?

BEYOND THE HILL: EMELYN DALY '07 MAKING FRIENDS WITH CHILDREN (AND GAINING GLOBAL PERSPECTIVE IN THE BARGAIN) IN GHANA DURING A MARCH BREAK TRIP.



Hans Estrin, Science Teacher

Hans has always had a “notion of ‘biophilia,’” meaning he likes being in the woods. So it fol-

lows that his education went down the road of botany, natural history and biology. It’s something he’d like to pass along. “As a teacher, I see students awakening into adult awareness,” says Hans. “The learning becomes a part of them. The foundation for a sustainable future is being laid here, whether they’re embracing it at the moment or not.”

But teaching isn’t all that Hans loves. “I love food. I love gardening. I love hard work—hours and hours outdoors with a shovel in my hands.” And he has an abiding interest in the energy cost of producing, among other things, food. “A human body uses 2.3 kilowatts per day. Americans use 100 times that amount per capita. We’re starting to feel the limits of the Earth. Carbon dioxide is a wonderful gas, but you can have too much of a good thing.”

In his role as sustainability coordinator this year, Hans is mostly taking inventory of what we have in place, new ideas (many gleaned from last year’s strategic planning meetings), and resources to pursue those new ideas. He says, so far, it makes a lot of sense for Putney to focus on food and fuel, since we’ve already made great inroads in those areas.

Hans also oversees Putney’s energy tsars—student workers who, twice a week, go to all of the dorms to read the electricity meters and leave sticky notes near the switches of lights that have been left on. The energy tsars are hand-picked from a pool of volunteers because of the go-getter nature of the job. The tsars present their findings in morning assembly on a regular basis.

Two special projects this year include overseeing Putney’s entry in the Green Cup Challenge, a multi-school contest to reduce campus energy use through behavioral changes (see sidebar, page 21). The other is an effort to make Putney’s sustainability more transparent on campus by erecting signs explaining systems at work, resource use, energy production, waste management and farm food featured at meals. The goal is that any Putney student could answer, with some degree of accuracy, questions visitors might have about our windmills, solar arrays and so on.

Judith Sheridan, Associate Director

“I think NAIS likes me to lead these seminars because I’m such a newcomer

to sustainability,” says Judy. “I have that beginner’s perspective and fresh eyes on the whole thing.” Don’t let her fool you, though. Judy is skilled in curriculum design and good at figuring out what will and won’t fit.

“It would be hard to add anything specific about sustainability to our class offerings without sacrificing something else,” says Judith. It’s true. We already teach environmental conservation and the whole biodiesel effort came by way of Project Week, which is a deeper look into several of our academic subjects. Judith suggests another track: “We could establish a tutorial in environmentally-certified students.” In other words, students with a lot of interest could study sustainability in depth and become certified as Emerging Green Builders with the U.S. Green Building



LIVING THE MISSION: ENVIRONMENTAL SCIENCE TEACHER AND ERSTWHILE SUSTAINABILITY COORDINATOR HANS ESTRIN AD LIBS A FOLK SONG DURING LAST FALL’S JEAN HINTON ROSNER WORK DAY MORNING ASSEMBLY.

Number of Single-Pane Windows Replaced by Argon-Filled, Low-E Models: Nearly all



WORKING IN HARMONY: JAMIE KANZLER '07, BIT SMITH '07 AND INTERNATIONAL STUDENT PROGRAMS DIRECTOR LIBBY HOLMES SCRUB OUT CAMPUS RECYCLING BINS. RECYCLING TAKES A BIT MORE EFFORT THAN TOSSING OUT TRASH, BUT SAVES ENORMOUS AMOUNTS OF ENERGY IN MANUFACTURING THE NEXT ROUND OF PAPER, BOTTLES AND SO ON. SO WHAT’S A LITTLE SWEAT AND SOAP SUDS COMPARED TO THAT?



Council, the people who established the Leadership in Energy and Environmental Design [LEED] Green Building Rating System.

Judy will, once again, be on the faculty of this summer's NAIS Institute for Leadership in Sustainability in Lawrenceville, New Jersey, this time with Washington, DC's Wynn Calder, associate director of University Leaders for a Sustainable Future.

Margie and Farm Manager Pete Stickney are New England farmers

Margie Levine, Assistant Farm Manager

(Pete was busy, so Margie was sitting in for the farm team, so to speak), first and foremost. They don't waste steps, materials, money or words if they can help it. You met them in the last issue, so suffice it to say nothing's changed in their commitment to teach youngsters exactly where their food comes from.

Margie reports that the farm is sending two milk cows to be beefed, instead of selling them at auction as we've done in the past when they get past their dairy production prime. The beef will be served in the KDU, in the interest of keeping our food gathering local. Margie also says issues we had with the health department over composting meal scrapings have been resolved by containing the compost in biodegradable trash bags. And, now that it's actually cold in Vermont, the new windows in the cow barn have made life much less harsh for the farmers and animals.

