

# Backup Power

The “Cheap Ham” approach

# Introduction

- Two safe, legal and inexpensive methods for connecting backup generators to run essential loads (without breaking the bank)
- Bob Peloquin – KB1VUA  
30+ years in computers & electronics

# Topics of Discussion

- Safely run selected or whole-house electrical loads without danger of back-feeding the grid or exposure to live electric wires
- Simple to operate and easy to understand
- Possible for many home-owners to install themselves (with guidance from the pros of course)

# Don't be this guy

- NEVER EVER DO THIS:
- Suicide Cord (double-male) between generator and drier or welder plug. EXTREME DANGER!!!!!!!
- Backfeed breaker without interlock to protect utility from generator voltage

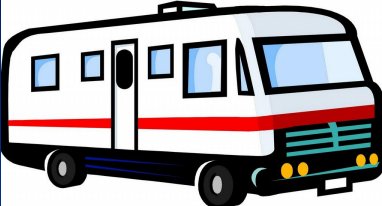




# Real Life Examples



- #1 – 6 circuit manual transfer & 3500 Watt 120/240V generator



- #2 – Whole House back-feed with mechanical interlock and 4000 Watt RV generator (120 volts)

# Essential Loads Power

- Multi-circuit manual transfer switch

Only essential loads are run from this manual transfer switch.

Cost: about \$400-\$600

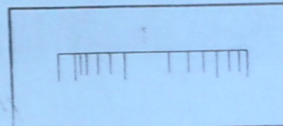




# All circuits labeled

Figure 20 — Circuit Identification Label

CIRCUIT	CIRCUIT # / DESCRIPTION	CIRCUIT	CIRCUIT # / DESCRIPTION
A	FURNACE/CIRCULATOR PUMP (14)	D	UPSTAIRS REFRIDGERATOR (6)
B	BEDROOMS/OFFICE/FREEZER (4A)	E	DINETT/BATHROOM/PORCH LITE(5)
C	PARLOUR PLUGS (4B)	F	BRZWAY/GARAGE/VIVIANS FURNACE



Electrical Rating  
125 / 250 VAC  
20A MAXIMUM INPUT AT 240V  
15A MAXIMUM PER CIRCUIT

