

AGENDA

UNIFORM BUILDING CODE COMMISSION
ELECTRICAL ADVISORY COMMITTEE

December 9, 2021 3:00

MEETING

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Heber M Wells Bldg Room 475
160 E 300 S
Salt Lake City, UT

1. Roll call
2. Approve the minutes from the October 14, 2021 meeting
3. Final review of the electrical portion of the 2021 IRC
4. Make a recommendation to the UBC Commission for the electrical portion of the 2021 IRC

Next Scheduled Meeting: if necessary, January 13, 2022

Please call Sharon at 801-530-6163 or email ssmalley@utah.gov if you do not plan on attending this meeting.



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MINUTES

UNIFORM BUILDING CODE COMMISSION
ELECTRICAL ADVISORY COMMITTEE

Meeting

October 14, 2021 3:00 pm

Convened: 3:03 pm

Adjourned: 3:43 pm

STAFF

Stephen Duncombe, Bureau Manager
Sharon Smalley, Board Secretary

ELECTRICAL ADVISORY COMMITTEE MEMBERS

Jason VanAusdal (excused)	Art Anderson, Commission Liaison
Joseph Taft	Rhett Butler
David Winger (absent)	Steve Woodman
Bryan Romney	Willie Chidester (excused)

VISITORS

MINUTES

A motion was made by Steve Woodman to approve the minutes from the September 9, 2021 meeting as written. The motion was seconded by Bryan Romney and passed unanimously.

FINAL REVIEW OF THE
ELECTRICAL PORTION
OF THE 2021 IRC

The committee reviewed their recommendations for the electrical portion of the 2021 IRC and the excel spreadsheet with the costs. The majority of the changes that have been reviewed were for clarification. No further recommendations were made for changes or new amendments. Joseph Taft will work with Jason Van Ausdal to combine the two excel worksheets for a final report for the Commission.

MAKE A RECOMMENDATION
TO THE UBC COMMISSION FOR
THE ELECTRICAL PORTION OF
THE 2021 IRC

The committee will make their final recommendation at the December 9th meeting.

REVIEW CHAPTER 27 OF THE
2021 IBC

The committee reviewed this chapter and made no recommendations for changes. The committee is asking the Mechanical Advisory Committee to review Section 2702.1.2 for their input on the cost

The meeting adjourned at 3:52.

Note: These minutes are not intended to be a verbatim transcript but are intended to record the significant features of the business conducted in this meeting. Discussed items are not necessarily shown in the chronological order they occurred.

Article	Description	Recommendation		Fiscal Impact
		support	deny	
E3403.3	Listing and labeling equipment "Shall be installed, and used or both, in accordance with any instructions included in the listing and labeling"	X		\$0
E3404.1	Voltages Added clarification that "The voltage rating of electrical equipment shall not be less than the nominal voltage of the circuit to which it is connected"	X		\$0
E3404.2	Interrupting Rating 10,000A at the nominal circuit voltage	X		\$0
E3404.11	Equipment Identification Added a requirement that reconditioned equipment shall be marked and dated	X		\$0
E3404.12	Field-applied hazard markings changed working from "shall adequately warn" to "shall warn".	X		\$0
E3405.2	Working Clearances for energized equipment and panelboards. Added requirements for access when equipment has limited access	X		\$0
E3406.2	Conductor Material Added Aluminum	X		\$0
E3406.5	Individual conductors Added requirement that the insulation type shall be approved for the application.	X		\$0
E3406.12	Installation Added requirement for torque tightening	X		\$100
Chapter 35 Definitions				
Accessible, Readily In Sight From	The use of keys is now allowed	X		\$0
Raceway	Added a definition of "In Sight From"	X		\$0
Receptacle	Added "an enclosed channel expressly for holding"	X		\$0
Structure	Added clarification of what an outlet is.	X		\$0
	Added a definition of "Structure"	X		\$0
Chapter 36 Services				
E3601.4	Added clarification phrase 'in which the service conductors are installed.'	X		\$0
E3601.4 Exception 1	Added the clarification that the 'Supply side' bonding jumpers and that it 'shall be permitted within service raceways'.	X		\$0
E3601.4 Exception 2	'overcurrent protection' and then they shall be 'permitted to be installed within the	X		\$15

