



NEW MEXICO HOME BUILDERS ASSOCIATION

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May 30, 2017

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Jack C. Milarch, Jr.

Construction Industries Division
2550 Cerrillos Rd.
Santa Fe, NM 87504

Attention: Hearing Officer
Re: Adoption of 2017 NM Electrical Code

Dear Sir or madam:

Affiliated Organizations

Association Services Corp.
dba New Mexico License Bonding
Builders Trust of New Mexico

Affiliated Local Associations

HBA of Central New Mexico
HBA of Eastern New Mexico
HBA of Lincoln County
BCA of Otero County
Las Cruces HBA
San Juan County HBA
Santa Fe Area HBA
South Eastern New Mexico HBA
Southwest New Mexico HBA

Affiliated National Association

National Association of Home
Builders

When the Construction Industries Division promulgated the 2014 New Mexico Electrical Code (NMEC), the residential construction industry was assured the cost of adopting the new code would be in the neighborhood of \$250-\$500. As the new code was implemented, it became obvious to our members that this number was vastly underestimated, and the actual cost per new home was actually closer to \$2,000.

Chief among the costly upgrades was the vast expansion of the requirement for Arc-Fault Circuit Interrupters (AFCIs) to virtually all areas of the dwelling (except the garage and bathroom). Over the past three years the National Association of Homebuilders estimates AFCIs have cost new homebuyers in New Mexico approximately \$5.1 million per year. That's \$5.1 million taken out of the pockets of New Mexicans and paid to out-of-state companies! And what is the "gain" for AFCIs? An assumption that, in theory, someone may be saved from a fire in the next 40 years. Actual data from the National Fire Incident Reporting Systems for One and Two Family Homes (that includes mobile homes and manufactured homes not even subject to the NMEC) determined the average number of fire per year that could be prevented by AFCIs was 0.2, and the civilian injuries or deaths was zero. That's right, \$5.1 million per year, and not one life is expected to be saved because of AFCIs.

Additionally, our members report the AFCI requirement in the NMEC for upgrading existing electrical circuits when remodeling kitchens has led to the requirement for all-new electrical panels that are able to accommodate the AFCIs. The extra cost for new electrical panels and breakers has led to the decision by many homeowners to either forego the kitchen remodel project, or to proceed unpermitted, costing our members jobs and costing the state untold loss of Gross Receipts Taxes and increased property taxes.

Clearly the requirement for AFCIs in residential dwellings in Section 210 of the NMEC is excessive and costly. We want this requirement removed from the NMEC.

Other provisions that cause issues for those of our members who are remodeling homes are the requirement in Section 210.8(A)(7) that requires Ground-Fault Circuit Interrupters within 6 ft. of all sinks in a dwelling unit, Section 210.8(A)(10) also requires GFCIs in all laundry areas regardless of the presence of a sink, and Section 210.8(D) requires that all outlets that supply dishwashers have GFCI protection. The NMEC requires updating all outlets on a circuit that is being modified in any fashion. This means adding an outlet in a bathroom remodel will likely result in expensive electrical upgrades to include many more GFCIs, and for kitchens and laundry rooms, a combination AFCI/GFCI receptacle and/or circuit breaker. Even after a decade in use, many of our members are still having numerous call-backs to replace malfunctioning GFCIs, and we have been hearing similar problems with AFCIs that trip frequently when the refrigerator compressor kicks in. A few builders reported they were required to replace GFCIs that had tripped so often the Reset button had worn out – all while the house was still under warranty. Homeowners (who are our customers) hate the constant tripping and resets. These expansions of irritating GFCIs should be deleted from the NMEC.

Most homeowners end up placing an extra refrigerator or freezer in their garage. A problem arises when the GFCI controlling that particular outlet trips and homeowners don't realize it until after the contents of the refrigerator/freezer are ruined. The NMEC requires that every outlet in a garage be protected by a GFCI, but builders want to have an exception inserted to allow one outlet in the garage to be exempted so the homeowner may have access for a refrigerator/freezer.

The reviewers of the NMEC did not take the opportunity to throw out a nonsensical requirement in Section 210.12 that AFCIs be installed in a “readily accessible location.” An illustration in one of the NFPA manuals show the installation of an outlet behind a dresser as being counter to this section. However, builders have no control over where a homeowner is going to place their furniture, and what may be “readily accessible” at the time of construction may be rendered “non-compliant” the instant someone moves into the home. Silly provisions such as this should not even be included in a code, and should be deleted whenever found.

Section 210.10 and 210.12 also include the expansion of AFCIs to include switches. This would mean any electrician replacing or relocating a switch, receptacle, or lighting outlet would have to install an AFCI breaker on the applicable circuit, and if the electrical panel could not accommodate that AFCI breaker, then a new electrical panel would be required.

The 2017 NMEC proposes a change in Section 210.52(C)(3) to revise the way countertops and “work surfaces” are measured. This will require kitchen remodels with an eating counter on the end to have an additional outlet when none was required previously. Under other provisions, that outlet will have to be either a GFCI/ACFI combo receptacle or AFCI. There is no apparent reason for this new requirement, as folks sitting at an eating counter perpendicular to the wall generally are not operating appliances or otherwise requiring their own electrical outlet. This is another instance where common sense should prevail to remove an unnecessary cost increase that shows no benefit.

The requirement in the 2014NMEC in Section 690.12 for a rapid disconnect device for solar generation units was an item that cost homebuilders and installers of solar PV \$2,500 per installation because the devices were still in prototype stage and were not yet being mass-manufactured. This requirement generated so many problems with compliance that the Electrical Bureau Chief issued a memo stating CID would not be enforcing this section of the code. However, this memo had no impact on municipalities, as they had already adopted the requirement through their Ordinances. This requirement has not been taken out of the 2017 NMEC, and our research shows in the 2017

National Electric Code that Section 690.12 has a *delayed implementation date* of January 1, 2019 to allow time to develop a product safety standard for rapid-shutdown PV arrays. Having one section's requirements delayed beyond the effective date of the code is a conflict. If the standard has not been developed, then this requirement must be deleted from the 2017 NMEC until the standard has been developed. Who knows? It may take until 2020 to finally develop a standard all can agree on.

