

Alternative Energy for Poultry Production

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Energy Use on Poultry Farms

Heating

Propane

Cooling

Electricity

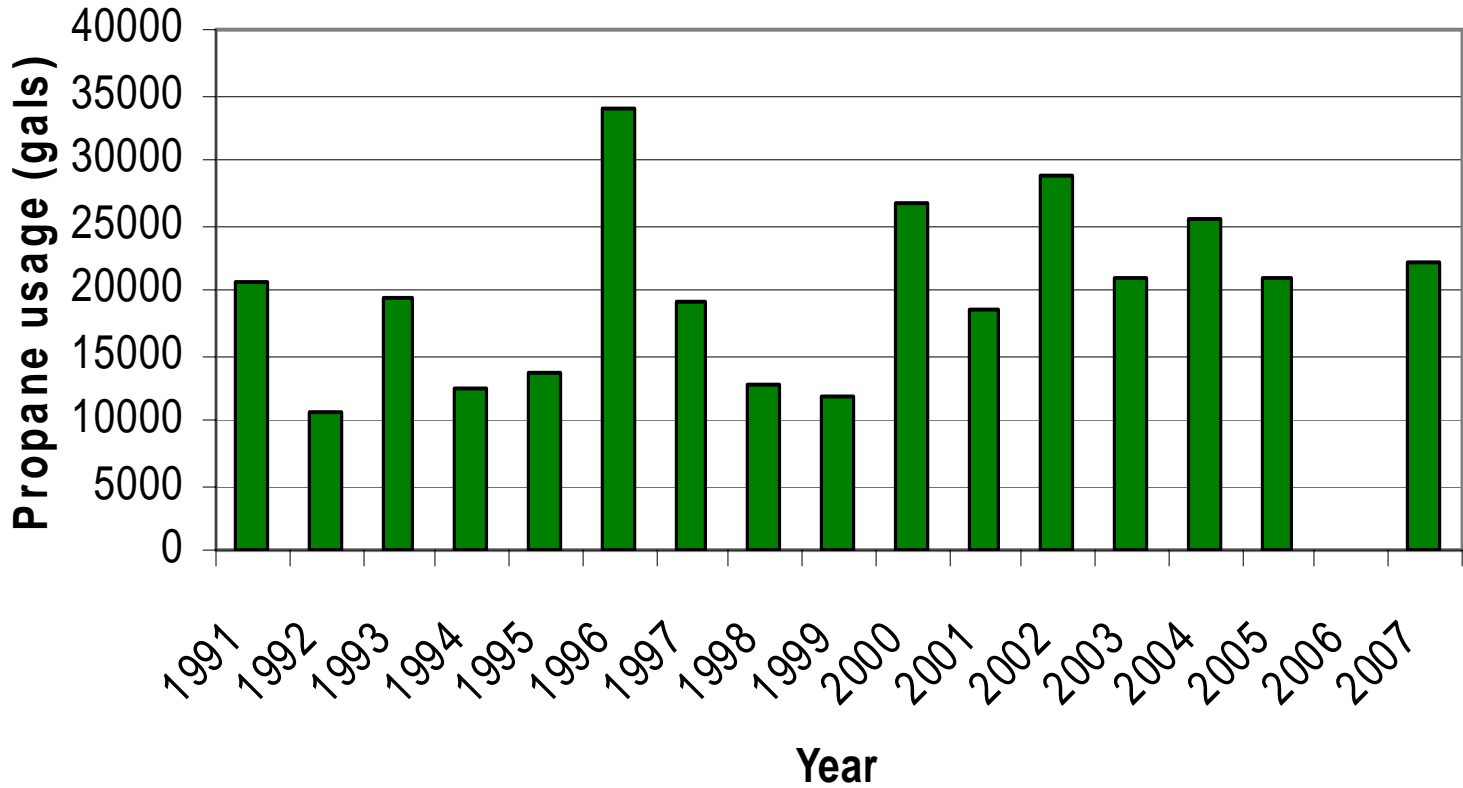
Ventilation

Lighting

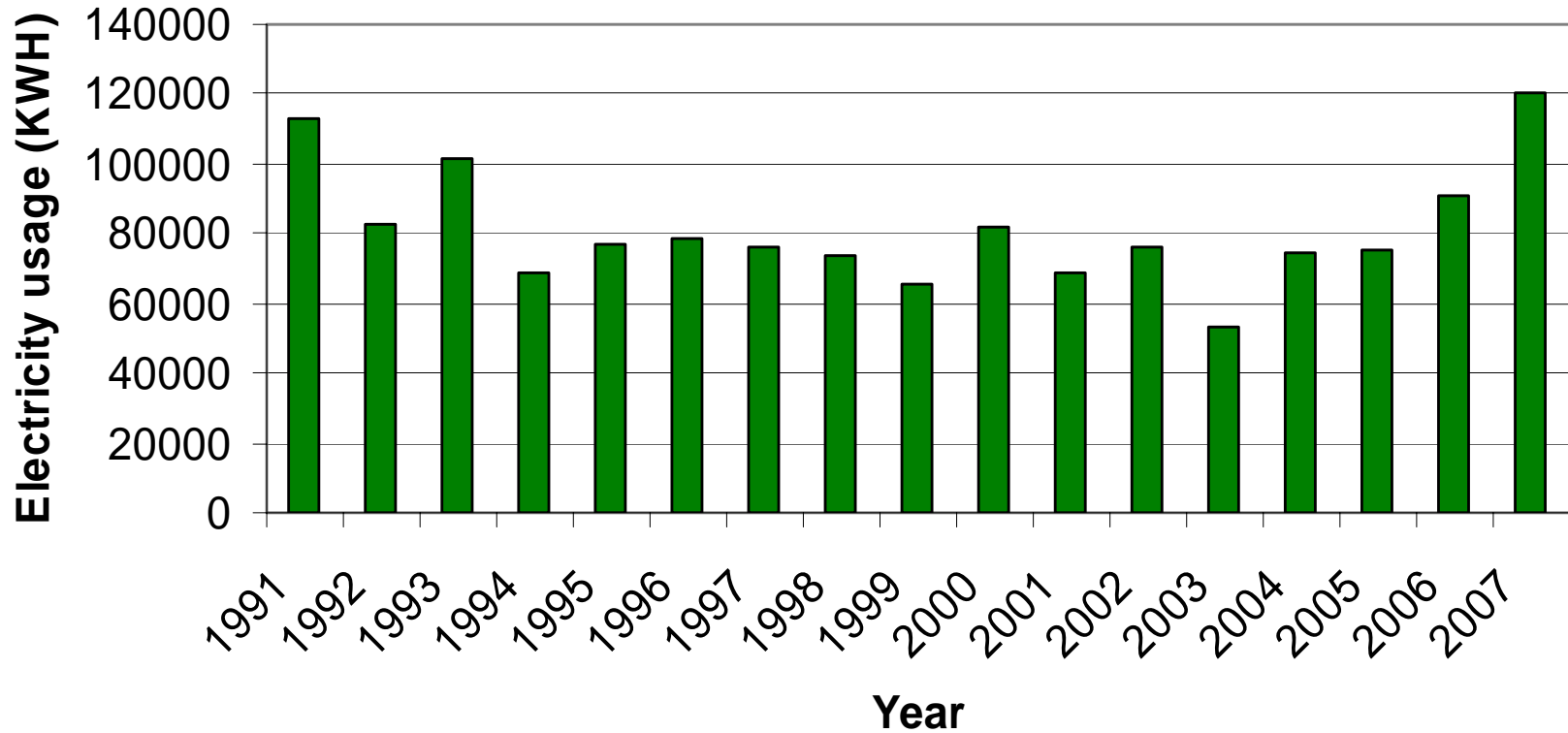
Feeding



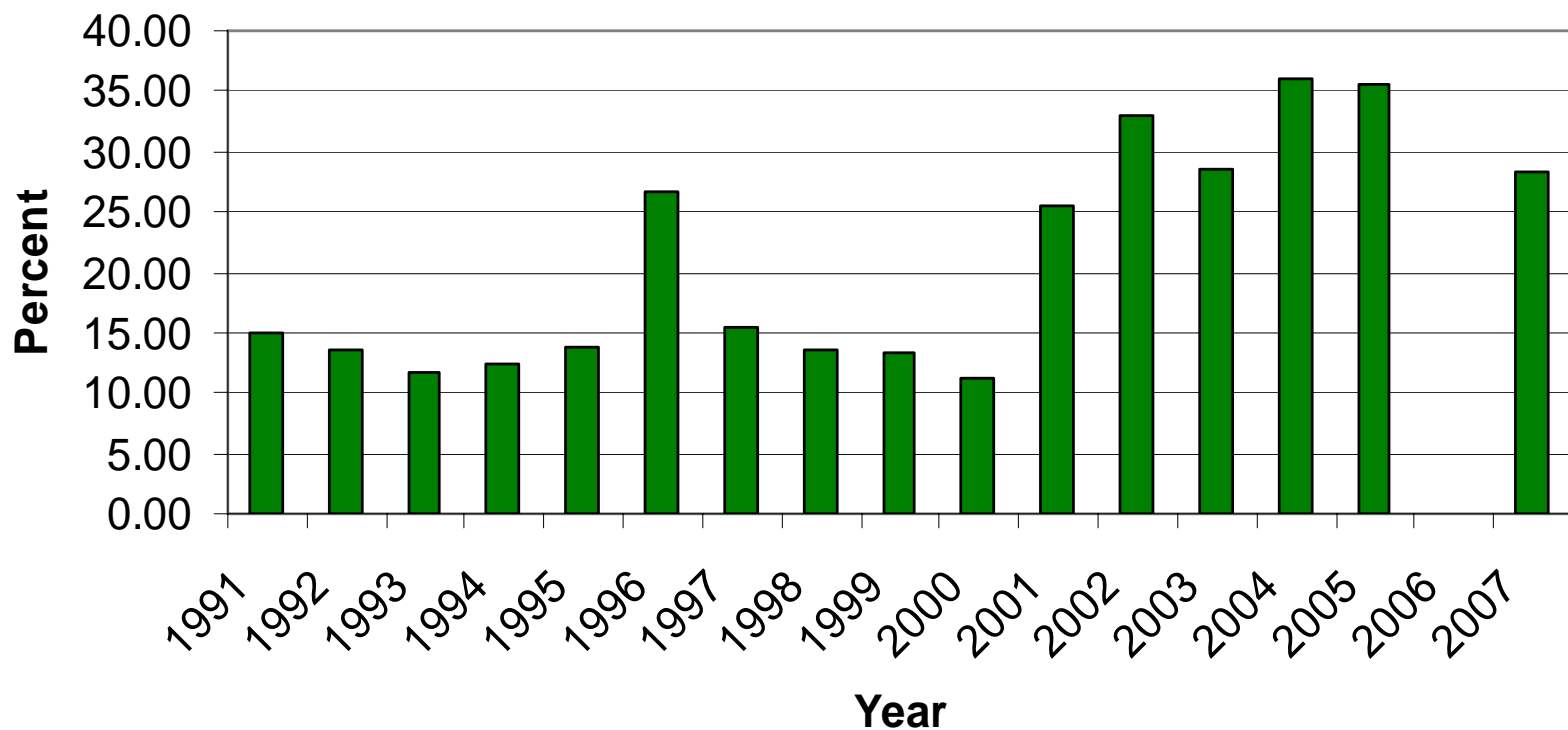
