

 <p style="text-align: center;">State of Ohio Weatherization Program Standards</p>	Section	<b>MECHANICAL SYSTEMS INSPECTION</b>
	Subject	<b>Electrical Efficiency</b>

*FLUORESCENT LIGHTING 201-7.1*

Survey and note all interior lighting fixtures. Note the location, existing wattage and number of bulbs per fixture. Interview the customer to determine the hours per day the fixture is on.

**survey existing lighting**  
201-7.1a



Using the information gathered and the replacement chart (reference 1506-6), determine which bulbs may be replaced and note that on the inspection form.

**determine replacements**  
201-7.1b



The customer’s specific needs and habits must be considered in the replacement decision. Light quality (lumens) must not be compromised. Fluorescent bulbs must not be installed in fixtures equipped with dimmers unless the bulb manufacturer specifically allows for it.

**customer needs**  
201-7.1c



Lumen output at the lamp should be sufficient to assure these illuminance levels at the working surface.

<u>Activity</u>	<u>Foot-candle Level</u>
General or ambient lighting	5-20
Task lighting (non-critical)	20-50
Reading or close work	50-100

Lumen output is measured at 1 foot from the source and is the total output in all directions. Foot-candles measured at the surface considers light output, distance from the light source and reflectance of the surrounding surfaces.

Approximate lumen output of typical incandescent lamps:

<u>Watts</u>	<u>Lumens</u>
40	505
52	800
60	870
75	1190
90	1620
100	1750

Reference the manufacturer’s information (typically displayed on the box) for CFL lumen output.

**consumer education**  
201-7.1d

CEE



Consumer education must be provided concerning matters such as:

- a. Fluorescent bulbs are most cost-effective in applications where the light remains on for long periods of time.
- b. Fluorescent bulbs may take 60-90 seconds to reach full brightness.
- c. Fluorescent bulbs last approximately 10 times longer than incandescent bulbs and are therefore beneficial in hard to reach places.
- d. Fluorescent bulbs are applicable where safety is an issue, such as fixtures where incandescent bulbs exist that are overrated for the wattage of the fixture and therefore create a fire hazard.

*ELECTRICAL ENERGY EFFICIENCY MEASURES (EEMs) 201-7.2*

**improvements**  
201-7.2a

NEAT



All electrical efficiency measures (EEMs) paid for using HWAP dollars must have a material cost of \$150 or less. Only improvements determined to be cost-effective using NEAT may be installed. Savings potential must be documented and usage levels of the pre-existing condition should be metered. Those electric efficiency measures paid for using other funds must meet the applicable cost-effectiveness test described in 1506-6.

Typical electric efficiency measures would include repairs to water well pumps and lines, waterbed foam insulation covers, and repairs to timers on septic aerators (see 1506-6).

*CONSUMER ENERGY EDUCATION 201-7.3*

**consumer energy education**  
201-7.3a

CEE



Education should be provided concerning such matters as the impact of dirty filters on electric clothes dryers, the impact of dirty coils on refrigerators and freezers, behavioral impacts on refrigerator energy use, and the impacts of water leaks on well pumps.

*ELECTRIC ENERGY EFFICIENCY MEASURES (EEMs) 201-7.4*

**electric energy efficiency measures**  
201-7.4a



- a. For any heated waterbed, add (or have the customer add) a foam insulation blanket directly above the water filled mattress (cannot pay for with HWAP funds).

- b.      Replace or convert any halide torchier lamp with a fluorescent torchier.

*REFRIGERATOR REPLACEMENT 201-7.5*

Survey and note each existing refrigerator. Note the location of each existing appliance and meter the existing appliance(s) wattage for at least 2 hours.

**survey existing appliances**  
201-7.5a



Using the information gathered during the inspection and the replacement chart (see 1506-6), determine which appliance(s) can be replaced and note that on the inspection form.

The client’s specific needs and habits must be considered in the replacement decision. From observation of the existing unit and discussion with the customer, determine if down-sizing of the replacement unit is appropriate.

**determine replacements**  
201-7.5b



Refrigerators taken out of service must be discarded in an environmentally-sensitive manner. Old units contain refrigerant gasses that must be reclaimed only at licensed stations. No units taken out of service may be returned to service by sale, barter, or for free. Disposal/recycling costs are to be added to the replacement cost and considered in the cost-effectiveness testing.

**client needs**  
201-7.5c



**recycle old units**  
201-7.5d