Finally, there is the concept that has been in the NMEC since at least 2002 that presents a conflict with NM Statutes. Section 90.4 Enforcement provides that "By special permission, the authority having jurisdiction may waive specific requirements in this Code or permit alternative methods where it is assured that equivalent objectives can be achieved by establishing and maintaining effective safety." This is intended to allow variances from the strict interpretation of the NMEC, but this section has been quoted as providing the authority for a Bureau Chief to choose not to enforce a particular section of the Code. However, this practice is not allowed by either the State Rules Act or the Uniform Licensing Act, and the CILA does not give any Bureau Chief the authority to declare a section of a properly-adopted code void. This can only be accomplished through the public hearing and adoption by the Construction Industries Commission process. Then the code change will "ripple" through to the various municipal/county entities that have adopted the state code by reference.

The National Electric Code has stated in its preface that "This code may require new products, constructions, or materials that may not yet be available at the time the Code is adopted. In such event, the authority having jurisdiction may permit the use of the products, constructions, or materials that comply with the most recent previous edition of this Code adopted by the jurisdiction." This is a concept that simply is against not only New Mexico law, but the whole concept of updating to a new code. Why would a code adoption entity include requirements for products (such as solar rapid shutdown devices) that aren't even available at the time the Code is adopted? This mind-set is counter-productive to the code adoption process, and creates confusion and cost increases for those who are so unfortunate as to be caught in the resulting mess.

Our members are used to having a say in the cost increases imposed on the construction and remodel of homes, and being excluded from the process yet again, when we have asked repeatedly to be included, is unbelievable. Being given no other opportunity to weigh in on these issues, this letter at public hearing is only means available to decry the millions of dollars uninformed code reviewers have cost the residential construction industry over the past decade. Our state cannot afford code changes such as the one that costs one sector of the construction industry over \$5 million per year to install products that might possibly (in theory) prevent one fire over the next 40 years.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jack C. Milarch, Jr.', written over a circular stamp or seal.

Jack C. Milarch, Jr.
Executive Vice President / CEO
New Mexico Home Builders Association

2017 NEC CODE CHANGE

NM Code Development Committee <i>Attn: Kelly Hunt, Electrical Bureau Chief</i> 2550 Cerrillos Road Santa Fe, NM 87505 Tele (505) 476-4679/Fax (505) 476-4685	Item _____ (for staff use only)
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APPLICABLE SECTION/TABLE/FIGURE NUMBER(S) **210.12 AFCI Protection.**

PROPONENT New Mexico Home Builders Association

ADDRESS 5931 Office Blvd. NE #1 Albuquerque 87109

PHONE 505-344-7072

CHECK ONE: | | Change section to read as follows
| | Add new section to read as follows
| | Delete section and substitute as follows
| | Delete section without substitution

FAX _____

EMAIL _____

~~Line through material to be deleted~~

Underline material to be added

USE SEPARATE SHEETS FOR SEPARATE TOPICS

210.12 Arc-Fault Circuit-Interrupter Protection. Arc-fault circuit-interrupter protection shall be provided as required in 210.12(A), (B), (C), and (D). ~~The arc-fault circuit interrupter shall be installed in a readily accessible location.~~

Exception: Arc-fault circuit interrupter protection shall not be required to be installed in one- and two-family dwellings.

(A) Dwelling Units. All 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets or devices installed in dwelling unit kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas, or similar rooms or areas shall be protected by any of the means described in 210.12(A)(1) through (6):

- (1) A listed combination-type arc-fault circuit interrupter, installed to provide protection of the entire branch circuit
- (2) A listed branch/feeder-type AFCI installed at the origin of the branch-circuit in combination with a listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet box on the branch circuit. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit.
- (3) A listed supplemental arc protection circuit breaker installed at the origin of the branch circuit in combination with a listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet box on the branch circuit where all of the following conditions are met:
 - a. The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit interrupter.
 - b. The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 15.2 m (50 ft) for a 14 AWG conductor or 21.3 m (70 ft) for a 12 AWG conductor.
 - c. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit.
- (4) A listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet on the branch circuit in combination with a listed branch-circuit overcurrent protective device where all of the following conditions are met:

Submit an original and one copy. Use separate sheets for separate topics. If required, start proposal on this sheet which will act as your cover and attach any additional sheets. If voluminous supporting data is submitted, it will be maintained on file in the NM Construction Industries Division office for review between the hours of 9:00 am and 5:00 pm, Monday through Friday, except holidays.

- a. The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit interrupter.
- b. The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 15.2 m (50 ft) for a 14 AWG conductor or 21.3 m (70 ft) for a 12 AWG conductor.
- c. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit.
- d. The combination of the branch-circuit overcurrent device and outlet branch-circuit AFCI shall be identified as meeting the requirements for a system combination-type AFCI and shall be listed as such.

(5) If RMC, IMC, EMT, Type MC, or steel-armored Type AC cables meeting the requirements of 250.118, metal wireways, metal auxiliary gutters, and metal outlet and junction boxes are installed for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, it shall be permitted to install a listed outlet branch-circuit type AFCI at the first outlet to provide protection for the remaining portion of the branch circuit.

(6) Where a listed metal or nonmetallic conduit or tubing or Type MC cable is encased in not less than 50 mm (2 in.) of concrete for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, it shall be permitted to install a listed outlet branch circuit type AFCI at the first outlet to provide protection for the remaining portion of the branch circuit.

Exception: Where an individual branch circuit to a fire alarm system installed in accordance with 760.41(B) or 760.121(B) is installed in RMC, IMC, EMT, or steel-sheathed cable, Type AC or Type MC, meeting the requirements of 250.118, with metal outlet and junction boxes, AFCI protection shall be permitted to be omitted.