Farm Propane Usage

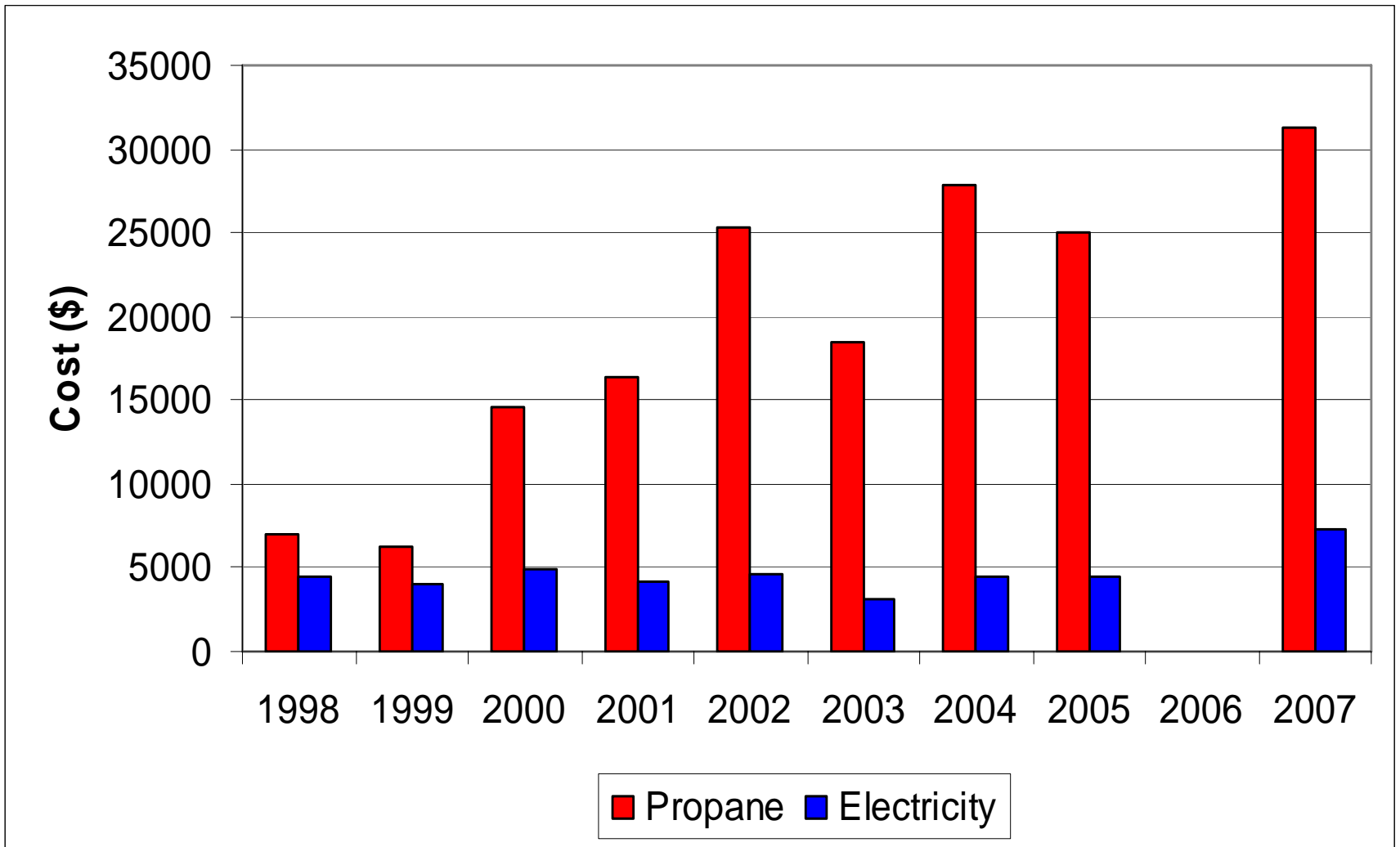


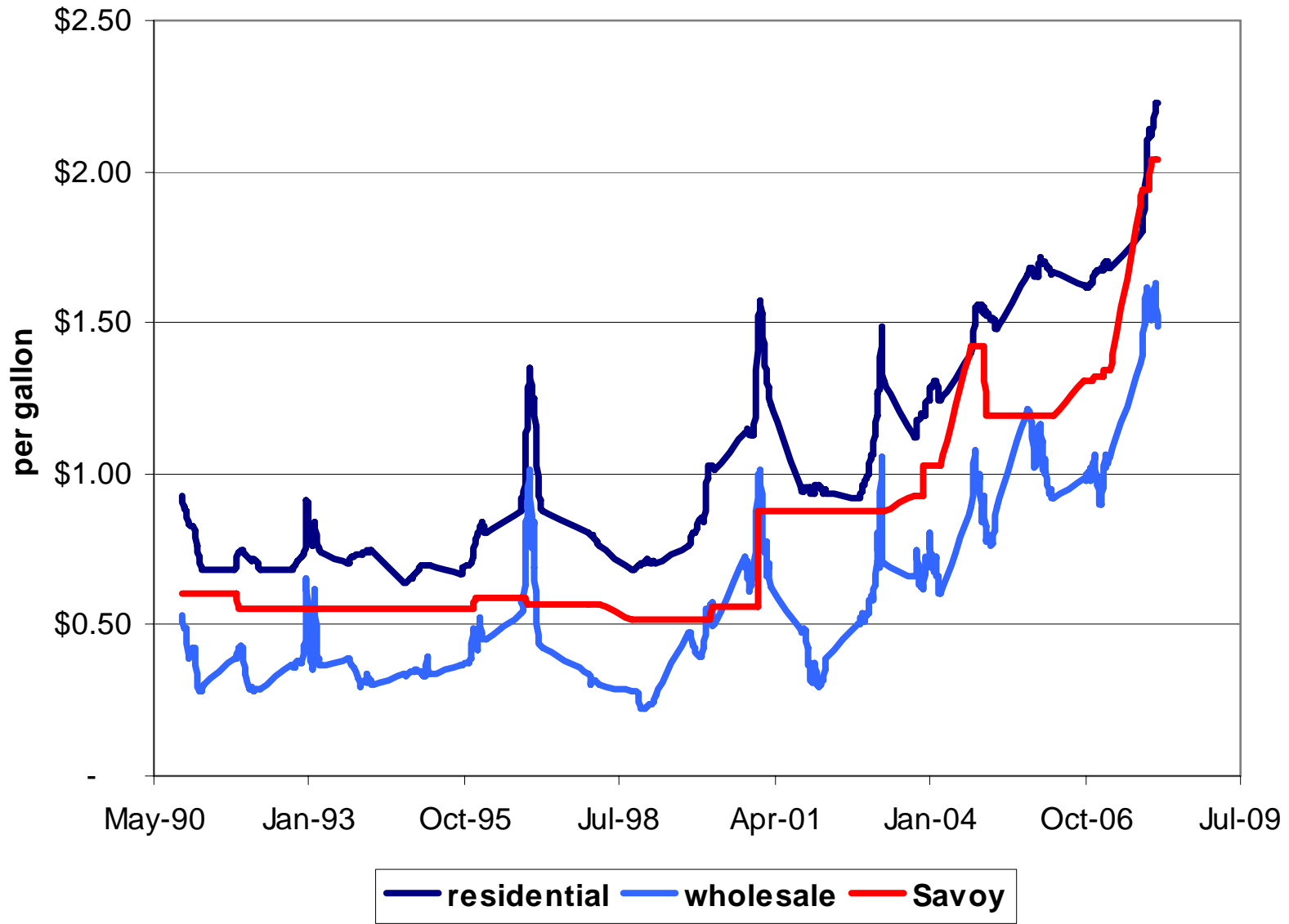
Farm Electricity Usage



Gas + electricity as % of chicken check



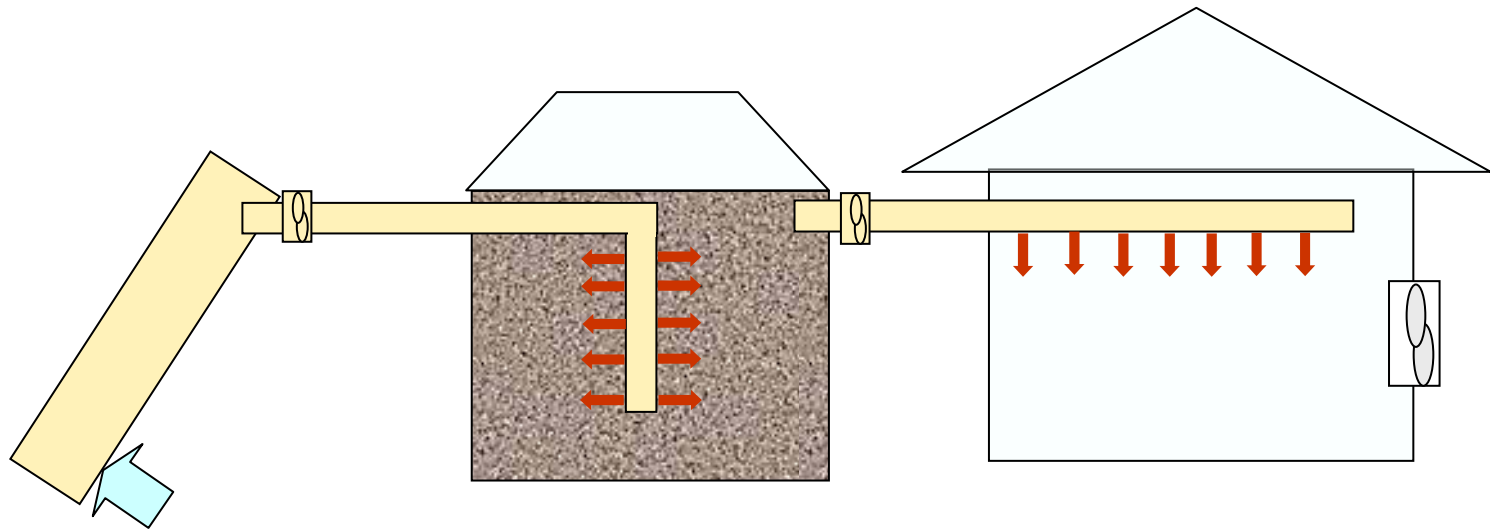






Alternatives to Propane

- **Electricity**
- **Solar**



**Multi-stage
Solar Air Heater**

