



Solar PV for Homeowners

Factors in ownership



University of New Hampshire
Environmental Conservation and Sustainability

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Academics

- Undergraduate Major
 - B.S. Degree in Environmental Conservation and Sustainability
- Graduate Programs
 - Master's Degree
 - Ph.D. Degree
- Online Education
 - MS in Sustainability
 - Online
 - UNH Graduate Courses

Research & Organizations

- Woodcock Field Station
- Wentworth Center for Environmental Research
- Wentworth Research
- Wentworth Program
- Wentworth Center for Environmental Research
- Wentworth Center for Environmental Research

Outreach

- Cooperating Institution
- UNH Office of Sustainability

Environmental Conservation and Sustainability

Meet a Student

Students in the ECS major

Sustainable for-profit International Finance partnership forms, great first meeting in

Students (other video reports)

Clay Mitchell, Esq PhD
UNH Natural Resources
NH Clean Tech Council, Advisory Board
Past President and Policy Director, NHSEA

HOME | ABOUT US | MEMBERSHIP | STATE ENERGY POLICY | JOB POSTINGS

NEW HAMPSHIRE CLEAN TECH COUNCIL

NH CLEANTECH NEWS

NHCTC Advisory Member Harold Turner: "We cannot overemphasize the need for clean tech sector." **Business Review - April 17, 2015**

March 16, 2015, CONCORD -- An independent economic study released by the New Hampshire Clean Tech Council (NHCTC) shows that the state's clean-tech sector accounts for a significant and growing share of the state's economy with substantial growth potential. Download the full report [HERE](#).

EVENTS

Considering a renewable energy system to power your business? Learn about your options. **12-14, 8:00-9:00am @ Wurtzhaus Industries.**

10/22/2015: Listen to NHCTC's Executive Chair Hearing Next Meeting Day

GET INVOLVED

Join the NH Council

NHCTC needs a mix of voices about the energy and clean tech economy as we convene to

technology jobs

Learn More

New Hampshire Sustainable Energy Association

Home | About Us | Membership | Education | Member Area | Resources

Join the NHSEA

Learn more about the energy and clean tech economy as we convene to

technology jobs

Learn More

Summary NHSEA

The mission of the NHSEA is to promote the development and use of renewable energy resources in New Hampshire. The NHSEA is a non-profit organization that provides information, education, and advocacy for the clean energy sector.

NHSEA News

Good news! NHCTC Advisory Member Harold Turner: "We cannot overemphasize the need for clean tech sector." **Business Review - April 17, 2015**

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Upcoming Events

10/22/2015: Listen to NHCTC's Executive Chair Hearing Next Meeting Day

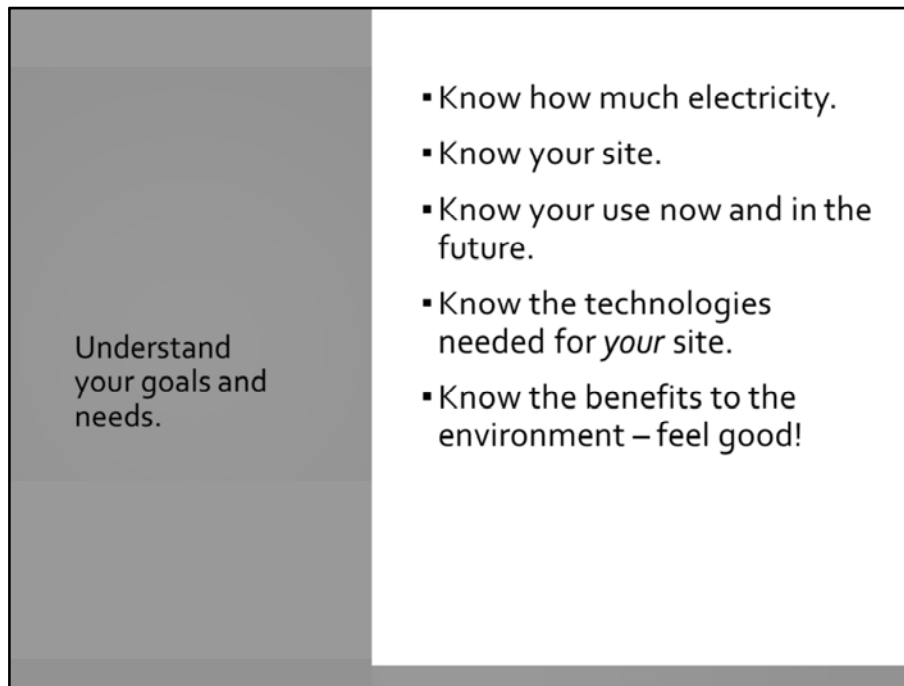
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Ownership

- Outright purchase or finance.
- You make the call.
- You get the O & M.
- You get the incentives.
- Could move it or sell it with house – your call.



Electricity: Bills usually show year history – or can be secured from your utility.

- Must know this because net metering currently secures maximum benefit at 100% or lower.
- Consider future as well – number of residents – future sale, electric cars, heat pumps, etc.

Site.

- Consider your resource potential.
- Locational concerns for installation – on roof, on ground, etc.
- Need good sun exposure.
- Can use Tigos or micro-inverters to maximize output.
 - <https://matter2energy.wordpress.com/2013/08/01/optimizing-optimizers-tigo-vs-solaredge/>
- Consider impacts from abutting properties or trees not in your control – may need to remove some of your own trees.



There will be challenges...

There will be permits:

Utility: Interconnection.

Local building/electrical.