Informational Note No. 1: For information on combination-type and branch/feeder-type arc-fault circuit interrupters, see UL 1699-2011, *Standard for Arc-Fault Circuit Interrupters*. For information on outlet branch-circuit type arc-fault circuit interupters, see UL Subject 1699A, *Outline of Investigation for Outlet Branch Circuit Arc-Fault Circuit-Interrupters*. For information on system combination AFCIs, see UL Subject 1699C, *Outline of Investigation for System Combination Arc-Fault Circuit Interrupters*.

Informational Note No. 2: See 29.6.3(5) of *NFPA 72 -2013, National Fire Alarm and Signaling Code*, for information related to secondary power-supply requirements for smoke alarms installed in dwelling units.

Informational Note No. 3: See 760.41(B) and 760.121(B) for power-supply requirements for fire alarm systems.

REASON(s):

In addition to the economic reasons stated in the attached article, there are two practical reasons why this section needs to be either deleted or massively re-written. Until then, NMHBA is seeking to be exempt from this requirement until these issues can be worked out.

First, the requirement that the AFCI be located at the origin of the branch circuit can only be accomplished in new construction. Sometimes older homes have home runs to the light fixture first, and then to the outlets. This wouldn't work for remodel projects without completely rewiring the home.

Second, most kitchen remodel projects will require adding additional outlets that require wiring to run at least six feet beyond the end of an existing branch circuit. This would require sub-panels to contain the AFCI breakers and moving the branch circuits currently from the kitchen into the new panel. This sometimes makes the cost of the project too high to continue, thereby causing the loss of jobs for electricians doing remodel work.

Additionally, the requirement for AFCI receptacles to be "readily accessible" is non-sensicle. During construction every receptacle is readily accessible. The problem is when folks move their furniture in to the house and put large/heavy items in front of the receptacles. There is no way for an electrician to know what furniture a homeowner is going to move in to a particular location, and the requirement for accessibility is a fleeting concept. This makes the requirement appear silly, and it is difficult to get anyone to comply with a code that contains frivolous concepts such as this.

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Time to Talk About the Economics of Arc-Fault Circuit Interrupters

In the 2008 National Electrical Code adoption came a requirement for Arc-Fault Circuit Interrupters (AFCI) in the bedrooms of all dwellings. An AFCI is designed to reduce the likelihood of a frayed electrical line sparking and causing a fire. They are designed to trip even when an extension cord plugged into an outlet has a problem that causes a magnetic pulse to surge along the cord, so they would protect against chafed cords behind furniture or under curtains from creating a spark that might ignite a fire.

There are several problems with the statistics behind this decision, the chief one being the numbers of fires this technology is projected to protect from include mobile and motor homes where the NEC does not apply. Another problem is that it also included not only single-family homes, but also multifamily, and a third problem is the statistics showed these types of fires were happening in homes built before 1970 where there were fewer outlets required in each room and the use of extension cords is common.

When the 2008 NEC was adopted, the requirement for just the bedroom wall circuits meant instead of three \$5 breakers, you might need three AFCIs at \$35 each. There is no added cost for installation. However, with the 2014 NEC came the requirement for AFCIs to be installed in more places, such as kitchens and laundry rooms, and the lighting circuits for all rooms – representing possibly another 10 circuits. The price for the AFCIs has now risen to \$40 each. And the 2017 NEC under consideration now would expand the requirement to ALL circuits in new homes – that’s an average of 20 circuits for a 3-bedroom home, and an additional \$700 wholesale cost – resulting in a price increase for the home in the neighborhood of \$1,500.

This doesn’t sound like much in order to save lives, except in New Mexico 1,132 households would now be priced out of the market.

Existing Homes Affected

The 2014 NEC also included a requirement that for branch circuit extensions or modifications an AFCI would be required anytime an extension went beyond 6 feet, and if any additional outlets or devices were added to the circuit. This meant kitchen remodels would now have to add AFCIs to all circuits.

An issue with AFCIs is that outlets have to match the manufacturer of the circuit breaker – there are no “universal” type products on the market yet. If an existing electrical panel for the home can’t accommodate one of the two types of AFCIs currently being manufactured, then an entirely new electrical panel would be required, with all circuits and outlets in the home brought up to current NEC standards for AFCIs. We have heard several remodelers tell of cancelled kitchen projects because the cost to upgrade to the AFCIs added too much to the total cost of the remodel. A rough estimate for this upgrade is around \$7,500, with a good chunk of that cost being the permit fees.

New Mexico Incidents vs. Cost

The National Association of Home Builders (NAHB) has analyzed data from the National Fire Incident Reporting System for One and Two Family Homes (where equipment involved was electrical branch circuit or outlet receptacle), and determined the average number of Fires per Year in NM was 0.2, and the civilian injuries per year were zero, and civilian deaths per year were also zero. NAHB also estimated the total cost for installation of AFCIs (under the 2008 NEC) was just over \$5 million per year wholesale. But because of the decrease in the number of new homes built, in spite of adding to this the expansion of requirements for the

AFCIs to all circuits, the cost per year stays approximately \$5.1 million per year to New Mexico consumers. However, that doesn't include any estimate for lost business by remodelers who have had kitchen projects cancelled over the electrical costs. That's \$5 million per year spent on something that may (in another 40 or so years) prevent one injury in the state.

Unfortunately, unreasonable requirements and costs associated with this type of code upgrade just force contractors to "fly under the radar" by finding an electrician who is willing to do the job without a permit and willing to ignore the requirement for AFCIs.

This isn't the type of situation where one asks "How many people have to get killed crossing the street before a traffic light gets installed?" This situation is pretty simple – the folks who really could benefit from this new technology are those living in older housing with outdated wiring. As usual, those poor folks are the ones who can least afford to update to this life-saving technology, and those with higher incomes are paying to install redundant safety devices that may never be called on to function because of other changes in materials and installation practices that have already increased safety to the point AFCIs are unnecessary.

