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# Taitemupdate

Technology As If The Earth Mattered

## from Lou's desk



While media outlets are focusing on the Presidential campaigns, you should also be aware of upcoming legislative action that will impact your friends, neighbors and community. The federal **Solar Investment Tax Credits (ITC) are set to expire at the end of 2016**. This key financial support credit will be reduced to 10% from 30% of the installed commercial system cost. The residential credit will be eliminated altogether (from 30%). We expect this would drastically reduce how many solar systems people will install in the coming years, just when Solar PV is beginning to have an impact on our fossil fuel energy use.

The ITC represents an investment in our future, and has already seen hundreds of thousands of Americans choose renewable energy for their homes and businesses. Since Congress adopted the ITC in 2006, solar installation costs have dropped by 73%. Extending the tax credits beyond 2016 will help drive costs even lower, and see our energy mix **continue its shift away from fossil fuels and nuclear energy and to renewable energy sources**.

Thirty years ago, I was designing and selling solar systems for a company in Indiana. We had a thriving business until the federal government took away the solar tax credit. Shortly after that, our company and many others across the country went out of business, stalling the momentum that had been building. Just think of how much farther ahead we would be today, if all those companies had been able to continue reducing our fossil fuel usage. Let's not repeat that scenario! **Please contact your congressperson and urge them to extend BOTH the commercial and residential Investment Tax Credits.**

## standardizing solar - Taitem partners with NYSEG

NYSEG, its parent company Iberdrola USA, and Taitem Engineering are collaborating to develop a NYS REV demonstration project, based in Tompkins County, called **Community Energy Coordination**. The project will explore how the involvement and support of the utility company can help communities meet their energy goals. The project seeks to:

- ⇒ create sustainable business models and **grow the market for clean energy services**;
- ⇒ reduce the cost and increase the adoption of distributed energy resources (DER) such as solar PV (with one potential focus being clients of low and moderate income); and
- ⇒ allow NYSEG to better understand how it can create value for DER developers and customers

One possible outcome is Taitem and NYSEG working together to develop and promote standardized solar PV packages which **lower the cost and complexity of solar for homeowners**. Community solar is another option. The first community outreach phase of the project is getting underway and will influence the selection of energy services developed over the next 2 years. Taitem is excited to be joining forces with the utility company to help scale up clean energy and explore new ways of making it happen.

# featured project

## 13kW residential install Oneonta, NY

Anna chose to feature this project "as an example of how well **our team can work together to troubleshoot problems** ahead of actually being on site."



This large installation included replacing the old main service panel. "The **installation stayed on schedule without any hiccups** because we put our heads together to plan every detail. I also had an opportunity to draft the structural attachment plan and work with one of our professional engineers, Yossi Bronsnick. This work is helping me towards eventually becoming a PE."



The installation featured forty Sun Power 327W modules mounted on a roof. "We were able to install the modules around a few vents and chimneys and **simplify the interconnection of the system** so we could swap out the old main service panel quickly."

**Want to learn more about our solar PV projects? [Click here](#) or contact Gordon at [gwoodcock@taitem.com](mailto:gwoodcock@taitem.com)**

## ask the solar design expert



We sat down with our resident project engineer and expert PV designer Anna Legard, to learn more about what it takes to design extraordinary solar PV systems.

### **Q: What are some challenges in designing PV systems?**

**A:** Each solar design is customized for each customer's needs. There are a lot of details to pay attention to. My goal is to design an installation that meets the customer's expectations, while also complying with Taitem's rigorous design principles and local/national codes.

### **Q: As a designer, how much do you know about incentives?**

**A:** It's very important to have at least a cursory understanding of everything that is involved in completing a job, from sales to installation. I am responsible for securing NYSERDA incentives for our customers, so I am very familiar with that portion of the funding. While knowing about the other rebates/credits is not a critical component of my job, it allows me to help a potential client understand how they will affect their install.

### **Q: What are the advantages of working with the team at Taitem?**

**A:** I have never worked with a more dedicated or professional group of people. Every single member of our solar team is focused on delivering a product that has been designed and installed to very high standards. It's amazing to work with so many individuals who care deeply about the quality of their work and what we represent for the community.

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### **Q: What advice would you give someone looking to design a PV system on their own?**

**A:** Unless you have a solid background with electrical installation or design, a DIY install is a very difficult endeavor, and not one I would recommend without professional help. Working with a solar installer like Taitem, you benefit from our experience and knowledge and are guaranteed a system that works, is installed according to code, and will last for decades.

### **Q: Who's your favorite hobbit?**

**A:** Funny you should ask, because I'm traveling to New Zealand (Middle Earth, as I like to call it) in December for my honeymoon. I was always a fan of Merri. He's foolhardy, but always seems responsible and able to help Pippin out of a tight spot.



# in the field



Taitem is supporting the Physics Bus and helping them go solar!



PV Installer, Edward Bailey carries another solar PV panel to its new home.



Is Mahbud searching for a soft drink or conducting an energy audit for Hammondsport Grocery? Answer: Both.

Follow our team to see more photos from the field!



## sustainable, low-income housing

Taitem is committed to bringing high performance building practices to the affordable housing industry. We are approved Technical Assistance providers to Enterprise Green Communities (EGC).