Home Owners Association Rules

- Array is installed to minimize shading on southern facing wall.
- Some say ugly – I say wonderful.

Understand the price.

- As with any major purchase – get a couple quotes.
- Usually get a free assessment with projections on output and savings – know the variables.
- Additional research:
 - Renewable Energy Initiative.
 - Look to see if your community is participating in a Solarize Campaign.
 - You can check prices of equipment online.

- With the proposal – check every number.
- Can look to non-traditional ways to participate with others – see below.
- <http://www.plymouthenergy.org/>
- <http://searei.org/>
- <http://solarupnh.com/news/launching-a-new-round-of-the-solarize-campaigns/>
- <http://myenergyplan.net/>
- <https://www.altestore.com/store/>

Understand the proposal.

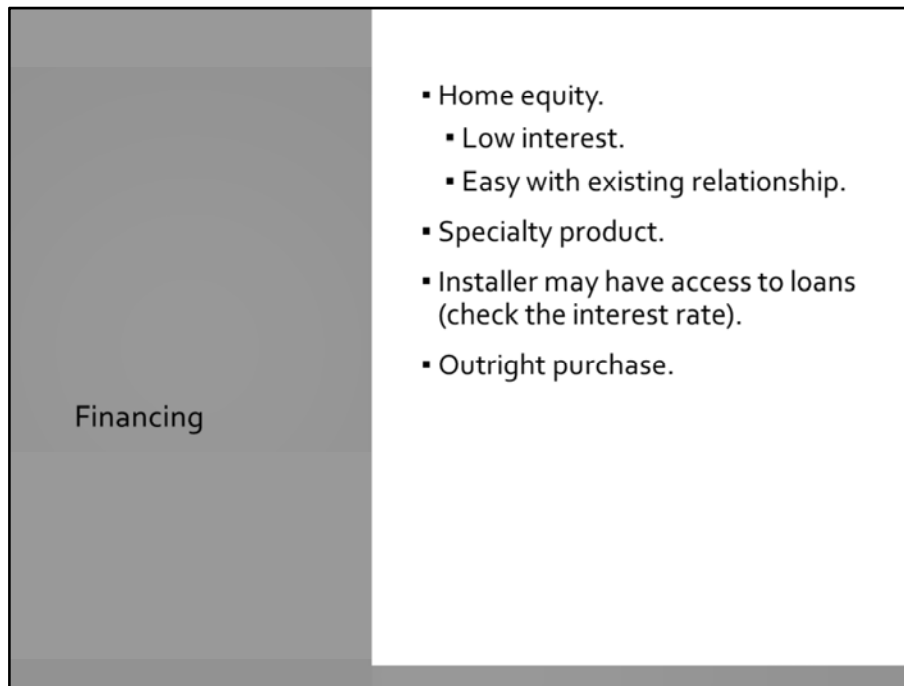


- Make sure you get the full price.
- Understand projections and assumptions.
 - Watch out for high escalation assumptions.
 - Watch out for correct kwh price.
 - Be aware of potential changes in laws and rules.

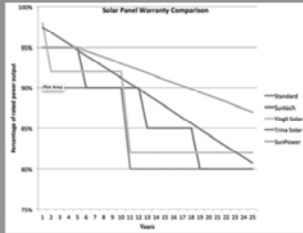
- Consider requesting the proposal with 2 – 3 % rate increases over time.
- Be wary of 5% or higher.
- Check your bill for your actual all in rate for kwh.

<p>Incentives</p> <p>Check your eligibility BEFORE you install.</p>	<ul style="list-style-type: none">▪ Tax Credit – set to expire at the end of 2016 on residential systems – currently 30% installed cost.▪ State Rebate – 0.50\$/watt, total \$2,500 up to 30% of system cost – limit is 10kw system.<ul style="list-style-type: none">▪ NH Electric Co-op has its own program.▪ Net metering – full credit at retail rate that can rollover.<ul style="list-style-type: none">▪ Be aware – soon could change.▪ NH Electric Co-op about 3.2 cents below retail rate
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- <http://www.puc.state.nh.us/sustainable%2oenergy/RenewableEnergyRebates-SREG.html>
- http://www.nhec.com/renewable_energy_programs.php



- Bank programs from Solar Up: <http://solarupnh.com/wp-content/uploads/2015/02/Solar-Financing-for-Solar-Up-NH2.pdf>



System life and Payback

- Panels – usually 25 year output warranty.
- Inverters – 5-15 year warranty.
 - Some have replacement plans or extended warranties.
- Data monitoring – can be free or cost a little.
- Payback:
 - Outright purchase.
 - Financing.

Ask for warranty information as part of any quote.

Maintenance and Property	<ul style="list-style-type: none">▪ Look at it.▪ Monitor it.▪ Prepare for inverter replacement.▪ Snow removal.▪ Cleaning. ▪ Property Value.<ul style="list-style-type: none">▪ Could increase.▪ Can get tax exemption in some towns.▪ Studies show sale of house with PV increases value.
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- The law: <https://www.nh.gov/oep/energy/saving-energy/incentives.htm>
- The list of towns: <https://www.nh.gov/oep/energy/saving-energy/documents/renewable-energy-exemptions.pdf>
- The form: <http://revenue.nh.gov/forms/2013/documents/pa-29.pdf>
- Studies are accurate – appraisers are not.
- Study CA: <https://emp.lbl.gov/publications/exploring-california-pv-home-premiums>
- Study 2 – National Bureau of Economic Research: <http://www.nber.org/papers/w17200>