**National Fire Incident Reporting System: 2002 to 2006 Data for One and Two Family Homes
Structural Fires Where Equipment Involved was Electrical Branch Circuit or Outlet Receptacle**

STATE	Average Number of Fires per Year	Square Footage Affected per Year	Civilian Deaths per Year	Civilian Injuries per Year	Total Damage per Year (in \$2006)	Average number of SF Permits	Average Number of AFCI Installed (2005 NEC)	Total Cost per year for Installation (2005 NEC)	Average Number of AFCI Installed (2008 NEC)	Total Cost per year for Installation (2008 NEC)
AK	1.0	2,937	0.0	0.0	\$176,581	1,696	5,087	\$178,038	20,347	\$712,152
AL	3.3	3,972	0.2	1.2	\$49,335	20,799	62,396	\$2,183,874	249,586	\$8,735,496
AR	6.7	11,863	0.0	0.0	\$149,463	10,520	31,561	\$1,104,642	126,245	\$4,418,568
AZ	1.4	2,463	0.0	0.6	\$3,858	67,772	203,315	\$7,116,018	813,259	\$28,464,072
CA	11.9	10,888	0.6	1.3	\$428,909	135,374	406,121	\$14,214,228	1,624,483	\$56,856,912
CO	2.8	2,926	0.0	0.0	\$134,977	36,018	108,053	\$3,781,848	432,211	\$15,127,392
CT	4.9	12,983	0.0	0.2	\$161,396	8,370	25,111	\$878,871	100,442	\$3,515,484
DC	0.7	0	0.0	0.0	\$5,579	202	607	\$21,252	2,429	\$85,008
DE	0.5	406	0.0	0.0	\$8,789	6,412	19,237	\$673,281	76,946	\$2,693,124
FL	9.8	12,111	0.0	0.2	\$348,577	165,686	497,059	\$17,397,072	1,988,237	\$69,588,288
GA	7.1	14,753	0.0	0.7	\$183,675	84,903	254,710	\$8,914,836	1,018,838	\$35,659,344
HI	2.3	1,194	0.0	0.0	\$43,335	5,723	17,170	\$600,936	68,678	\$2,403,744
IA	5.5	11,260	0.0	0.0	\$125,233	11,456	34,369	\$1,202,901	137,474	\$4,811,604
ID	4.1	5,732	0.0	0.0	\$138,492	14,536	43,608	\$1,526,280	174,432	\$6,105,120
IL	11.9	30,771	0.0	0.3	\$205,254	43,948	131,843	\$4,614,519	527,374	\$18,458,076
IN	9.4	11,471	0.2	0.2	\$425,597	30,282	90,847	\$3,179,631	363,386	\$12,718,524
KS	6.1	10,464	0.0	0.0	\$83,211	11,225	33,676	\$1,178,646	134,702	\$4,714,584
KY	5.6	11,803	0.0	0.2	\$128,796	16,730	50,189	\$1,756,629	200,758	\$7,026,516
LA	5.8	6,682	0.0	0.0	\$111,538	19,680	59,039	\$2,066,379	236,158	\$8,265,516
MA	23.0	50,375	0.0	0.3	\$729,947	13,403	40,210	\$1,407,336	160,838	\$5,629,344
MD	2.4	2,856	0.0	0.0	\$72,767	21,944	65,833	\$2,304,162	263,333	\$9,216,648
ME	0.9	1,725	0.0	0.2	\$80,815	7,215	21,645	\$757,575	86,580	\$3,030,300
MI	20.7	40,602	0.0	0.4	\$771,305	39,184	117,552	\$4,114,320	470,208	\$16,457,280
MN	3.1	4,748	0.0	0.0	\$48,945	28,882	86,645	\$3,032,589	346,582	\$12,130,356

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MO	6.5	7,166	0.0	0.4	\$69,087	23,124	69,373	\$2,428,041	277,490	\$9,712,164
MS	5.1	8,124	0.0	0.0	\$125,683	11,202	33,607	\$1,176,252	134,429	\$4,705,008
MT	2.0	2,209	0.0	0.0	\$24,945	2,936	8,807	\$308,259	35,230	\$1,233,036
NC	5.8	12,406	0.0	0.0	\$233,866	75,615	226,846	\$7,939,617	907,385	\$31,758,468
ND	0.3	0	0.0	0.0	\$0	2,264	6,793	\$237,762	27,173	\$951,048
NE	2.2	1,899	0.0	0.0	\$124,780	8,037	24,110	\$843,864	96,442	\$3,375,456
NH	1.0	3,116	0.0	0.0	\$0	6,319	18,958	\$663,537	75,833	\$2,654,148
NJ	5.4	18,625	0.0	0.4	\$76,601	21,270	63,809	\$2,233,308	255,235	\$8,933,232
NM	0.2	0	0.0	0.0	\$0	11,922	35,767	\$1,251,831	143,066	\$5,007,324
NV	0.5	481	0.0	0.0	\$439	32,781	98,344	\$3,442,026	393,374	\$13,768,104
NY	16.1	35,500	0.2	0.6	\$343,644	23,808	71,425	\$2,499,882	285,701	\$9,999,528
OH	56.7	110,938	0.0	1.4	\$914,696	38,170	114,511	\$4,007,871	458,042	\$16,031,484
OK	3.9	4,790	0.0	0.0	\$202,580	13,567	40,701	\$1,424,535	162,804	\$5,698,140
OR	15.0	39,538	0.0	0.3	\$445,660	19,943	59,829	\$2,094,015	239,316	\$8,376,060
PA	0.7	732	0.0	0.0	\$2,766	37,827	113,481	\$3,971,835	453,924	\$15,887,340
RI	0.0	0	0.0	0.0	\$0	1,928	5,785	\$202,482	23,141	\$809,928
SC	5.1	9,147	0.9	0.0	\$116,263	36,252	108,755	\$3,806,439	435,022	\$15,225,756
SD	1.5	1,676	0.0	0.0	\$46,038	4,253	12,759	\$446,565	51,036	\$1,786,260
TN	15.1	21,630	1.5	0.6	\$453,311	35,702	107,107	\$3,748,752	428,429	\$14,995,008
TX	45.5	72,840	0.0	1.6	\$859,866	146,961	440,882	\$15,430,884	1,763,530	\$61,723,536
UT	2.2	5,273	0.0	0.0	\$9,757	20,200	60,599	\$2,120,958	242,395	\$8,483,832
VA	7.7	16,853	0.0	0.2	\$95,094	45,980	137,940	\$4,827,900	551,760	\$19,311,600
VT	0.3	NA	0.0	0.0	\$124,821	2,400	7,199	\$251,958	28,795	\$1,007,832
WA	8.0	11,913	0.0	0.9	\$224,189	35,367	106,102	\$3,713,577	424,409	\$14,854,308
WI	2.5	3,183	0.3	0.9	\$33,853	26,023	78,070	\$2,732,457	312,281	\$10,929,828
WV	3.1	5,854	0.0	0.2	\$105,999	4,986	14,959	\$523,551	59,834	\$2,094,204
WY	0.8	1,091	0.0	0.0	\$11,178	2,631	7,894	\$276,297	31,577	\$1,105,188
US	364.1	660,984	4.1	13.6	\$9,261,489	1,493,432	4,480,295	\$156,810,318	17,921,179	\$627,241,272

