GENERAL ELECTRICAL REQUIREMENTS
FOR SINGLE FAMILY DWELLINGS

This is a list of basic requirements, but not all, confirm with Code Enforcement Director.
Code is taken from the 2014 NEC and the 2015 International Residential Code

Service

- A minimum of 100 Amp 3-wire service for a single-family dwelling unit - NEC 230.79(C)
- Only one service per dwelling, except for multiple occupancy buildings - NEC 230.2
- Working space around electrical panels shall be a minimum of 3o inches wide and 36 inches deep and the height of the equipment or 6 feet -6 inches, whatever is higher - NEC 110.26
- Service disconnecting means shall be installed at a readily accessible location either outside of a building or structure or inside nearest the point of entrance of the service conductors - NEC 230.70 (1)

Grounding

- A grounding electrode system shall bond to one or more of the following items - NEC 250.52:
    - Metal underground water pipe in direct contact with the earth for 10 feet or more, unless it is further than five feet from the building (requires supplemental electrode)
        - Continuity of the grounding path to interior piping shall not rely on water meters, filters, or similar equipment - NEC 250.53(D)(1)
    - Metal Frame of the Building or Structure providing one of the following
        - At least one metal structural member is in contact with the earth for a min. 10 feet
        - Hold down bolts connecting the structural steel to a concrete-encased electrode
    - Concrete-Encased Electrode – 20 feet of ½ in rebar located in a footing that is in direct contact with the earth (does not require a supplemental electrode)
    - Ground Rod of 8 feet in length (requires supplemental electrode)
- Connection methods must not depend solely on solder - NEC 250.8(A) & (B)

Branch Circuits

- The two 20 amp small appliance circuits serving the kitchen, pantry, breakfast room, and dining room shall have no other outlets - NEC 210.52 (B)(1)
- Kitchen exhaust hoods, garbage disposals, dishwashers, trash compactors and other motor loads shall not be on the same circuit as either of the two required small appliance branch circuits. NEC 210.52(B)(1)
- Bathroom receptacles shall be supplied by at least one 20-amp circuit that shall have no other outlets. If the circuit serves a single bathroom, the lights in that bathroom may be on the same circuit - NEC 210.11(C)(3)
- Range circuits shall be a minimum 40 amp - NEC 210.19 (3)
- A general lighting circuit shall be provided for each 3 volt-amperes for every square foot. NEC 220.12
- GFCI protection of receptacles shall be provided in: bathrooms, garages, accessory buildings, outdoors, crawl spaces, unfinished basements, kitchens, dishwashers, within 6 feet of all sinks & bathtub/showers, and laundry areas - NEC 210.8
- AFCI protection of all circuits serving outlets (not just receptacles) in dwelling unit kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreations rooms, closets, hallways, laundry rooms, and similar rooms - NEC 210.12

Receptacle Outlets

- In every kitchen, family room, dining room, living room, parlor, library, den, sunroom, bedroom, recreation room, or similar room or area of dwelling units, receptacle outlets shall be installed in accordance with 210.52(A)(1) through (A)(3) - NEC 210.52(A)
    - Receptacles shall be installed so that no point measured horizontally along the floor line in any wall space is more than 6 feet from a receptacle outlet
        - Wall space is defined as:
            - Any space 2 feet or more in width
            - The space occupied by fixed panels in exteriors, excluding sliding panels
            - The space afforded by fixed room dividers such as freestanding bar-type counters
            - Receptacle outlets in floors shall not be counted as part of the required number of receptacle outlets unless located within 18 inches of the wall - NEC 201.52(A)(3)
    - Wall Countertop Spaces
        - A receptacle outlet shall be installed at each wall countertop space that is 12 inches or wider. Receptacle outlets shall be installed so that no point along the wall line is more than 24 inches measured horizontally from a receptacle outlet – NEC 210.52(C)(1)
    - Island Countertop Spaces
        - At least one receptacle outlet shall be installed at each island countertop space with a long dimension 24 inches or greater and a short dimension of 12 inches or greater - NEC 210.52(C)(2)
    - Peninsular Countertop Spaces
        - At least one receptacle outlet shall be installed at each peninsular countertop space with a long dimension 24 inches or greater and a short dimension of 12 inches or greater - NEC 210.52(C)(3)
    - Separate Spaces
        - Countertop spaces separated by cooktops, refrigerators, or sinks shall be considered as separate counter top spaces and need to comply with requirements of 210.52(C)(1) through (C)(3) - NEC 210.52(C)(4)
        - Receptacle Outlet Location. Receptacle outlets shall be located above, but not more than 20 inches above the countertop - NEC 210.52(C)(5)
- Bathrooms
    - At least one wall receptacle outlet shall be installed in bathrooms within 3 feet of the outside edge of each basin (sink). The receptacle outlet shall be located on a wall or partition that is adjacent to the basin or basin countertop, or installed on the side or face of the basin cabinet not more than 12 inches below the countertop - NEC 210.52(D)
- Outdoor Outlets
    - At least one receptacle outlet accessible at grade level and not more than 6½ feet above grade shall be installed at the front and back of the dwelling - NEC 210.52(E)(1)
    - Balconies, Decks, and Porches. Balconies, decks, and porches that are accessible from inside the dwelling unit shall have at least one receptacle outlet installed within the perimeter of the balcony, deck, or porch. The receptacle shall not be located more than 6 ½ feet above the balcony, deck or porch surface. Not required if balconies, decks, or porches are less than 20 square feet - NEC 210.52(E)(3)
- Laundry Areas
    - At least one receptacle outlet shall be installed for the laundry - NEC 210.52(F)
- Basements and Garages
    - At least one receptacle outlet, in addition to those for specific equipment, shall be installed in each basement and in each attached garage, and in detached garages with

