

SOLAR POWER AND ENERGY CONSERVATION FOR COMMUNITY RADIO:

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**Top 10 overlooked problems that add significantly to your utility, health care, and repair costs.
Keep these in mind when building, renovating, buying or renting a building.**

THE FIRST OBVIOUS TASK: GET THE UTILITY PAYMENTS HISTORY of the space as part of your decision to buy or rent. AND THEN CONSIDER:

- 1) DAMP BASEMENTS & CRAWLSPACES.** It is common for Summer's warm humid air to enter a vented cool basement or crawl space and condense, producing a permanently damp area. In cool, damp dark places mold grows well. That mold rots wooden floor joists and window casings, and will enter the living space through updraft and leaks in the ventilation ducts., or just by vapor diffusion. A solution to keep the crawl space dry is to install a GOOD QUALITY fiberglass scrim reinforced white continuous moisture and vapor barrier covering the floor and 12 inches or more up the foundation wall. AFTER that's done, the air leaks and vents should be sealed and the foundation insulated.
- 2) LEAKING AND UNSEALED DUCTS IN THE ATTIC.** They suck the mouse poop, dead bodies, mold, fiberglass insulation fibers, and dust into your air ducts and pass that into your living space. They vent the heated or cooled air into unused spaces and reduce the efficiency of your cooling or heating system. Plus if the ducts aren't insulated well enough, the air temperature of attic or crawl space transfers into the air inside the ducts, thwarting your efforts to heat or cool the air. The attic is the coldest place in the house during the Winter and the hottest during the summer. when you're trying to heat or cool the air in the ducts. If are planning to install a duct system locate them within the building envelope. Or lay the ducts on the floor of the attic and bury them in cellulose insulation after resealing with mastic.
- 3) AIR DRIFTING UP THROUGH THE HOUSE.** If the attic isn't properly or sufficiently insulated, cool moist air from the crawl space or basement is drawn up through the wall cavities into the attic. That updraft also occurs through pipe penetrations, attic access hatches and recessed lights. *Air leaks are by far the greatest source of lost heat in the winter.* The best solution to the problem is to air-seal the penetrations. Google "Stack Effect", "AirSealing" & "conditioned crawlspace"
- 4) FIBERGLASS INSULATION WITHOUT AN AIR-BARRIER or IMPROPERLY INSTALLED - IS NOT INSULATION.** Almost anything is more effective then fiberglass that has gaps between it and the other surfaces or has little to no air barrier. Air drawn up though the walls and ceiling openings or escaping from ducts deposits mold, dirt, moisture and insects into the fiberglass just like in an air filter. The best solution to cover that fiberglass with a vapor barrier of apply a thick layer of blown cellulose over top thus converting the itchy stuff into insulation.
- 5) HEAT LOSS THROUGH THE WATER PIPES.** The best solution is to insulate the pipes coming out of the hot water heater and remember to insulate the emergency relief valve.
- 6) USING AN OIL HOT WATER BOILER TO HEAT.** It would be challenging to find any less efficient way to heat water.
- 7) INSULATE THE WINDOWS.** You are losing heat in the winter and cool during the summer. The best solution is to install cellular shades on the inside and/ or *exterior* shade cloth to shield the exterior (and thus interior as well!) from heat in the summer. A cheaper version is a "pop-in panel" that is foil faced foam panels cut to fit into the window opening. Ensure that the bottom of the foam panel lays flat all the way across the window sill as a "dam" to stop the flow of cold air off the window from bypassing the foam panel! The foil should face towards the heat, thus inward in the winter and outward in the summer. You can add handles to make it easier to remove when you are using the room and want the light! Tape the ends with packing tape to prevent abrasion of the foam..
- 8) DARK ROOFS REFLECT ONLY ~ 6% OF THE SUNS HEAT.** A white roof can reflect ~ 84%. That's heat you never have to Air Condition. A cheaper solution is to apply a silver-gray or white-gray or roof coating.
- 9) A BROKEN OR NONEXISTENT CHIMNEY DAMPER** allows cold air, rain, leaves and critters to enter in the cool months and warm air to escaping in the cool months. The best solution is to cap the chimney or install a top sealing damper.
- 10) DAMAGED OR CLOGGED GUTTERS** leak water under the roof shingles, on to the siding, and in to the crawlspace or basement. Solution are to leaf-guard the gutters, seal the gutter leaks and lead water away from the building using drain spout hoses or storm water drain pipes.
- 11) Commercial space bonus:** To cool the electronics means many radio stations often run the AC even in the WINTER! Its worth it to install: **11a) A separate return from each and every soundproofed area** for proper airflow and **11b) A "fresh air vent" system that brings in winter air to cool the electronics without using the compressor at all!**

THEN once you've patched the holes in your "energy bucket" it will take a lot less solar panels to achieve net zero power!