Total square footage is based on size of the main floor multiplied by the number of floors above ground. Dwellings with total square footage greater than 10,000 square feet are excluded from the calculations, under the assumption that they represent unrealistic outliers. Total damage includes damage to both property and contents, but excludes outliers where property damage is more than \$10 million."

Numbers each year are inflated to account for the self-reported share of fires missed by the NFIRS, ranging from a high of 35% in 2002 to a low of 6% in 2005 and 2006.

Source: NAHB tabulation of data from the U.S. Fire Administration, National Fire Data Center.

Damage numbers are adjusted for inflation using the annual Consumer Price Index for all items (U.S. Bureau of Labor Statistics)

Average number of AFCI breakers installed are based upon NAHBRC survey data reporting the average size of homes built in this time period was 2,244sf and the calculations found in the *National Electrical Code* for the minimum number of circuits required.

Source: A cost of \$35 per AFCI device was derived from NFPA fact Sheet on AFCI available at <http://www.nfpa.org/itemDetail.asp?categoryID=285&itemID=19048&URL=Safety%20Information/For%20consumers/Electrical%20safety/Electrical%20circuit-interrupters>

Submit an original and one copy. Use separate sheets for separate topics. If required, start proposal on this sheet which will act as your cover and attach any additional sheets. If voluminous supporting data is submitted, it will be maintained on file in the NM Construction Industries Division office for review between the hours of 9:00 am and 5:00 pm, Monday through Friday, except holidays.

2017 NEC CODE CHANGE

NM Code Development Committee <i>Attn: Kelly Hunt, Electrical Bureau Chief</i> 2550 Cerrillos Road Santa Fe, NM 87505 Tele (505) 476-4679/Fax (505) 476-4685	Item _____ (for staff use only)
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APPLICABLE SECTION/TABLE/FIGURE NUMBER(S)

210.8 GFCI Protection for Personnel.

PROPONENT New Mexico Home Builders Association

ADDRESS 5931 Office Blvd. NE #1 Albuquerque 87109

PHONE 505-344-7072

- CHECK ONE:
- Change section to read as follows
 - Add new section to read as follows
 - Delete section and substitute as follows
 - Delete section without substitution

FAX _____

EMAIL _____

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Underline material to be added

USE SEPARATE SHEETS FOR SEPARATE TOPICS

210.8 Ground-Fault Circuit-Interrupter Protection for Personnel.

Ground-fault circuit-interrupter protection for personnel shall be provided as required in 210.8(A) through (E). The ground-fault circuit interrupter shall be installed in a readily accessible location.

Informational Note No. 1: See 215.9 for ground-fault circuit interrupter protection for personnel on feeders.

Informational Note No. 2: See 422.5(A) for GFCI requirements for appliances.

For the purposes of this section, when determining distance from receptacles the distance shall be measured as the shortest path the cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, or fixed barrier, or passing through a door, doorway, or window.

(A) Dwelling Units. All 125-volt, single-phase, 15- and 20- ampere receptacles installed in the locations specified in 210.8(A)(1) through (10) shall have ground-fault circuit interrupter protection for personnel.

(1) Bathrooms

(2) Garages, and also accessory buildings that have a floor located at or below grade level not intended as habitable rooms and limited to storage areas, work areas, and areas of similar use

Exceptions to (2): (a) Receptacles that are not readily accessible; and

(b) A single receptacle or a duplex receptacle for two appliances located within dedicated space for each appliance that, in normal use is not easily moved from one place to another, and that is cord- and plug-connected in accordance with Section 400.10 A(8).

(3) Outdoors

Exception to (3): Receptacles that are not readily accessible and are supplied by a branch circuit dedicated to electric snow-melting, deicing, or pipeline and vessel heating equipment shall be permitted to be installed in accordance with 426.28 or 427.22, as applicable.

(4) Crawl spaces — at or below grade level

(5) Unfinished portions or areas of the basement not intended as habitable rooms.

Exception to (5): A receptacle supplying only a permanently installed fire alarm or burglar alarm system shall not be required to have groundfault circuit-interrupter protection.

Informational Note: See 760.41(B) and 760.121(B) for power supply requirements for fire alarm systems. Receptacles installed under the exception to 210.8(A)(5) shall not be considered as meeting the requirements of 210.52(G).

