

Our Emissions Free Greenhouse

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Timeline

1995-2001	Built 21,000 sq of connected poly houses with concrete floors throughout
2001-2012	Operated as a wholesale spring operation supplying area garden centers and landscapers with annuals, veggies and herbs
Sept 2011	Applied and accepted into the Maine Farms for the Future Program to improve our operation. Phase 1 included a \$ 6,000 grant to investigate the feasibility of our improvements and develop a business plan
Oct-Nov 2011	Installed a 12 ton field and a 6 ton ground source heat pump in the existing 21,000 sq ft ghs for the cost of \$ 50,000
Jan-Mar 2012	Applied for a REAP grant from the USDA for 25% of the energy portion of the new greenhouse (25% of the \$ 195,000 cost). Full funding was required with reimbursement after improvements are up and running - Coastal Enterprises approved our loan and the REAP grant was awarded in April of 2012. Payments would be doled out as portions of the project were completed and up and running.
Jul-Aug 2012	30 kW photovoltaic system was installed, \$ 130,000 check written and \$ 32,500 (25%) received from USDA and applied to loan
Oct 2012	Site work for the new greenhouse was completed along with burying propane tanks
April 2013	The Farms for the Future panel reviewed and approved our project and business plan and \$ 25,000 was received and applied to the loan
Jul-Dec 2013	30 X 96 Conley greenhouse was built with radiant floor heat supplied by a 10 ton horizontal closed loop geothermal system. This geothermal portion cost \$ 40,000 and, once inspected, \$ 10,000 (25%) was received from USDA and applied to loan
Jan-Feb 2014	12 ton geothermal system in the original 21,000 greenhouses was completed costing \$ 25,000 and \$ 6,250 (25%) was received after inspection and was applied to the loan
March 2014	2" Styrofoam insulation was installed along 1268 running feet of roll-up sides costing \$ 4,700 (w/o labor). \$ 5,200 was reimbursed by USDA's NRCS (Natural Resources Conservation Service)
Feb-Jun 2015	A heat curtain was installed in the zero emission greenhouse costing \$ 8,200 (w/o labor) with \$ 5,500 being reimbursed by NRCS
Feb 2015	All graduates of the Farms for the Future program are eligible for a 2% loan to cover the improvements once the system is fully functioning. The Coastal Enterprises loan at 6% was replaced with a FAME (Finance Authority of Maine) loan at 2%

NOTE: Shaded items on both pages involve the energy improvements to the original poly greenhouses. All other items concern the zero emission greenhouse. The shaded items are not included in the project costs on the following page but do show our efforts to reduce carbon emissions.

The numbers (rounded off to the nearest \$ 1,000)

Costs	Sitework	11,000	
	Greenhouse slab	15,000	
	Greenhouse structure	32,000	
	Photovoltaic system	130,000	
	Geothermal (zero emission gh)	40,000	
	Heat Curtain	8,000	
	Benches	9,000	
		Cost Total	245,000
Grants	USDA REAP (photovoltaic and geothermal)	(42,500)	
	Maine Dept of Ag (Farms for the Future)	(25,000)	
	USDA NRCS (insulation and heat curtain)	(5,000)	
Tax Credits	Photovoltaic System (30%)	(39,000)	
	Geothermal Commercial (10%)	(4,000)	
		Total Credits	(115,500)
Accelerated & Sec 179 Depreciation		Total Tax Advantage	(???????)
			Net Cost \$ 130,000 less ???

NOTES to consider

Ouch...All grants I received were followed the next January by a 1099-Misc income

Ouch...CMP, our electrical supplier, moved me from a small user to a medium user. Along with the move came a Demand Charge where I am charged to reserve the electricity needed each month. There could be a \$ 60 charge in months where we generate more than we use and upwards of \$ 300 in the big months

Ouch...Our state's Public Utilities Commission is considering a tax for net-metering

YEAH...The photovoltaic and geothermal systems value were not reflected in our assessed property value by the town

YEAH...Single use agricultural facilities (greenhouses) may be depreciated using Sec 179 or some other schedule. Check with your tax preparer as to what is most beneficial for your operation

The Bottom Line

Though we have experienced unexpected costs, like the demand charge and the looming net-metering tax, we do not regret this move forward in growing green as it has made our property more marketable. If we were a retail operation, this would be a no-brainer as every customer entering the store or seeing our ads would know of our effort to reduce carbon emissions. Our tagline would be **Buy Local Buy Green By Golly**

Cozy Acres Greenhouse Zero Emissions Greenhouse

Photovoltaic vs Organic GH Summary

Photovoltaic System

Organic Greenhouse

Date	Meter Reading	Annual Kw Gained	Date	Meter Reading	Annual Kw Used
8/24/2012	0 kWh				
8/24/2013	38,975 kWh	38,970 kWh	12/12/13	0 kWh	
8/24/2014	77,770 kWh	38,800 kWh	12/12/14	37,458 kWh	37,458 kWh
8/24/2015	116,270 kWh	38,500 kWh	12/12/15 (1)	60,658 kWh	23,200 kWh
8/24/16	156,170 kWh	39,900 kWh	12/12/16 (2)	<u>72,658 kWh</u>	<u>12,000 kWh</u>

Estimated

Organic GH put on line 12/12/13

(1) Heat Curtain installation completed in May '15. Minimal affect in this 2nd year of gh operation.

(2) Numbers reflect a very mild winter, lower floor heat settings and the use of a Heat Curtain On 10/18/16 meter reads 69,625 kWh (with YTD at 8,967 kWh)