
# Energy Conservation from the Grower's Perspective

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Claussen's Florist and Greenhouses
Colchester, VT

Green Works Winter Meeting

# Who Are We?

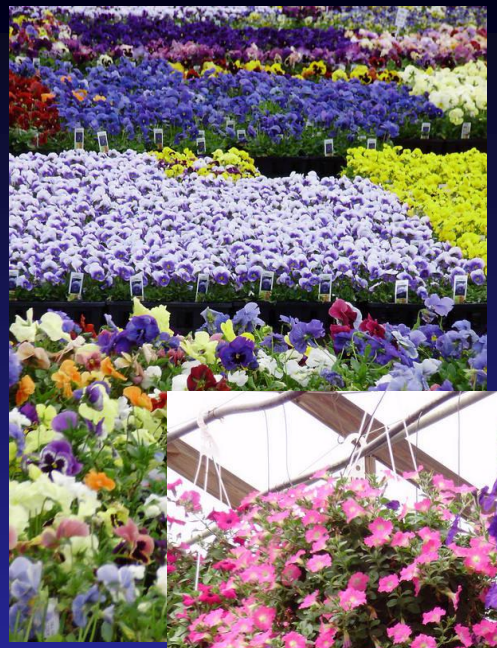
## Our Mission

Claussen Enterprises is dedicated to delivering legendary **service**, exceptional **value**, **consistency** and professional guidance in providing top **quality products** and services for our patrons. Our number one goal is to develop life-long **relationships with our customers** by understanding and delivering to their needs.

# History of Our Operation

- 1972 – Nursery established by Bill Claussen, including greenhouses & florist
- Late 1970's – Chris Conant started working at Claussen's
- 2008 – VT Retailer of the Year
- 2013 – Best Garden Center (second place)
- 2013 – Environmental Awareness Award
- Site of many UVM research projects on IPM and Energy Conservation since the 1990's

# The Diversity of Our Crops



# Our Annual Energy Costs

- ✓ Natural Gas: Over $275,000
- ✓ Electricity: $50,000
- ✓ Water: $15,000

# We Needed an Energy Audit

**= Energy Management Plan (EMP)**

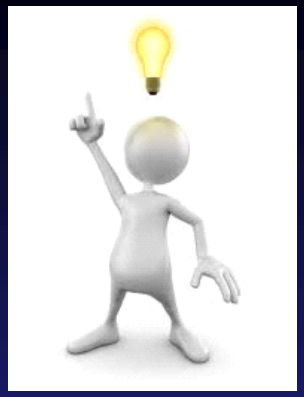
**= Agricultural Energy Use Assessment**

The Ins and Outs of applying with USDA for NRCS, REAP, etc.

# Energy Audits are Worth it.

We all get complacent about energy conservation.

- Pick your auditor carefully
- Let the auditors do their job to identify energy your conservation program.
- How much does an audit cost?



# Energy Audits

## What you need to do when you get your EMP?

- ✓ Review opportunities to help reduce energy bills by installing and making operational changes identified through the EMP.
- ✓ Come up with a plan for implementing immediate measures, and a 1, 3 and 5 yr capital plan for larger investments.

We had our first EMP in 2010 and we are still making significant improvements based on the original plan.

## So what did we do with our EMP recommendations?

# Energy Conservation Measures:

## Facilities



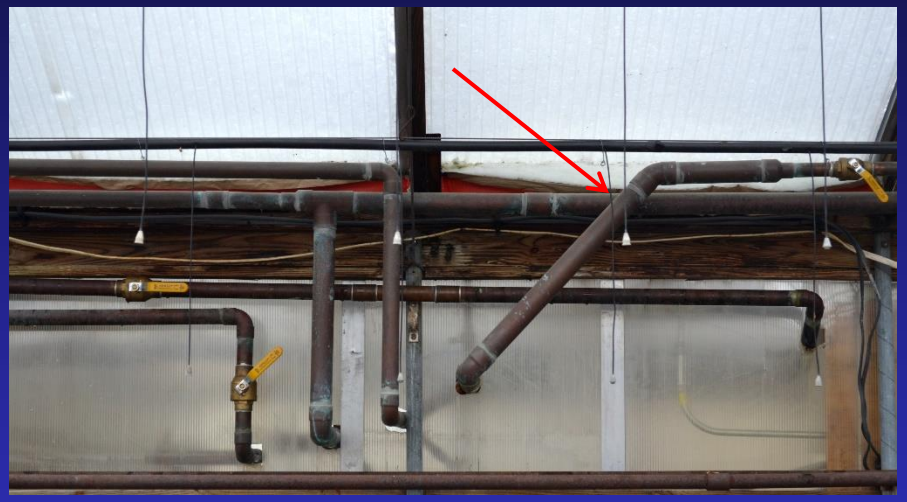
# Energy Conservation Measures:

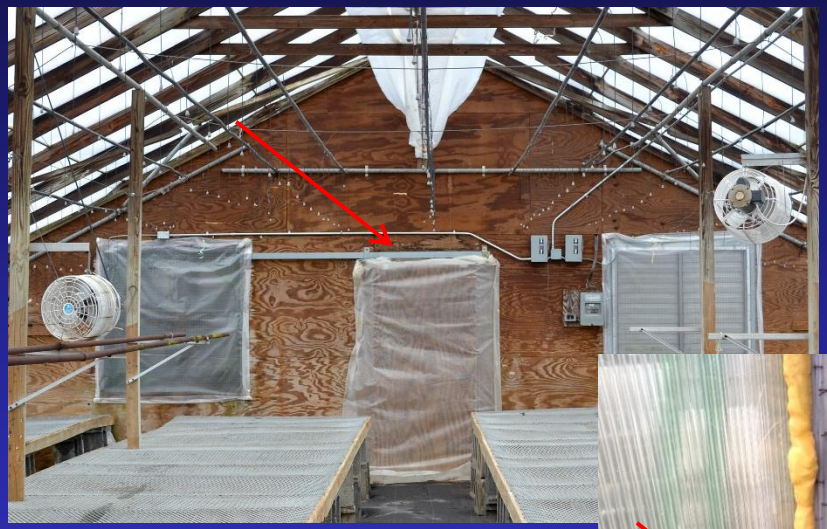
## Fixed Equipment




# Energy Conservation Measures:

## Insulation





# Energy Conservation Measures:

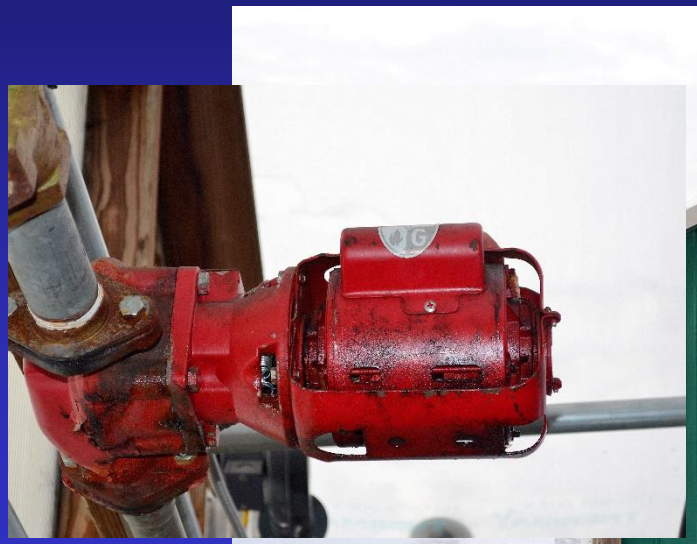
## Insulation

# Energy Conservation Measures:

## Roof Type

# Energy Conservation Measures:

## Auxiliary Equipment



# Energy Conservation
# Change of Habit


# Energy Conservation
## A Few Measures to Consider

- Facility: Where's the biggest bang for the buck? What improvements can be made for the least cost for best return?
- Crops: What are the essential needs of the crops in your facility to bring the most profit for your return i.e., Cost/sq ft of greenhouse according to crop value vs capital investment?

Your Energy auditor will identify **your greatest return** on investment.

# Energy Conservation

## Keep it Simple

Reduce infiltration of outdoor air!

- Cover fans, doors, vents any time that allows
- Repair broken vents and openings to the elements (doorways, etc.).
- Take simple insulation measures.

# Energy Conservation

## Keep it Simple

Maintain your equipment!

Servicing is Essential to Energy Conservation!

- Heaters, boilers, fans motors, pulleys, belts, etc.
- Repair broken vents and openings to the elements (doorways, etc.)
- Simple insulation measures

# Energy Conservation

## Keep it Simple

Install simple equipment to monitor energy use!





Yearly calibration is <u>Critical</u>!

# Energy Conservation
## Keep it Simple

Maintain your equipment!
Change of Habit is Essential

- High efficiency lighting
- Motion sensors
- Electrical upgrades
- Turn the lights off!

Sign up for Commercial Lighting Rebates
from Efficiency Vermont.

