ARTICLE 220: BRANCH CIRCUIT, FEEDER, AND SERVICE CALCULATIONS (DWELLING UNITS)

PART I: GENERAL REQUIREMENTS FOR CALCULATION METHODS
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RECOGNIZE the difference between *connected load* and *demand load*. For example, if you added up all the light bulbs in a house, the total wattage (connected load) might be 800 watts. Under average use, only a few of these would be used at any one time, maybe 300 watts. This amount --- the expected usage at any one time --- is the *demand load.*

BRANCH CIRCUIT, FEEDER, AND SERVICE CALCULATIONS are based on the DEMAND load, not the connected load. Article 220 provides specific calculations for determining the minimum demand. To arrive at a feeder or service size, compute the branch circuit demands using Part II, add them together, and then apply any feeder/service demands from Parts III or IV.

STEPS TO A DWELLING UNIT CALCULATION:

1.	Calculate demand for general lighting & receptacles *(3 va per square foot, outside dimensions excluding garages & open porches)*	220.14 (J)
2.	Add small appliance demand *(at least two at 1500 va each)*	220.52 (A)
3.	Add laundry demand *(1500 va)*	220.52 (B)
4.	Add the above together and apply the general lighting demand *(First 3000 va @ 100%, then use demand for balance)*	Table 220.42
5.	Add fixed electric space heating *(100% of nameplate. If this is higher than the ac load, omit the ac from the calculation. See 220.60 for more information about non-coincident loads.)*	220.51
6.	Add fixed appliance loads *(Do not include cooking appliances calculated under item #8, and do not include clothes dryers, fixed space heating, or ac. Four or more appliances = 75% of nameplate)*	220.53
7.	Add clothes dryer *(5000 va minimum, or nameplate if known to be higher)*	220.54
8.	Add cooking appliances rated more than 1.75 kw (ranges, cooktops, ovens) *(Use Table 220.55 to calculate demand)*	220.55
9.	Add motor loads *(Use Table 430.248 to determine load (amps x volts = va). Always add 25% of the largest motor load to the calculation per 430.24.)*	220.50
10.	Total items 4 - 9 and divide by the service voltage to determine the minimum amperage required. See Table 240.6 (A) for standard overcurrent device ratings.	