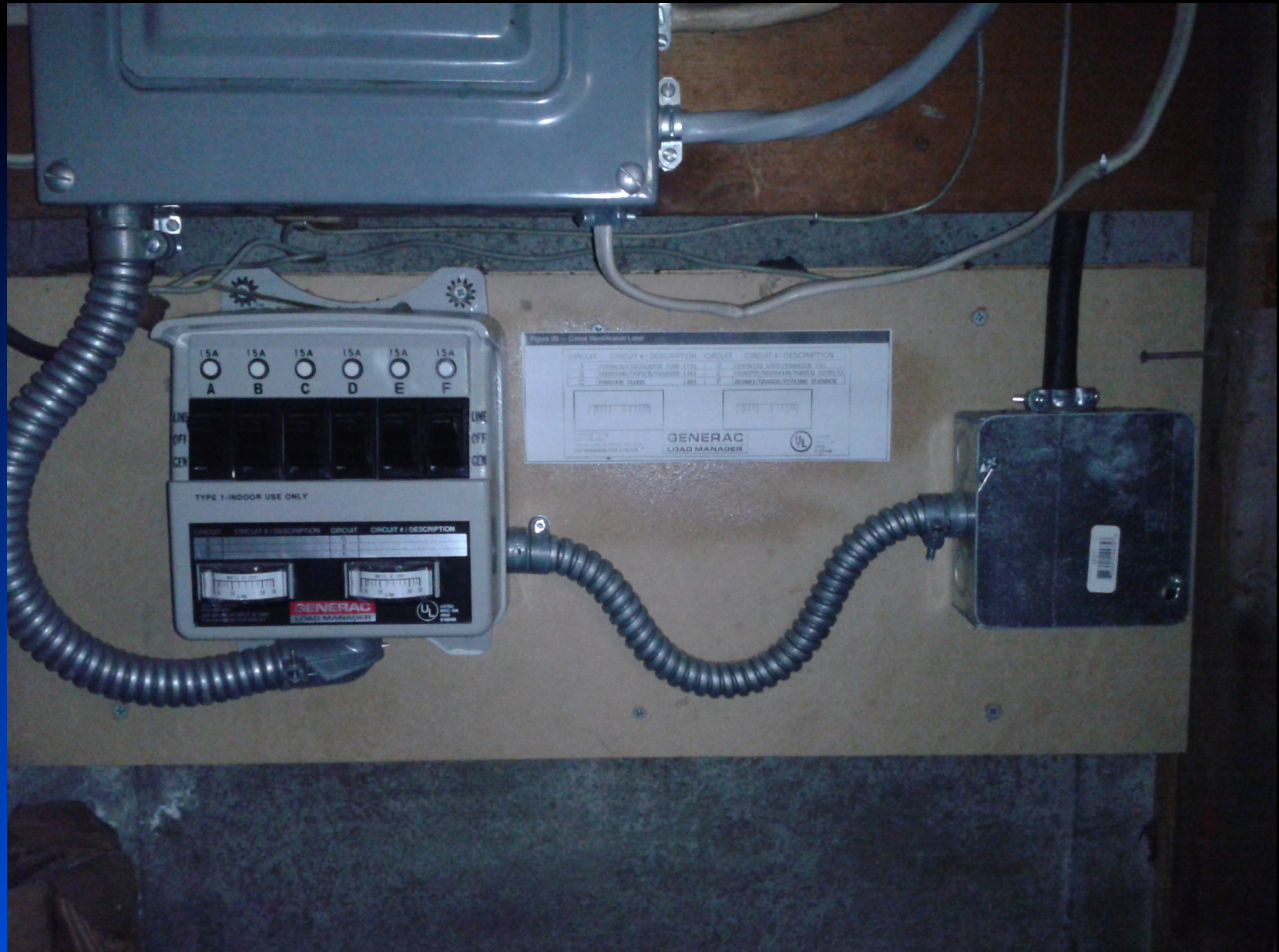
**GENERAC**  
**LOAD MANAGER**



LISTED  
MISC. SW  
4R50  
E182436



# All wires neatly run



# Whole-House Back-Feed

## Costs:

Murray/ITE  
load-centers —  
About \$30 to  
\$50

Square-D load-  
centers — About  
\$25 to \$35

