

Practice: 670 - Lighting System Improvement

Scenario: #1 - Lighting - CFL

Scenario Description: To install dimmable CFLs to replace incandescent lamps on a one-for-one basis. Light fixtures do not have to be replaced. A typical poultry house has 48 fixtures. CFL requirements: minimum 8 Watt, 4100 Kelvin, dimmable, grow-out bulb; industrial grade; suitably protected from dirt accumulation. In high humidity environments or areas subject to wash down, gasketed or weatherproof housings are required to prevent corrosion and premature failure.

Before Situation: An inefficient lighting system such as one using incandescent lamps has been identified by an on-farm energy audit.

After Situation: More efficient lighting is provided by Compact Fluorescent Lamps (CFLs) in order to reduce energy use as evidenced by the energy audit. Associated practices/activities: 122-AgEMP - HQ and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure: Each lamp replaced

Scenario Unit: Each

Scenario Typical Size: 1

Total Scenario Cost: \$18.44

Scenario Cost/Unit: \$18.44

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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Labor

General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$22.19	0.167	\$3.71
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Materials

Lighting, bulb, CFL, 8 watt	1166	8 watt compact fluorescent lamp (CFL), typically 4100 Kelvin, dimmable, grow-out bulb, industrial grade, suitably protected from dirt accumulation. Materials only.	Each	\$14.73	1	\$14.73
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Practice: 670 - Lighting System Improvement

Scenario: #2 - Lighting - LED

Scenario Description: To install dimmable LEDs to replace incandescent lamps on a one-for-one basis. Light fixtures do not have to be replaced. A typical poultry house has 48 fixtures. LED requirements: minimum 6 Watt, 3700 Kelvin, dimmable, grow-out bulb; industrial grade; suitably protected from dirt accumulation. In high humidity environments or areas subject to wash down, gasketed or weatherproof housings are required to prevent corrosion and premature failure. If lighting controls are needed, add Controller-Automatic as a separate line item.

Before Situation: An inefficient lighting system such as one using incandescent lamps has been identified by an on-farm energy audit.

After Situation: More efficient lighting is provided by Light-Emitting Diode (LED) lamps in order to reduce energy use as evidenced by the energy audit. Associated practices/activities: 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure: Each lamp replaced

Scenario Unit: Each

Scenario Typical Size: 1

Total Scenario Cost: \$23.52

Scenario Cost/Unit: \$23.52

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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Labor

General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$22.19	0.167	\$3.71
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Materials

Lighting, bulb, LED, 6 watt	1167	6 watt light emitting diode (LED), typically 3700 Kelvin, dimmable, grow-out bulb; industrial grade; suitably protected from dirt accumulation. Materials only.	Each	\$19.82	1	\$19.82
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Practice: 670 - Lighting System Improvement

Scenario: #3 - Lighting-High Bay LED

Scenario Description: The lighting system consists of a 150 watt light emitting diode (LED), typically 5,000 Kelvin bulb, 14,000 lumens, with industrial grade fixture typically used to replace a Metal Halide (PSMH) lamp or four to eight lamp fluorescent fixtures in high bay locations. This or equal or better shall be detailed in ASABE S612-compliant energy audit). Associated materials for installation of replacement fixtures are included. Appropriate disposal of existing lamps, ballasts and other materials is required. If lighting controls are needed, add Controller-Automatic as a separate line item.

Before Situation: An inefficient lighting system such as one using incandescent lamps has been identified by an on-farm energy audit.

