CERTs: Minnesotans building a clean energy future

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Heating the Midwest – Biomass for Poultry: Getting There...
Biomass for Poultry...

- Overview of CERTs
- Biomass for Poultry Operations
CERTs: Minnesotans Building a Clean Energy Future

Mission: We connect individuals and their communities to the resources they need to identify and implement community-based clean energy projects
How Is CERTs Structured?
What Does CERTs Do?

**LEARN**
- Write blog posts & case studies
- Create educational guides
- Manage diverse web-based tools

**CONNECT**
- Host events, tours, and conferences
- Help with community organizing
- Connect people to technical resources

**ACT**
- Provide seed grant funding and more
- Deliver research-based campaigns
- Spur other statewide programs
Energy Efficiency
CERTified Campaigns

Provide clear, actionable ways to save energy

- Sharing information about poultry-specific lighting
- Guiding farmers through funding options:
  - USDA NRCS EQIP
  - USDA RD REAP
  - Utility Rebates
  - MDA Grant

Get ready to gobble up savings!

CleanEnergyResourceTeams.org/Turkeys
CERTified Campaigns

Provide clear, actionable ways to save energy

- Collaborating with associations to raise awareness among independent stations
- Created a list of 12 high quality lighting products
- Connect stations to utility rebates

CleanEnergyResourceTeams.org/LEDcanopy
Right Light Guide

Right Light Guide for General Use Bulbs

Today there are many lighting options available. The right bulb for you depends on how much light you need, what color light you want, and its costs and features.

STEP 1 Decide How Much Light You Need

Focus on Brightness. Different amounts of light are needed for different uses. Instead of thinking about light bulbs based solely on the amount of energy they use, focus on their brightness level.

Lumen is the measurement of brightness—higher lumen bulbs produce brighter light. Watt (W) is the measure of power consumption. Lower wattage bulbs can lower your electric bills.

If you like your bulb’s current brightness, choose a CFL or LED with similar lumens to reduce your energy use. You may also consider a bulb that is less bright to save more.

Note: Lumen output listed on packages may vary. Light bulbs listing anywhere from 800 to 860 lumens are similarly bright, for instance.

<table>
<thead>
<tr>
<th>Brightness</th>
<th>Incandescent</th>
<th>CFL</th>
<th>LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>450 lumens</td>
<td>40W</td>
<td>9.13W</td>
<td>4.8W</td>
</tr>
<tr>
<td>800 lumens</td>
<td>60W</td>
<td>11.16W</td>
<td>8.13W</td>
</tr>
<tr>
<td>1100 lumens</td>
<td>75W</td>
<td>17.23W</td>
<td>11.15W</td>
</tr>
<tr>
<td>1600 lumens</td>
<td>100W</td>
<td>23.28W</td>
<td>16.20W</td>
</tr>
</tbody>
</table>

STEP 2 Decide What Color Light You Want

Choose Light Appearance. You’ll be pleased with your new bulb by choosing a light appearance that you like. All of these colors are available for LEDs and CFLs and at most brightness levels.

Note: Choose warm or soft white (2700-3000 K) to match the color of incandescent bulbs.

Different Colors, Same Brightness

- Soft White, Warm White (Living Room, Bedroom)
- Bright White, Cool White (Kitchen, Bathroom, Dining Room)
- Natural Daylight (Office, Library, Workshop, Garage)
- Cool Color (Lighting for work, industrial, task lighting)

Resources

Learn about lighting rebates and energy efficiency from Lighting.MnCERTs.org to learn more locations.

CleanEnergyResourceTeams.org/Lighting
Renewable Energy
Connecting with Companies

theCleanEnergyBuilder.com
Catalyzing grants for community-based clean energy projects in MN

Past funding: Over 230 projects have received nearly $1 million in seed grants since 2006
How Does CERTs Work?

- **Staff:** Regional coordinators and statewide support
- **Steering Committees:** One per region; governing body for regional team
- **Regional Teams:** Anyone can join; broad range of skills, interest, and backgrounds
The Teams
Program Approach

- Community development to spur broader community-scaled clean energy adoption... and vice-versa
- Diffusion of innovation & influence of social networks
- Storytelling: make it visible
- Focus on issues that bring us together
- Do not do advocacy work
Outreach Capacity

- Network of partners
- Weekly email blasts to nearly 12,000 contacts
- Facebook, Twitter, LinkedIn followers

- News media
Helped save over 103 billion BTUs of energy and avoid $1.6 million in energy costs since 2010

Awarded over $930,000 in seed grants to more than 230 energy projects since 2006

Impacted 120,000 people through grants, events, and programs since 2009

Fostered robust networks in each region and across industry sectors

CleanEnergyResourceTeams.org
Regional Goals:

- Increase energy awareness and action by fostering cross-sector communication and collaboration
- Build stronger connections and relationships with local utilities
- Advance energy efficiency and renewable energy projects at colleges and universities
- Support development of the regional biomass industry

Region: Northwest
Biomass for Poultry: Getting There

- Minnesota is the #1 turkey producing state.
  - 46 million yearly
  - 450 farms
- Big on chickens
  - 47 million chickens
  - 300 farms
Turkey Brooder Barns

- Two days to 4-6 weeks
- Barn temp is 90°F / 32°C
- Lowers by week as birds grow

Finisher Barns

- Weeks 7 – 18 or 20
- Temp 75°F / 24°C
Chickens like it HOTTER

- Chicken Broiler Barns (day old to 5 weeks)
- Barn temp starts 93°F / 34°C
Ballpark BTUs

Turkey Brooder Barn

- Long and skinny barns
  60-70’ x 300-400’

- 3 mmBTUs to heat a barn this size for 1 hour

- Cold year about 4,000 - 5,000 mmBtus
The Project Concept

- “Canned” project from Becky, Al and Jim
Put a 1.2 MMBTU Wood Chip Furnace on a Poultry Barn

- “Laboratory” - Turkey brooder barn split in half

- **Control-side** (pancake heaters) and **Test-side** to host the furnace

- 1.2 mmBTU cover 2/3 of the test side heat requirements
  - 1/6 of whole barn
Put a 1.2 MMBTU Wood Chip Furnace on a Poultry Barn

- Estimated LP savings of 18,500 gals
- $15.57 MMBTU in LP heat at $1.30 gal
- $4.63 MMBTU in wood chips at $50 short ton
- 60 short tons of wood chips per flock
- Feed rate of 183 lbs of wood chips per hour, 24 hours a day, 28 days per brooder rotation
• USDA NRCS Conservation Innovation Grant?  
  No!
• Minn. Dept. of Ag Next Gen Round 1?  
  No!
• Minn. Dept. of Ag Next Gen Round 2?  
  It’s complicated...
Green light but...INSURANCE!

- Insurance broker refused coverage
- Cited NFPC 211 and related policies on solid fuels
  - Ash disposal
  - Sparking
  - Human error
Poultry Heating Reality

- 20-40 open flame pancake heaters over a bed of wood chips
Almost there...

- Found an insurance broker and re-insurance agent who said YES
  - Lesser of two evils (open flame + wood chips = more risk)
  - Firewall separating barn sections
  - Automatic shut off
  - Spark arrestors
  - High temp cut out/thermal switch
  - Get it UL listed...
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Learn more: Visit the CERTs website, attend an upcoming event, or connect with a member of our staff. www.CleanEnergyResourceTeams.org

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