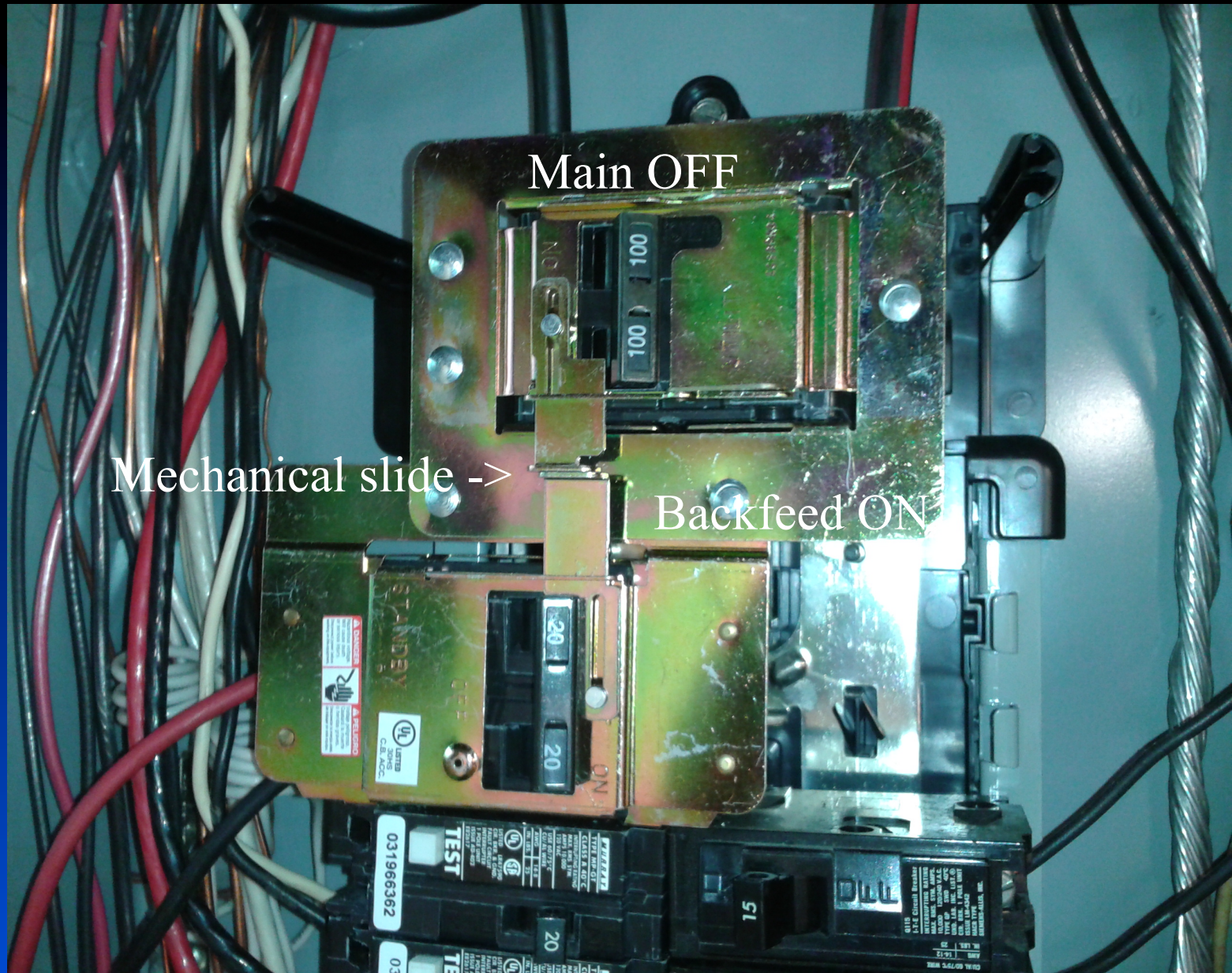
- Back Feed Breaker Interlock
- Legal according to National Electrical Code
- Physically prevents back-feeding utility power grid when generator is providing power
- Requires more empty space in your load-center (2 to 4 empty spaces)