After Situation: More efficient lighting is provided by Light-Emitting Diode (LED) lamps in order to reduce energy use as evidenced by the energy audit. Associated practices/activities: 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure: Each fixture

Scenario Unit: Each

Scenario Typical Size: 1

Total Scenario Cost: \$686.08

Scenario Cost/Unit: \$686.08

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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Labor

Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$34.38	2	\$68.76
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Materials

Lighting, Fixture, High Bay, LED, 150-200 watt	2602	150-200 watt light emitting diode (LED), typically 5000 Kelvin bulb, 11,000-24,000 lumens; industrial grade with fixture; typically replaces up to 400 watt equivalent metal halide; suitably protected from dirt accumulation. Includes materials only.	Each	\$617.32	1	\$617.32
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Practice: 670 - Lighting System Improvement

Scenario: #4 - Lighting - Linear Fluorescent

Scenario Description: The lighting system consists of a four-foot, three-lamp fixture with a single electronic ballast. The high-efficiency lighting system uses high-efficiency T8 or T5 fluorescent lamps or equal or better such as LED T8 lamps. Associated materials for installation of replacement or retro fit of fixtures are included. Appropriate disposal of existing lamps, ballasts and other materials is required. If lighting controls are needed, add Controller-Automatic as a separate line item.

Before Situation: Inefficient lighting (such as incandescent or T12 fluorescent tubes driven by magnetic ballasts) as evidenced by an on-farm energy audit.

After Situation: High-efficiency lighting system which reduces energy use. The new lighting equipment will provide suitable light levels and reduce overall power requirements (kW) compared to the existing lighting system as evidenced by the energy audit. Associated practices/activities: may include 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure: Each fixture replaced or retro fixed

Scenario Unit: Each

Scenario Typical Size: 1

Total Scenario Cost: \$347.08

Scenario Cost/Unit: \$347.08

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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Labor

Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$34.38	1	\$34.38
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Materials

Lighting, fixture, Fluorescent, 75 watt	1168	75 watt fluorescent lamp fixture with T5 or T8 lamps and ballast. Materials only.	Each	\$312.70	1	\$312.70
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Practice: 670 - Lighting System Improvement

Scenario: #5 - Lighting - Pulse-Start Metal Halide

Scenario Description: The lighting system consists of a Pulse-Start Metal Halide (PSMH) lamp with a matched ballast or light-emitting diode (LED) equivalent fixtures (as detailed in ASABE S612-compliant energy audit). Associated materials for installation of replacement fixtures are included. Appropriate disposal of existing lamps, ballasts and other materials is required. If lighting controls are needed, add Controller-Automatic as a separate line item.

Before Situation: Inefficient high-bay or exterior lighting (such as mercury vapor, T12 fluorescent, or similar) as evidenced by an on-farm energy audit.

After Situation: High-efficiency lighting system which reduces energy use. The new lighting equipment will provide suitable light levels and reduce overall power requirements (kW) compared to the existing lighting system as evidenced by the energy audit. Associated practices/activities: may include 122-AgEMP - HQ and activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure: Each fixture replaced

Scenario Unit: Each

Scenario Typical Size: 1

Total Scenario Cost: \$652.65

Scenario Cost/Unit: \$652.65

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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Labor

Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$34.38	1	\$34.38
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Materials

Lighting, Fixture, High Bay, LED, 150-200 watt	2602	150-200 watt light emitting diode (LED), typically 5000 Kelvin bulb, 11,000-24,000 lumens; industrial grade with fixture; typically replaces up to 400 watt equivalent metal halide; suitably protected from dirt accumulation. Includes materials only.	Each	\$617.32	1	\$617.32
Lighting, Pulse Start Metal Halide	2425	Replacement of lighting with PSMH Light.	Watt	\$0.95	1	\$0.95

Practice: 670 - Lighting System Improvement

Scenario: #6 - Automatic Controller System

Scenario Description: The typical scenario consists of an automatic control system installed on an existing manually controlled agricultural system. Typical components may include any of the following: wiring, sensors, data logger, logic controller, communication link, software, switches, and relay.

Before Situation: A manually controlled system is existing in an agricultural facility that causes the inefficient use of energy, as evidenced by an on-farm energy audit.

After Situation: An on-farm energy audit has determined that energy use can be reduced through use of an automatic controller that helps regulates the energy consumption of the existing system. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure: Each system

Scenario Unit: Each

Scenario Typical Size: 1

Total Scenario Cost: \$297.87

Scenario Cost/Unit: \$297.87

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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Labor

Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$34.38	4	\$137.52
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Materials

Switches and Controls, programmable controller	1193	Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	\$160.35	1	\$160.35
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