The Jean Hinton Rosner Greenhouse project is producing some useful data via max/min thermometer readings. It appears that growing anything in January and February requires additional heat, which is not the point of a passive solar greenhouse. So, for now, we'll be having fresh Elm Lea Farm vegetables growing from mid-March to December until we come up with a more clever means of stretching the growing season farther.

The manure lagoon is in its third year of operation, collecting all of the liquid runoff from the manure pit and cow barn milking wastes. The fermented effluent fertilizes grazing pastures by way of a moveable pipeline and pump system—not a place you want to be on a windy day.

Biodiesel production has been moved from the recycling shed to the Milk House to take advantage of the water, heat and electricity there. So far we've produced about 300 gallons. It's not a good fuel for winter use because of production inconsistencies, but we only run a tractor for about 20 minutes per day in the winter. The bulk of the tractor work occurs in the summer when fuel vagaries are less likely to cause the motors to run roughly. So far, the Marina Restaurant in Brattleboro is supplying us with all the used vegetable oil we need. There's talk of an oil collection cooperative that could form once other biodiesel producers in the area ramp up their production.



FROM LEFT: KDU CHEF JD MELLOWSHIP (DRUMS), COMMUNICATIONS DIRECTOR DON CUERDON (GUITAR), MATH CHAIR JOE HOLLAND (HARMONICA), MATT COHEN '05 (GUITAR, SQUATTING), HARRISON WOOD '05 (GUITAR) AND ADRIAN CARLETON '05 (GUITAR) AT THE ANNUAL GRAY HOUSE BLUES JAM SLED RIDE BARBEQUE HELD IN FEBRUARY ON WINTER FUN WEEKEND.



Gallons of Fuel Oil Saved from Insulation Improvements to Existing Buildings: No way to tell, because we also built the Michael S. Currier Center, which added 28,000 heated square feet to the equation, but it's got to be better than it would have been without all of the improvements.

Marty Brennan-Sawyer, Executive Chef

Marty has popped up several places in this special section as a



cheese-maker, athlete and purveyor of Putney Special. He keeps us fed, and fed well. (Some of us a little too well.) Marty's approach to food service is professional, innovative and fun. He works hard to keep us healthy and happy—which isn't as easy as you might think.

"Our initiatives are the same as the farm's," says Marty. "I work very closely with Marge and Pete because \$40,000 of our food comes from the farm. That's only 20 percent of the total, but it's still a significant amount." As for eating local food, Marty says, "We're fortunate. You can't get any more local than that."

Marty says local beef production is limited by the amount of available pastureland on Elm Lea Farm. Most of it is dedicated to our milking herd, horses and sheep. But he's been looking into buying Vermont grass-fed beef because research he's seen says it's quite a bit healthier than grain-fed beef. But it's also more expensive because of the grazing land needed. So, as with so many things, it comes down to a compromise among appropriate land use, personal health and money. "Some decisions are not always rational. You have to weigh the health benefits against the fact that grass-fed beef costs half again as much as the standard issue," says Marty. He'll try to offset the cost by searching for more local or sustainable animal proteins.

"We don't use much, but when we do, all of our paper products from dishes to napkins are fully compostable," Marty reports. And he's looking for effective bio-safe sanitizers for cleaning tabletops, an odd compromise between one health issue and another.

"We get our apples from down the road," says Marty. But because the growing season is so short in New England, we don't eat as much Vermont and Northeast seasonal vegetables during the school year as Marty would like. Global warming might improve the situation, but that's really not the point now, is it?

Marty says the challenge with students' dietary needs is the heritage we now have of convenience foods. "It's what a lot of them have been eating up 'til now," says Marty. So the challenge will remain: keeping them healthy while keeping them happy.

**PUTNEY SPECIAL:
EXECUTIVE CHEF
MARTY BRENNAN-
SAWYER PERFORMS
THE GRINDING OF THE
PEANUTS, TOASTING OF
THE BREAD AND STEW-
ING OF THE TOMATOES
IN WHAT HAS COME
TO PASS AS AN ANNUAL
MORNING ASSEMBLY
PAGEANT CELEBRATING
THE YEARLY FIRST SERV-
ING OF THE PUTNEY
SPECIAL, IN HONOR OF
MABEL GRAY'S INGENUITY
IN KEEPING THE MASSES
SUSTAINED DURING
THE LEAN WWII ERA.**

**Number of Eggs
Students Collect Per
Day: About 150**



**Savings from
the Use of Emission-
Free Wind-Generated
Electricity on
Campus:**

**1,090 lbs. air emis-
sions not generated
2,593 cubic feet of
natural gas unused
equivalent of not
driving 1,181 miles or
planting 74 trees**

Last, But not Least

Chief Financial Officer Randy Smith and Development Director Christie Baskett were also at the meeting, but mostly to listen.

Randy's job is to make sure we don't spend more money than we bring in. Christie likes to keep her ears open for ideas that might fit well with various grants that are available for our sustainable ideas. For example, the last tractor bought for the farm came by way of a Windham Foundation grant because we (well, Pete, actually) were able to demonstrate how we needed it for our curriculum.

The meeting adjourned with most everyone knowing more than they did before they met. Now there's a sustainable idea.