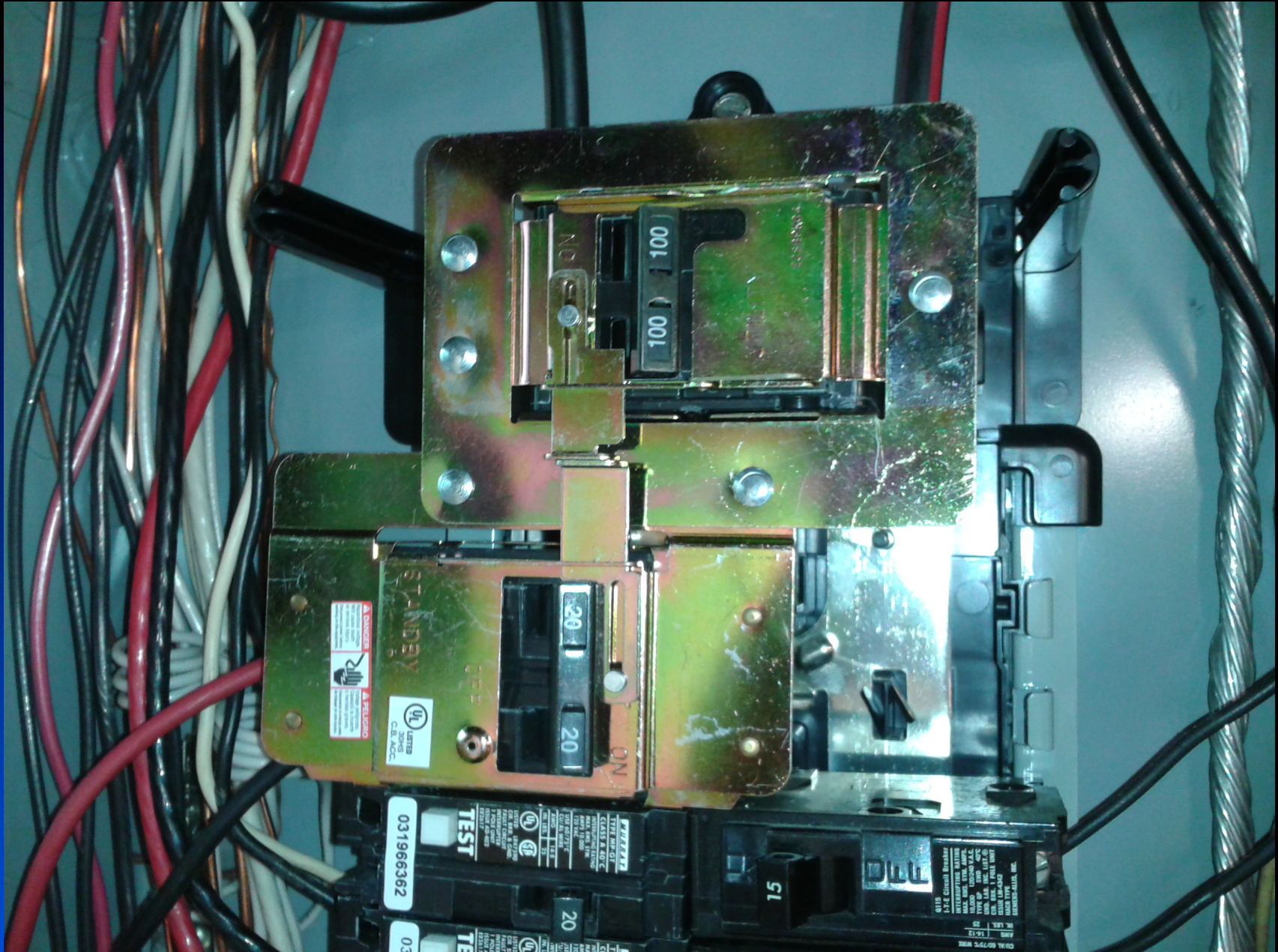


# Murray back-feed Interlock





**Note back-feed breaker should be sized to match generator capacity and connecting cord wire gauge.**





**MAIN**

For generator backup,  
start generator first

Connect cable, then open main  
breaker, operate interlock

Then close backfeed  
breaker.

UL Listed Mechanical  
Safety Interlock

**Backup  
Generator**

**Kitchen  
GFCI**

**North Wall**

North Wall  
Kitchen  
West  
Wall

031966362

**TEST**

**UL LISTED**  
30MS  
CB, ACC.

20  
OFF  
20

100  
100



MAIN

For generator backup,  
start generator first

Connect cable, then open main  
breaker, operate interlock

Then close backfeed  
breaker.

UL Listed Mechanical  
Safety Interlock

Backup

Generator

Kitchen

GFCI

Kitchen

North Wall

LR/BR Wall

Attic

031966362

03220

TEST

TEST



**MAIN**

For generator backup,  
start generator first

Connect cable, then open main  
breaker, operate interlock

Then close backfeed  
breaker.

UL Listed Mechanical  
Safety Interlock

**Backup**

**Generator**

**Kitchen**

STANLEY

UL LISTED  
30A/5  
C.B. ACC.