for initial tool

E3601.7	Added the word sets when referring to the six 'sets' of circuit breakers as additional detail and clarification.	X	\$0
E3603.1.5	Added additional clarification ' E3603.1.5 Adjustment/correction factors - Where correction or adjustment factors are required by Section E3705.2 or E3705.3, they shall be permitted to be applied to the ampacity associated with the temperature rating of the conductor.'	X	\$0
E3603.3.3	Added the sentence, 'Where fuses are used as the service overcurrent device, the disconnecting means shall be located on the supply side of the fuses.' to help add clarification and detail to the installation method.	X	\$0
Table E3603.4 (f)	Changed sentence to flow better grammatically and added additional clarification on the requirements for the grounding electric conductor required size.	X	\$0
E3604.6	Added the phrase, 'by a substantial structure.' and the sentence, 'For a grounded system, where the substantial structure is metal, it shall be bonded by means of a bonding jumper and listed connector to the grounded overhead service conductor.' This new installation direction will require the grounding of a metal substantial structure which will affect the installation costs minimally when required.	X	\$20
E3605.5	Added the conduit type 'reinforced thermosetting resin conduit' otherwise known as Fiberglass Conduit to the group of approved conduit type to protect service cables.	X	\$0 Could offer savings in some instances.
E3605.9.3	Added additional verbiage and clarification to the phrase, Service heads 'on raceways or service entrance cables'	X	\$0
E3606.4	Added the phrase, 'or field labeled' and 'but shall be listed and rated for the voltage and ampacity of the service.' for clarity.	X	\$0
E3606.4 Exception	Added the 'Exception: Meter sockets supplied by and under the exclusive control of an electric utility shall not be required to be listed. (230.66 Exception)' to give the utility additional flexibility of the requirements.	X	\$0
E3608.1.1.1	Changed the word to to 'into' to give more clarity to the meaning of the sentence.	X	\$0
E3608.7	and structural reinforcing steel the structures and structural reinforcing steel described in Section E4204.2, Items 1 and 2, shall not be used as a grounding	X	\$0
E3609.3	Deleted 'Bonding for other systems' as the Title and changed it to 'Bonding for Communications systems' and added the phrase, 'Communications system bonding terminations shall be connected in accordance with Section E3609.3.1 or E3609.3.2 (250.94)' for added Clarity.	X	\$0

E3609.3.1	Added the Acronym '(IBT)' to define an intersystem bonding termination.	X	\$0
E3609.3.1 Exception	Added the following exception to the list, ' <i>Exception: Means for connecting Intersystem bonding conductors are not required where communications systems are not likely to be used.</i> '	X	Could be a potential savings is Exception applies. -\$55
E3609.3.2	Added the verbiage for a requirement to provide ' <i>An aluminum or copper busbar not less than 1/4 inch thick and 2 inches wide (6.4mm by 51mm) and of sufficient length to accommodate not fewer than three terminations for communications systems in addition to the other connections shall be provided. The busbar shall be securely fastened and shall be installed in an accessible location. Connections shall be made by a listed connector. Where aluminum busbars are used, the installation shall comply with Section E3610.2. Exception: Means for connecting Intersystem bonding conductors are not required where communications systems are not likely to be used. (250.94(B))</i> '	X	When it applies - \$85
E3609.7	Added the phrase for clarity and direction when referring to the sizing of the Bonding conductor(s) or jumper(s) in the second sentence, ' <i>and equipment grounding conductors shall be sized in accordance with Table E3908.12</i> ' using the rating of the circuit capable of energizing the piping.	X	\$0
E3610.2	Changed for clarity the third sentence to read, ' <i>A 6AWG or larger copper or aluminum grounding electrode conductor not exposed to physical damage shall be permitted to be run along the surface of the building construction without metal covering or protection.</i> ' along with the phrase ' <i>a 6AWG or larger copper or aluminum grounding electrode exposed to physical damage</i> ' shall be in rigid metal conduit, ... Also the phrase ' <i>in contact with the earth</i> ' shall not be required to comply with Section E3803, ' <i>but shall be buried or otherwise protected if subject to physical damage. (250.64(B)).</i> '	X	\$0
E3610.3	The second sentence was rewritten to provide more clarity, ' <i>Ferrous metal raceways and enclosures shall be bonded at each end of the raceway or enclosure to the grounding electrode or to the grounding electrode conductor to create an electrically parallel path.</i> ' This sentence was also the third sentence in the 2015 IRC and is now changed to the second sentence in the order.	X	\$0
E3611.5	when referring to ufer-type grounding electrodes it reads, ' <u>E3611.5 Rebar type concrete-encased electrode</u> . Where a grounding electrode conductor or	X	\$0