EGC helps developers, investors, builders and policymakers make the transition to a green future for affordable housing by providing the funds and technical expertise to help build, rehabilitate, and operate healthier, more efficient, yet still affordable homes. The group works with state and local governments to ensure the development of smart and sustainable housing and economic development polices. **Here is what EGC has done:**

**550** housing organizations supported across the country.

**38,000** green, healthy homes created and rehabilitated for low-income people.

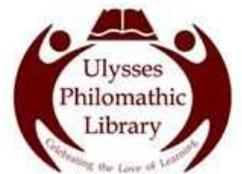
**+\$2 billion** invested in the development and preservation of green, healthy and affordable homes.

**policies** transformed in state, local, and national governments across the country.

## celebrate the love of learning and solar

Taitem Engineering is installing a 48kW solar system for the Ulysses Philomathic Library (UPL) in Trumansburg, NY. The Sun Power module array will generate nearly 100% of UPL's annual electricity consumption.

The project was awarded through a grant of \$55,313 and requires a 50% commitment of matching funds. Please support their efforts to reduce energy costs and consumption by donating to the library.



## is your county going solar?

Have you joined the community solar program in your neighborhood? Sign up today to learn how community solar can reduce the cost of solar PV for your home. Taitem is working with several counties on their programs.

Here are some upcoming events:

- November 4:** Solar Schuyler @ Damiani Winery in Burdett, 7pm
- November 6:** Solar Seneca Fundraiser @ Boathouse Beer Garden in Romulus, 7pm
- November 7:** Solar Delhi @ Delaware Academy, in Delhi, 10:30-12:00pm
- November 18:** Solar Southern Tier @ Congregation Kol Ami in Elmira, 7pm

[www.taitem.com](http://www.taitem.com)



## net zero in NYC – a case study

Umit Sirt, partner and senior engineer at Taitem, was recently published in *Consulting Specifying Engineer* magazine. Umit and his team modeled a NYC multi-family mid-rise and determined that the building will meet the challenge of **reducing emissions by 90% to 100%**.

Our engineering team assumed that a new, mid-rise multifamily building may have the highest potential for cost-effective net-zero energy building design for the following reasons: easier adoption of new technologies, lower initial incremental costs, and optimal occupant density per roof area to **maximize use of renewable energy**.

Table 3: Lifecycle cost analysis of energy efficiency packages

Improvements	Installed cost (\$)	Electricity savings (kWh/yr)	Peak demand reduction (kW)	Cost savings (\$/yr)	SIR	Lifecycle savings (\$)	Lifetime expectancy (yrs)
Appliance	\$162,602	59,360	12.6	\$12,290	0.85	(\$23,773)	14
Lighting	\$34,400	124,936	24.4	\$25,953	7.51	\$223,936	12
Domestic hot water	\$238,400	93,694	14.4	\$19,194	0.96	(\$9,263)	15
Building envelope	\$311,105	71,961	12.7	\$14,599	0.82	(\$56,890)	25
HVAC	\$490,313	86,385	16.5	\$17,807	0.43	(\$277,734)	15
Total energy efficiency savings	\$1,236,820	436,336	80.6	\$89,843	0.97	(\$37,916)	17.3

Although a 90% reduction in emissions by 2050 looks like an intimidating target, it is possible to overcome the challenge following a "one step at a time" approach. This means **breaking the target into smaller, achievable pieces** instead of considering it as an insurmountable whole.

The conclusion: A **net-zero building design is feasible in NYC, up to four stories**. Taller buildings would be possible with higher-efficiency solar PV systems or a larger permissible roof area. The package of energy efficiency improvements is shown to be cost effective, on a lifecycle basis. [Here is a link to the complete published case study.](#)

## NYSERDA energy modeling partner

Taitem has been accepted as an energy modeling partner to provide technical support services for new construction projects in the [new NYSERDA program](#).

The program aims to increase the performance of buildings and to reduce overall greenhouse gas emissions with an emphasis on deep energy savings and zero-net energy designs. Taitem was selected due to the strength of our energy modeling department and our nationally recognized work in net zero design.

### DOE defines 'net zero' as

"...a building where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy."

### Net Metering 101

Check out [this video](#) to understand net metering and its effect on your electric bill once you install a solar PV system.



## net zero training

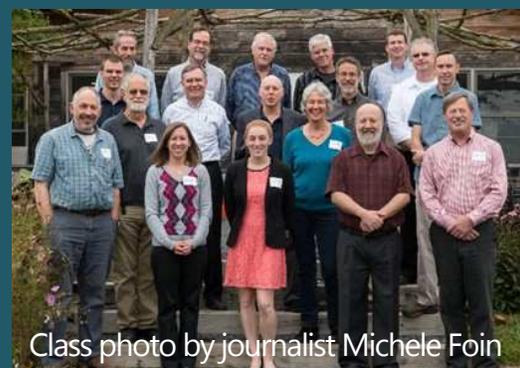
Ian Shapiro, founder of Taitem Engineering and co-author of the book *Green Building Illustrated* (Wiley, 2014) and Liz Walker, co-founder of EcoVillage Ithaca, and Executive Director of its educational arm, Learn@EcoVillage addressed **the fundamentals and strategies for zero energy design** during the net zero training at EcoVillage Ithaca in September.

The two-day training focused on design and construction details to achieve net-zero energy use in new buildings - both residential and commercial.

### what people are saying

Well presented, knowledgeable speakers, and the tours were excellent. - Engineer

Very informative and well presented. - Architect



Class photo by journalist Michele Foin

The next training is scheduled for May 9-10 2016.

Contact Beth at [bmiebrecht@taitem.com](mailto:bmiebrecht@taitem.com) if you are interested in attending.