(6) Kitchens — where the receptacles are installed to serve the countertop surfaces

(7) Sinks — where receptacles are installed within 1.8 m (6 ft) from the top inside edge of the bowl of the sink

(8) Boathouses

(9) Bathtubs or shower stalls — where receptacles are installed within 1.8 m (6 ft) of the outside edge of the bathtub or shower stall

(10) Laundry areas where sinks are installed within 1.8 m (6 ft) of a receptacle.

REASON(s):

The two Exceptions in (A)(2) restore the ability for homeowners to plug in a refrigerator or freezer in to an outlet in the garage without worrying about a GFCI tripping while they are gone for a week. The wording is exactly what was in the 1999 NEC except for the reference to Section 400-7 was changed to 400.10.

The requirement for a GFCI makes sense when there is likely to be water on the floor when someone is plugging something into an outlet. Just requiring them in all laundry rooms when many do not have a sink is just expanding the requirements without regard to common sense.

2017 NEC CODE CHANGE

NM Code Development Committee Attn: Kelly Hunt, Electrical Bureau Chief 2550 Cerrillos Road Santa Fe, NM 87505 Tele (505) 476-4679/Fax (505) 476-4685	Item _____ (for staff use only)
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APPLICABLE SECTION/TABLE/FIGURE NUMBER(S) **210.8(D) Kitchen Dishwasher Branch Circuit.**

PROPONENT New Mexico Home Builders Association

ADDRESS 5931 Office Blvd. NE #1 Albuquerque 87109 PHONE 505-344-7072

CHECK ONE: | | Change section to read as follows FAX _____
| | Add new section to read as follows EMAIL _____
| | Delete section and substitute as follows
| | Delete section without substitution

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Underline material to be added

USE SEPARATE SHEETS FOR SEPARATE TOPICS

210.8 Ground-Fault Circuit-Interrupter Protection for Personnel.

(D) Kitchen Dishwasher Branch Circuit. GFCI protection shall be provided for outlets that supply dishwashers installed in dwelling unit locations when located within 1.8 m (6 ft) of a sink.

REASON(s):

This appears to be an instance where a requirement was added without any sensible reason. If the dishwasher is not within 6 ft. of a sink, there is no logical reason for requiring a GFCI to be installed. If the dishwasher is a drawer-type installed in an island, the outlet will be difficult to access, and our members are still having a lot of call-backs related to the GFCIs tripping or wearing out after less than 10 years.

2017 NEC CODE CHANGE

NM Code Development Committee <i>Attn: Kelly Hunt, Electrical Bureau Chief</i> 2550 Cerrillos Road Santa Fe, NM 87505 Tele (505) 476-4679/Fax (505) 476-4685	Item _____ (for staff use only)
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APPLICABLE SECTION/TABLE/FIGURE NUMBER(S) **210.8(D) Kitchen Dishwasher Branch Circuit.**

PROPONENT New Mexico Home Builders Association

ADDRESS 5931 Office Blvd. NE #1 Albuquerque 87109 PHONE 505-344-7072

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USE SEPARATE SHEETS FOR SEPARATE TOPICS

210.8 Ground-Fault Circuit-Interrupter Protection for Personnel.

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2017 NEC CODE CHANGE

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APPLICABLE SECTION/TABLE/FIGURE NUMBER(S) 210.52(C)(3) Peninsular Countertop Spaces

PROPONENT New Mexico Home Builders Association

ADDRESS 5931 Office Blvd. NE #1 Albuquerque 87109 PHONE 505-344-7072

CHECK ONE: | | Change section to read as follows FAX _____
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 | | Delete section and substitute as follows
 | | Delete section without substitution

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Underline material to be added

USE SEPARATE SHEETS FOR SEPARATE TOPICS

210.52 Dwelling Unit Receptacle Outlets. This section provides requirements for 125-volt, 15- and 20-ampere receptacle outlets. The receptacles required by this section shall be in addition to any receptacle that is:

- (1) Part of a luminaire or appliance, or
- (2) Controlled by a wall switch in accordance with 210.70(A)(1), Exception No. 1, or
- (3) Located within cabinets or cupboards, or

(4) Located more than 1.7 m (5½ ft) above the floor Permanently installed electric baseboard heaters equipped with factory-installed receptacle outlets or outlets provided as a separate assembly by the manufacturer shall be permitted as the required outlet or outlets for the wall space utilized by such permanently installed heaters. Such receptacle outlets shall not be connected to the heater circuits.

Informational Note: Listed baseboard heaters include instructions that may not permit their installation below receptacle outlets.

(A) General Provisions. 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 the general provisions specified in 210.52(A)(1) through (A)(4).

(1) Spacing. Receptacles shall be installed such that no point measured horizontally along the floor line of any wall space is more than 1.8 m (6 ft) from a receptacle outlet.

(2) Wall Space. As used in this section, a wall space shall include the following:

- (1) Any space 600 mm (2 ft) or more in width (including space measured around corners) and unbroken along the floor line by doorways and similar openings, fireplaces, and fixed cabinets that do not have countertops or similar work surfaces
- (2) The space occupied by fixed panels in walls, excluding sliding panels
- (3) The space afforded by fixed room dividers, such as freestanding bar-type counters or railings

(3) Floor Receptacles. Receptacle outlets in or on floors shall not be counted as part of the required number of receptacle

outlets unless located within 450 mm (18 in.) of the wall.

(4) Countertop and Similar Work Surface Receptacle Outlets. Receptacles installed for countertop and similar work surfaces as specified in 210.52(C) shall not be considered as the receptacle outlets required by 210.52(A).

(B) Small Appliances.

(1) Receptacle Outlets Served. In the kitchen, pantry, breakfast room, dining room, or similar area of a dwelling unit, the two or more 20-ampere small-appliance branch circuits required by 210.11(C)(1) shall serve all wall and floor receptacle outlets covered by 210.52(A), all countertop outlets covered by 210.52(C), and receptacle outlets for refrigeration equipment.

Exception No. 1: In addition to the required receptacles specified by 210.52, switched receptacles supplied from a general-purpose branch circuit as defined in 210.70(A)(1), Exception No. 1, shall be permitted.