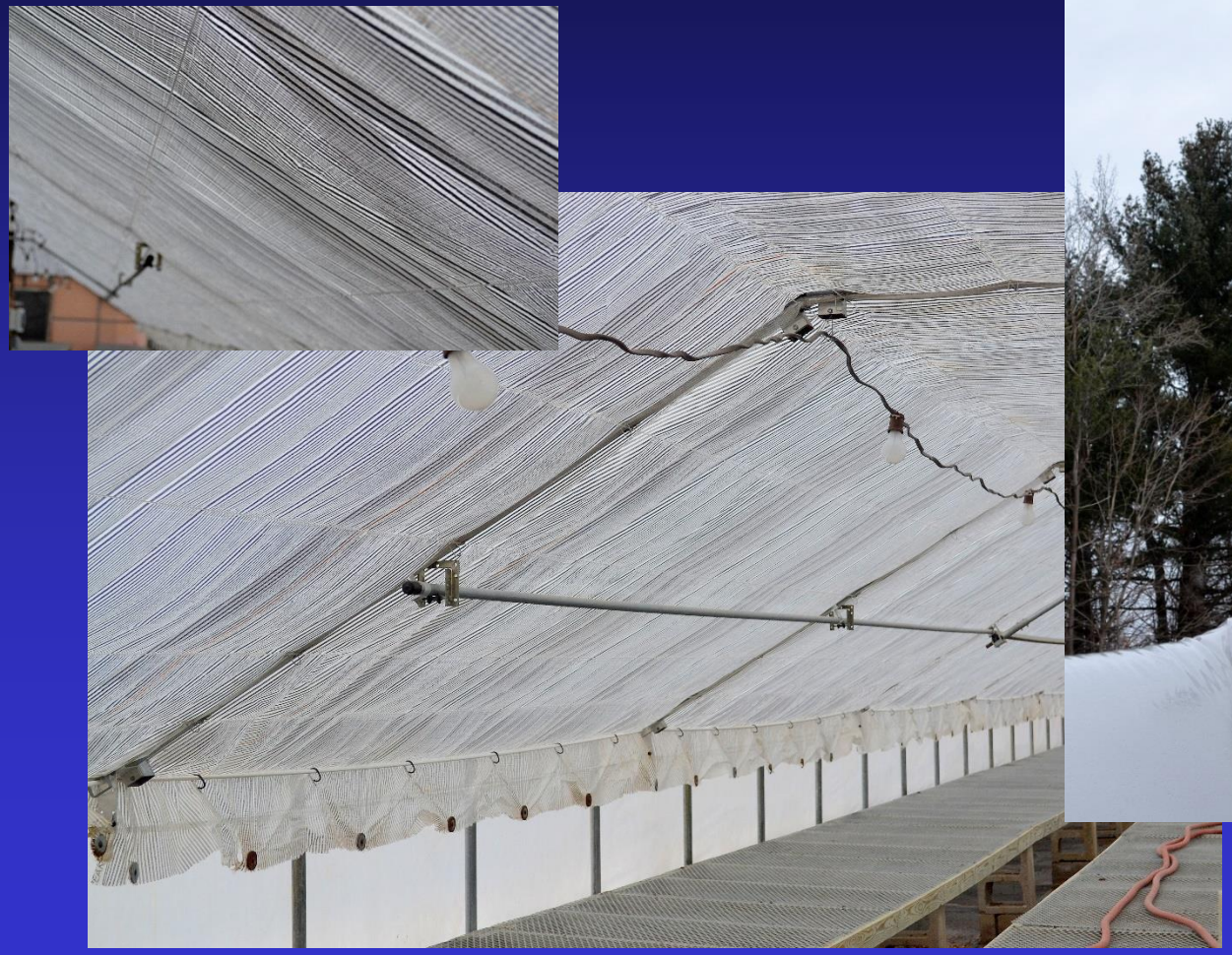
# Energy Conservation

## Efficiency of Heating



# Energy Conservation

## Efficiency of Heating



# Energy Conservation

## What else can we do?

- Greenhouse positioning
- Rolling benches to capture space use
- Germination chamber for seeding
- Back up energy system (for heat & electricity) is essential
- Water conservation

# *BLIZZARD PREPARATION!*

- ✓ Check all structures for poly connections and loose fasteners. (NO SHADECLOTHS on the exterior.)
- ✓ Patch leaky roofs with mending tape.
- ✓ Remove materials around greenhouse perimeters that could allow snow buildup.
- ✓ Make sure inflation kits are working properly.
- ✓ Make sure panels for PCSS covering are properly connected.

# *BLIZZARD PREPARATION!*

- ✓ When over 4 inches of snow is expected, turn the heat up so it melts.
- ✓ Keep heat on until snow is off the roof.
- ✓ Keep shade systems open to let heat to reach the roof and melt the snow.
- ✓ Prop up houses inside to help them shed snow, esp. if they are unheated.
- ✓ Ensure backup generator works and can handle your heating and safety light loads.

# *BLIZZARD PREPARATION!*

- ✓ Test it NOW (or even better YESTERDAY).
- ✓ Blizzards mean high winds so be prepared for heavy snow loads on and around structures.
- ✓ Make sure ALL insurance premiums are paid and confirmed.

# The Fruits of our Labors
# Energy Conservation

## Thanks!

**USDA Natural Resources Conservation Service and**
**NE Sustainable Agriculture Research & Education Program for funding the audit;**
**John Bartok for preparing a usable audit;**
**and the UVM Entomology Research Lab for putting it all together.**

# The Fruits of our Labors
# Energy Conservation

## Questions?