**Rock Bin
Heat Storage**

**Positive-Negative
Ventilated
Broiler House**



Alternatives to Propane

- **Electricity**
- **Solar**
- **Biomass**



Biomass Fuels

- Wood

Biomass Furnace





Biomass Fuels

- Wood
- Corn

Biomass Furnace





Biomass Fuels

- **Wood**
- **Corn**
- **Poultry Litter**

Lynndale Furnace 2004 Installation at UA Engineering Research Center



2006 Installation at UA Farm





Performance in 2007

- **Litter Incineration Rate over 100 lb/h**
- **Peak Heat Output over 250,000 btu/h**
- **System Efficiency 32%**
- **Prototype not farmer-friendly**
- **Emissions testing still needed**

Fuel Use/Storage

- The system consumes 70-120 tons of litter per house per year.
- Need to store one clean-out per house per year.





Ash Management

- **110 Tons Poultry Litter Burned**

- **17 Tons Ash**

P,K

Metals

Fossil to Biomass Fuel Cost Comparison





Planning Scenario

- 40 ft x 400 ft conventional house in NEO
- Requires 5,000 gal propane per year
- Furnace should replace 85% propane use

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Annual Fuel Cost	\$10,500	\$8,500	\$5,300	\$9,900	\$2,500



In Conclusion

- ❑ **Currently propane is greatest cost**
- ❑ **Biomass furnaces show promise**
- ❑ **Litter not technically feasible ... yet**
- ❑ **Don't forget solar**