Exception No. 2: In addition to the required receptacles specified by 210.52, a receptacle outlet to serve a specific appliance shall be permitted to be supplied from an individual branch circuit rated 15 amperes or greater.

(2) No Other Outlets. The two or more small-appliance branch circuits specified in 210.52(B)(1) shall have no other outlets.

Exception No. 1: A receptacle installed solely for the electrical supply to and support of an electric clock in any of the rooms specified in 210.52(B)(1).

Exception No. 2: Receptacles installed to provide power for supplemental equipment and lighting on gas-fired ranges, ovens, or counter-mounted cooking units.

(3) Kitchen Receptacle Requirements. Receptacles installed in a kitchen to serve countertop surfaces shall be supplied by not fewer than two small-appliance branch circuits, either or both of which shall also be permitted to supply receptacle outlets in the same kitchen and in other rooms specified in 210.52(B)(1). Additional small-appliance branch circuits shall be permitted to supply receptacle outlets in the kitchen and other rooms specified in 210.52(B)(1). No small-appliance branch circuit shall serve more than one kitchen.

(C) Countertops and Work Surfaces. In kitchens, pantries, breakfast rooms, dining rooms, and similar areas of dwelling units, receptacle outlets for countertop and work surfaces shall be installed in accordance with 210.52(C)(1) through (C)(5).

(1) Wall Countertop and Work Surface. A receptacle outlet shall be installed at each wall countertop and work surface that is 300 mm (12 in.) or wider. Receptacle outlets shall be installed so that no point along the wall line is more than 600 mm (24 in.) measured horizontally from a receptacle outlet in that space.

Exception: Receptacle outlets shall not be required on a wall directly behind a range, counter-mounted cooking unit, or sink in the installation described in Figure 210.52(C)(1).

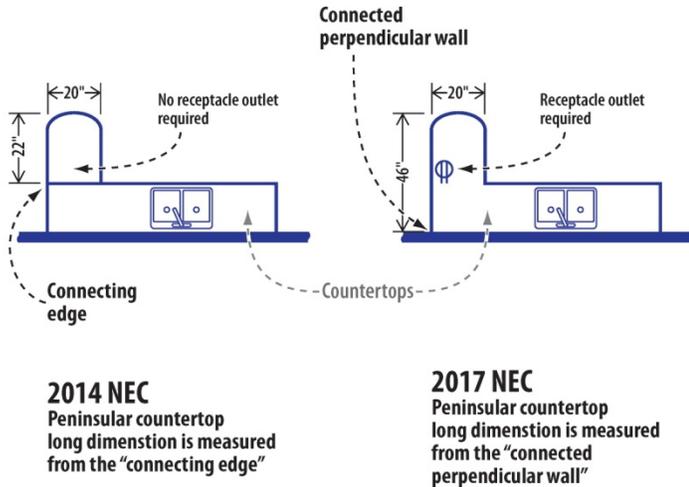
(2) Island Countertop Spaces. At least one receptacle shall be installed at each island countertop space with a long dimension of 600 mm (24 in.) or greater and a short dimension of 300 mm (12 in.) or greater.

~~**(3) Peninsular Countertop Spaces.** At least one receptacle outlet shall be installed at each peninsular countertop long dimension space with a long dimension of 600 mm (24 in.) or greater and a short dimension of 300 mm (12 in.) or greater. A peninsular countertop is measured from the connected perpendicular wall.~~

(4) Separate Spaces. Countertop spaces separated by rangetops, refrigerators, or sinks shall be considered as separate countertop spaces in applying the requirements of 210.52(C)(1). If a range, counter-mounted cooking unit, or sink is installed in an island or peninsular countertop and the depth of the countertop behind the range, counter-mounted cooking unit, or sink is less than 300 mm (12 in.), the range, counter-mounted cooking unit, or sink shall be considered to divide the countertop space into two separate countertop spaces. Each separate countertop space shall comply with the applicable requirements in 210.52(C).

(5) Receptacle Outlet Location. Receptacle outlets shall be located on or above, but not more than 500 mm (20 in.) above, the countertop or work surface. Receptacle outlet assemblies listed for use in countertops or work surfaces shall be permitted to be installed in countertops or work surfaces. Receptacle outlets rendered not readily accessible by appliances fastened in place, appliance garages, sinks, or rangetops as covered in 210.52(C)(1), Exception, or appliances occupying dedicated space shall not be considered as these required outlets.

REASON(s):



This will require kitchen remodels with an eating counter on the end to have an additional outlet when none was required previously. Under other provisions, that outlet will have to be either a GFCI/ACFI combo receptacle or AFCI. There is no apparent reason for this new requirement, as folks sitting at an eating counter perpendicular to the wall generally are not operating appliances or otherwise requiring their own electrical outlet.

For kitchen remodel projects in older homes this could lead to a requirement for an entirely new electrical panel to accommodate the AFCI/GFCI combo breaker. This is an unnecessary cost increase that shows no benefit.

2017 NEC CODE CHANGE

NM Code Development Committee <i>Attn: Kelly Hunt, Electrical Bureau Chief</i> 2550 Cerrillos Road Santa Fe, NM 87505 Tele (505) 476-4679/Fax (505) 476-4685	Item _____ (for staff use only)
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APPLICABLE SECTION/TABLE/FIGURE NUMBER(S) **NEC 690.12 Rapid Shutdown of PV Systems**

PROPONENT New Mexico Home Builders Association

ADDRESS 5931 Office Blvd. NE #1 Albuquerque 87109 PHONE 505-344-7072

CHECK ONE: Change section to read as follows FAX _____

Add new section to read as follows EMAIL _____

Delete section and substitute as follows

Delete section without substitution

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USE SEPARATE SHEETS FOR SEPARATE TOPICS

690.12 Rapid Shutdown of PV Systems on Buildings. PV system circuits installed on or in buildings shall include a rapid shutdown function to reduce shock hazard for emergency responders in accordance with 690.12(A) through (D).