electric power. Where a portion of the basement is finished into one or more habitable rooms, each separate unfinished portion shall have a receptacle outlet installed - NEC 210.52(G)

- Hallways
    - Hallways of 10 feet or more in length shall have at least one receptacle outlet - NEC 210.52(H)

Lighting Outlets Required

- Dwellings
    - At least one wall switch-controlled lighting outlet shall be installed in all habitable rooms, bathrooms, hallways, stairways, attached garages, and detached garages with power - NEC 210.70(A)
- Storage or Equipment Spaces
    - For attics, underfloor spaces, utility rooms, and basements, at least one lighting outlet containing a switch or controlled by a wall switch shall be installed. At least one point of control shall be at the usual point of entry to these spaces - NEC 210.70(A)(3)
    - Closet lights shall conform to NEC 410.16
- Bathtub and Shower Areas
    - No parts of cord-connected luminaires, chain-, cable- or cord-suspended luminaires, lighting track, pendants, or ceiling-suspended fans shall be located within a zone measured 3 feet horizontally and 8 feet vertically from the top of the bathtub rim or shower stall threshold. This zone is all encompassing and includes the space directly over the tub or shower stall. Luminaires located within the actual outside dimension of the bathtub or shower to a height of 8 feet vertically from the top of the bathtub rim or shower threshold shall be marked for damp location, or marked for wet location where subject to shower spray - NEC 410.10(E)

Wiring Methods

- Cable and wires installed in grooves or holes in studs or joists that are less that 1-¼" from the face of the stud or joist shall be protected by 1/16" thick steel plates, sleeves, or equivalent - NEC 300.4
- Nonmetallic sheathed cable shall be supported every 4 ½ feet and within 12 inches of every outlet - NEC 334.30
- Wiring is not permitted to travel through ducts or plenums used for environmental air unless it is rated for this use. Nonmetallic sheathed cable (NM) is not rated for this use - NEC 300.22
- Switches or circuit breakers shall not disconnect the grounded conductor of a circuit - NEC 404.2(B)
- Built-in kitchen appliances are allowed to be cord connected, but the receptacle must be accessible without removing the appliance - NEC 422.33
- Ceiling fans shall be supported from outlet boxes identified for such use. Fans that exceed 70 pounds shall be supported independently of the box - NEC 314.27(D)

Disconnects

- A disconnecting means shall be located within sight from and readily accessible from the air-conditioning or refrigerating equipment - NEC 440.14
- Electric water heaters shall have a disconnecting means within sight of the appliance or have a circuit breaker capable of being locked in the open position - NEC 422.31
- Minimum rating for a service disconnecting means for: - NEC 230.79
    - Single branch circuit installation shall have a rating of not less than 15 amps

    - Two 2-wire branch circuit installations shall have a rating of not less than 30 amps
    - One-Family Dwellings the service disconnecting means shall have a rating of not less than 100 amps
    - All others it is 60 amps (detached garages with more than two circuits must have 60 amp rating)

Boxes

- Boxes shall be installed at each conductor splice, outlet, switch point, junction point, or pull point - NEC 314
- Unused openings in boxes and conduit bodies shall be closed - NEC 314
- All boxes shall be accessible - NEC 314.29