Does Solar Fit My Ag Operation?

- Dr. John Worley

Why Solar on Poultry (and other) Farms

- They are agricultural operations and thus eligible for grants that not everyone can get.
- They use a lot of electrical energy, especially in summer when solar production is maximum.
- Existing buildings are usually properly oriented for solar panels.

Can I get “Off the Grid” by using solar to power my poultry houses

- Is it possible? Yes.
- Is it practical? No.
- Requires battery backup, which adds tremendously to the cost
- Requires enough panels to supply energy in Worst Case Scenarios
- Makes much more sense to use net metering to produce power when you can
  Produce enough power during daylight hours to run operation most of the time
  Recommendation is to always install LESS than the maximum you need due to Georgia net-metering agreements

Think of solar energy as a separate enterprise from the poultry operation
The enterprise must make a profit on its own
Talk with Power Supplier!
- Programs are different for GA Power and each EMC and they vary with time
- Investment Cost (- help from grants)
- Income = reduced power cost + possible tax incentives
- Life of the System (25-30 years)
- Maintenance
- Tax and Insurance

Can I get “Off the Grid” by using solar to power my poultry houses

Where to Install Panels on a Poultry Farm

- Roof Mount
  - Generally oriented the right way, but angle not optimal
  - Expensive panels on a roof that is questionable structurally
  - Accessibility for service

- Ground Mount (preferred)
  - Vegetation must be controlled (Mowing or Goats/sheep - not cattle)
  - Better orientation can use exact angle and azimuth ~40°/South. (Poultry House roof typically 22°)
  - Cooler thus more efficient
  - More accessible for service

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**Cost of the System - Choosing panels**

- **Efficiency**
  - Ranges from ~10-20% most are around 15% efficient
  - Higher efficiency means fewer panels needed
  - [https://news.energysage.com/what-are-the-most-efficient-solar-panels-on-the-market/](https://news.energysage.com/what-are-the-most-efficient-solar-panels-on-the-market/)
  - Reputation of the company

**Expenses**

- Investment Cost (- help from grants)
- Life of the System (25-30 years)
- Maintenance
- Tax and Insurance
- Will there be decommissioning expenses at the end?

**Taxes and Insurance**

- This is an investment that is worth a significant amount of money
- You need Insurance to cover possible losses (tornado, fire)
  - Industrial use 25–50% of total capital investment annually
  - Roof top installations may be covered under homeowner policy
  - Need to talk to insurance company to make sure
- Is it going to be taxable?
  - It will most likely add to the value of the property, and will thus increase property taxes

**Annual Maintenance**

- Controlling Vegetation
- Cleaning
- Repair/replace damaged or defective equipment
- Figure on $15 per year per kW

**Income**

Talk with Power Company

- Depends on your power company
- What they offer varies with time
- Can you utilize Tax Credits?
  - 26% of investment (through 2022, then 22%, then 10% after 2024)
  - Carries back 1 year and forward 20 years
  - If you can’t utilize them, can the installer own the equipment so that they can utilize them and pass savings on?

**Solar Project Economics - Income**

- Accelerated depreciation
- 100% first year bonus depreciation (Federal only)
- Eliminates all future depreciation
- Some owners sell this depreciation
- Talk to your accountant. A good accountant is absolutely your best friend in making these decisions.
**Investment Cost**

- About $1850/kW of power
- Auburn reported a 50-kW system will come in at an installed cost of $100,000 to $115,000 (2016)
- Our calculations for 2020 put this same system at around $86,000

**Solar Trade Case**

- Tariff was predicted to have small impact on panel cost
- Modules are approx. 20% of total cost of project
- Prices were expected to increase ~$0.15/watt (5.6%)

**Solar Tariffs and Cost Increases**

- Impact of Solar Tariff on Residential Prices (in Dollars per Watt)

**Financing Help**

- USDA Rural Development REAP grants and loans (see concurrent session)
- 25% grant, up to 75% combination grant and loan
- Grants are taxable (reduce the amount of your deductible investment)
- See Concurrent Session for Details
- DSIRE web site: [www.dsireusa.org](http://www.dsireusa.org)
- Comprehensive list of available Federal, State, and Local incentives for all types of renewables and energy efficiency improvements

**Thank You!**