20

20

100 / 100

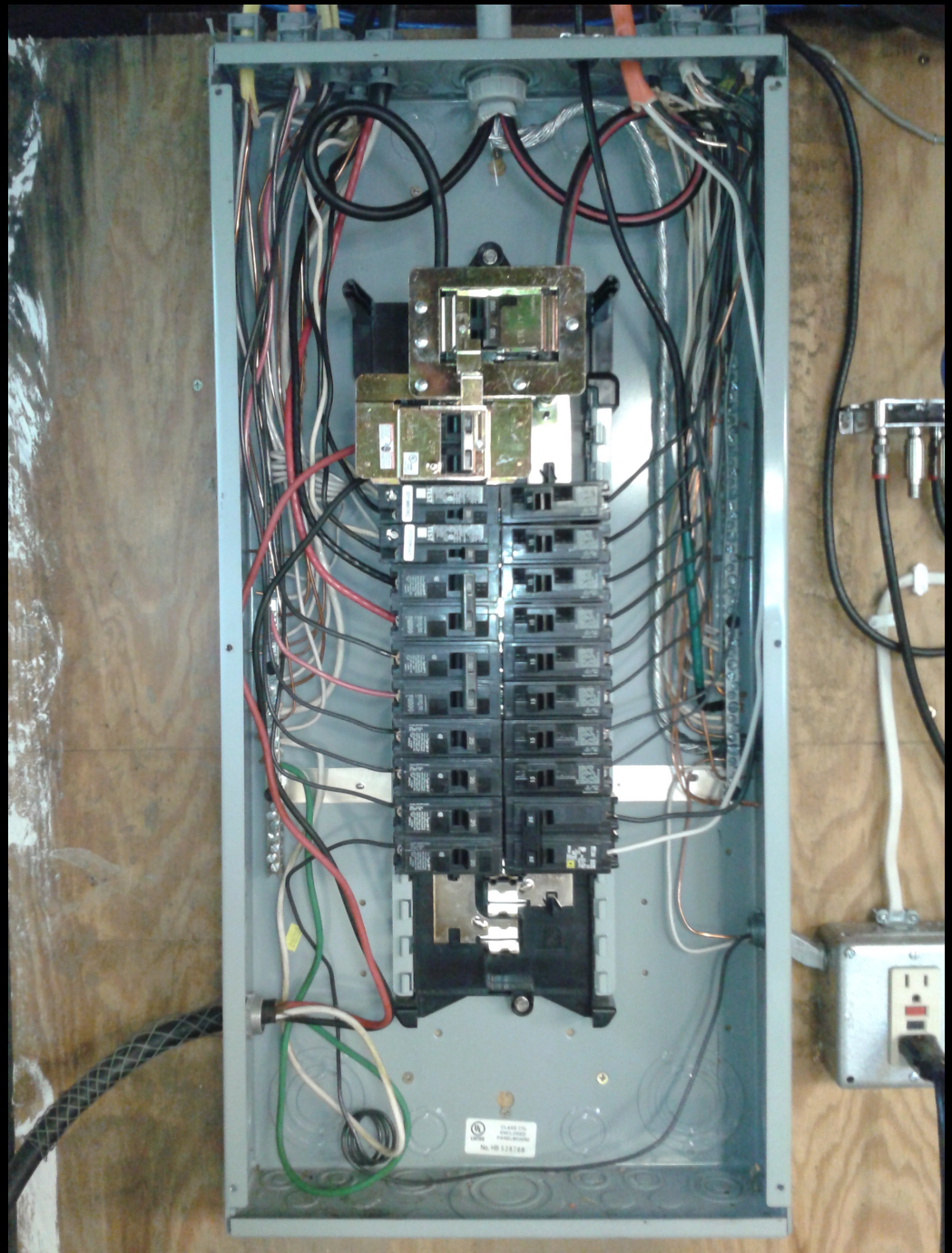
MAIN

North Wall  
Kitchen  
West  
Wall



Completed whole-house back-feed with Murray Mechanical Main Breaker Interlock.

Note: You will need to move both sets of breakers down 2 slots to use this in my particular Murray electrical box.



# What This Means

- While we as Hams know more than the general public about electricity; we are still human and can make mistakes
- Don't take chances with the dedicated lineman's lives. Always use a N.E.C. approved method of isolating your generator from the grid.

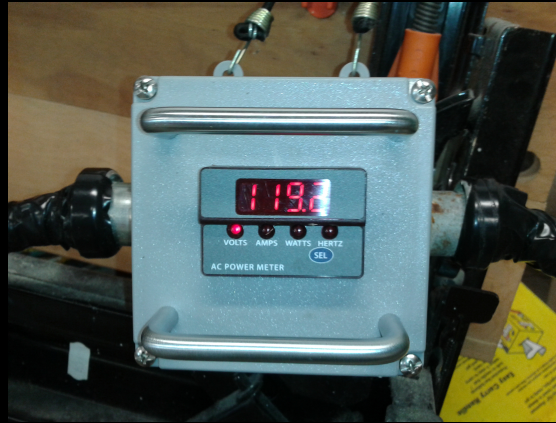
# What really happens when the power goes out:

- Will you be home when the lights go out? Probably not. Murphy's law and all that...
- Can someone else safely get the generator up and running in your absence? Yes, if you document it and train them. Practice makes perfect.

# Conclusion



Motor-Home  
Generator



Multi-function  
AC meter



120/240 inlet plug  
on outside wall