Exception: Ground mounted PV system circuits that enter buildings, of which the sole purpose is to house PV system equipment, shall not be required to comply with 690.12.

(A) Controlled Conductors. Requirements for controlled conductors shall apply to PV circuits supplied by the PV system.

(B) Controlled Limits. The use of the term *array boundary* in this section is defined as 305 mm (1 ft) from the array in all directions. Controlled conductors outside the array boundary shall comply with 690.12(B)(1) and inside the array boundary shall comply with 690.12(B)(2).

(1) Outside the Array Boundary. Controlled conductors located outside the boundary or more than 1 m (3 ft) from the point of entry inside a building shall be limited to not more than 30 volts within 30 seconds of rapid shutdown initiation. Voltage shall be measured between any two conductors and between any conductor and ground.

~~**(2) Inside the Array Boundary.** The PV system shall comply with one of the following:~~

~~(1) The PV array shall be listed or field labeled as a rapid shutdown PV array. Such a PV array shall be installed and used in accordance with the instructions included with the rapid shutdown PV array listing or field labeling. Informational Note: A listed or field labeled rapid shutdown PV array is evaluated as an assembly or system as defined in the installation instructions to reduce but not eliminate risk of electric shock hazard within a damaged PV array during fire fighting procedures. These rapid shutdown PV arrays are designed to reduce shock hazards by methods such as limiting access to energized components, reducing the voltage difference between energized components, limiting the electric current that might flow in an electrical circuit involving personnel with increased resistance of the conductive circuit, or by a combination of such methods.~~

~~(2) Controlled conductors located inside the boundary or not more than 1 m (3 ft) from the point of penetration of the surface of the building shall be limited to not more than 80 volts within 30~~

~~seconds of rapid shutdown initiation. Voltage shall be measured between any two conductors and between any conductor and ground.~~

~~(3) PV arrays with no exposed wiring methods, no exposed conductive parts, and installed more than 2.5 m (8 ft) from exposed grounded conductive parts or ground shall not be required to comply with 690.12(B)(2). The requirement of 690.12(B)(2) shall become effective January 1, 2019.~~

(C) Initiation Device. The initiation device(s) shall initiate the rapid shutdown function of the PV system. The device “off” position shall indicate that the rapid shutdown function has been initiated for all PV systems connected to that device. For one-family and two-family dwellings, an initiation device(s) shall be located at a readily accessible location outside the building. The rapid shutdown initiation device(s) shall consist of at least one of the following:

(1) Service disconnecting means

(2) PV system disconnecting means

(3) Readily accessible switch that plainly indicates whether it is in the “off” or “on” position

Informational Note: One example of why an initiation device that complies with 690.12(C)(3) would be used is where a PV system is connected to an optional standby system that remains energized upon loss of utility voltage. Where multiple PV systems are installed with rapid shutdown functions on a single service, the initiation device(s) shall consist of not more than six switches or six sets of circuit breakers, or a combination of not more than six switches and sets of circuit breakers, mounted in a single enclosure, or in a group of separate enclosures. These initiation device(s) shall initiate the rapid shutdown of all PV systems with rapid shutdown functions on that service. Where auxiliary initiation devices are installed, these auxiliary devices shall control all PV systems with rapid shutdown functions on that service

(D) Equipment. Equipment that performs the rapid shutdown functions, other than initiation devices such as listed disconnect switches, circuit breakers, or control switches, shall be listed for providing rapid shutdown protection.

Informational Note: Inverter input circuit conductors often remain energized for up to 5 minutes with inverters not listed for rapid shutdown.

REASON(s):

The requirements in 690.12(B)(2) do not become effective until January 1, 2019 to allow time to develop a product safety standard for rapid-shutdown PV arrays. There is no provision in NM State Rules for adopting a code that contains a delayed effective date 1-1/2 years in the future. This section should be deleted until the product safety standard is developed, which may not be until the 2020 NEC.

2017 NEC CODE CHANGE

NM Code Development Committee Attn: Kelly Hunt, Electrical Bureau Chief 2550 Cerrillos Road Santa Fe, NM 87505 Tele (505) 476-4679/Fax (505) 476-4685	Item _____ (for staff use only)
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APPLICABLE SECTION/TABLE/FIGURE NUMBER(S) **14.10.4.10 ARTICLE 90 INTRODUCTION**

PROPONENT New Mexico Home Builders Association
ADDRESS 5931 Office Blvd. NE #1 Albuquerque 87109 PHONE 505-344-7072
CHECK ONE: | | Change section to read as follows FAX _____
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| | Delete section and substitute as follows
| | Delete section without substitution

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USE SEPARATE SHEETS FOR SEPARATE TOPICS

90.4 Enforcement. This *Code* is intended to be suitable for mandatory application by governmental bodies that exercise legal jurisdiction over electrical installations, including signaling and communications systems, and for use by insurance inspectors. The authority having jurisdiction for enforcement of the *Code* has the responsibility for making interpretations of the rules, for deciding on the approval of equipment and materials, and for granting the special permission contemplated in a number of the rules.

By special permission, the authority having jurisdiction may waive specific requirements in this *Code* or permit alternative methods where it is assured that equivalent objectives can be achieved by establishing and maintaining effective safety.

~~This *Code* may require new products, constructions, or materials that may not yet be available at the time the *Code* is adopted. In such event, the authority having jurisdiction may permit the use of the products, constructions, or materials that comply with the most recent previous edition of this *Code* adopted by the jurisdiction.~~

REASON(s):

This is a concept that is against New Mexico law and the whole concept of updating to a new code. The AHJ cannot decide to toss out a section of the Code and revert back to the previous version of the Code. The only process that complies with NM law is to have the CIC declare an emergency Rule Change that will be in effect for 90 days while the Rule (Code) Amendment goes through the process for a public hearing and final adoption by the CIC.