**Chapter 37 Branch
Circuit and Feeder
Requirements**

E3701.3 Exception	The Exception to E3701.3 was clarified with the following language to give added direction to the meaning of the exception. <i>'Where different ampacities apply to portions fo a circuit, the higher ampacity shall be permitted to be used where the total portion(s) of the circuit witht he lower ampacity does not exceed the lesser of 10 feet or 10 percent of the total circuit.'</i>	X		\$0
E3701.5.2	Added method of <i>'grouped by wire markers, ... or similar means'</i> to reference.	X		\$0
E3701.5.2 Exception	The Exception to E3701.5.2 was clarified with the following change to the final phrase of the sentence. <i>'Or where the conductors pass through a box or conduit body without a loop as described in Section E3905.12.2.1 or without a splice or termination. [200.4(B) Exception 1 and 2]'</i>	X		\$0
E3702.10	Deleted the ampere ratings of 15, 20, 25, and 30 to the list and just stated that it <i>'shall be rated not over 30 amperes'</i> Same meaning just a better way of saying it.	X		\$0
E3702.13	The word separate was replaced by the word <i>'Individual'</i> . Also the word Such was deleted from the reference and was replace by <i>'Each'</i> giving additional clarity to the intent of the meaning.	X		\$0
E3703.5	E3703.5 Garage branch circuits was added pushing the 2015 similar reference to be numbered at 3703.6. This addition requires: <i>'In addition to the numver of branch circuits required by other parts of this section, not less than one 120-volt, 20-ampere branch circuit shall be installed to supply receptacle outlets in attached garages and in detached garages with electric power. This circuit shall not have other outlets. Exception: This circuit shall be permitted to supply readily accessible outdoor receptacle outlets.'</i>	X	\$75 - \$150	
E3705.3 Exceptions 1	Change the word <i>'nipples'</i> to <i>'raceway'</i> giving it the correct general term rather than the trade name.	X		\$0
E3705.4.5	Added clarity to the meaning of the reference by inserting the phrase, <i>' with ungrounded conductor sizes 10AWG and smaller....'</i>	X		\$0
E3705.5	In the first paragraph, third sentence the wording was replaced and added to with the following. <i>'Overcurrent proteciton and allowable loads for branch circuits and for feeders that do not supply the entire load associated with a one-family dwelling or the entire load associated with an individual dwelling unit in a two family dwelling shall be in accordance with this chapter.'</i>	X		\$0

E3705.7	Deleted the heading to the list which was 'Overcurrent devices shall:' to 'Circuit breakers and switches containing fuses shall:'	X		\$0
Chapter 38	no changes of significance			
Chapter 39				
E3901.2.4 Countertop and	Added "similar work surfaces" in addition to just countertop receptacles	x		\$0
	Deleted refrigeration appliances only to require dedicated circuits for any specific appliance. Change: "In addition to the required receptacles specified by Section	x	\$?/circuit per appliance in addition to refrigerators.	
E3901.3, Exception #2 Sm	E3901.2, a receptacle outlet to serve a specific appliance..."			
E3901.4 Countertop and w	Added "similar work surfaces" in addition to just countertop receptacles	x		\$0
E3901.4.1 Wall countertop	Added "similar work surfaces" in addition to just countertop receptacles	x		\$0
E3901.4.3 Peninsular coun	Clarified that the measurement of the peninsular countertop is: "A peninsular countertop is measured from the connected perpendicular wall. [210.52(C)(3)]	x		\$0
E3901.4.5 Appliance	Added "or work surfaces" in addition to just countertop receptacles	x		\$0
E3901.6 Bathroom.		x		\$0
E3901.9 Basements,	Added "basin countertop" and deleted the face-up outlet position.	x		\$0
E3902.4 Crawl space rece	Deleted the following last sentence: "The branch circuit supplying the receptacle(s)	x	\$30/lighting outlet	
	Added the lighting outlets shall be GFCI protected	x		
E3902.5 Unfinished basem	Deleted the following portion of the last sentence: "...and limited to storage areas,	x		\$0
	work areas, and similar areas			
E3902.7 Sink receptacles	Deleted previous language outlet locations and replaced it with the following:	x		\$0
E3902.13 Electrically heate	Replaced language regarding electric heating cables as follows: "...electric heating	x		\$0
E3902.14 Location of grou	Clarified the measuring distance thus: "When determining distance from	x		\$0
E3903.2 Habitable rooms		x		\$15
	Add Kitchen and a required location			
E3903.3.1 Stairway lighting	"Lighting outlets installed to meet this requirement shall not be controlled by the	x		\$0
E3904.2 Mechanical contin	just raceways.	x		\$0
3905.6.2 Ceiling outlets	Adds language for marking of boxes by manufacturer	x		\$0
3905.12.Box Volume	Adds language for barriers in boxes and inch modifier for type of barrier for box fill	x		0
3905.12.2 fill calculation	each space to be independent measured	x		\$0
3906.3 metal boxes	adds language for sheath to extend 1/4 inches into box for type nm cables use	x		\$0
3906.8.2.1 Nails and screw	allows holes in back of boxes intended as mounting holes to be used	x	cost savings	
3906.12 separable	limits.	x		
attachment fittings				
Section E3907.1.1	clarification and understanding to the intent.	X		\$0
E3907.6 Cables Exception	allowable cable fill for conduit or tubing shall not exceed that permitted by Table	X		\$0
E3908.1 metal Enclosures	underground installation of rigid nonmetallic conduit and are isolated from possible	X		\$0
Exceptions #7				
Table 3907.9.1(2)	at terminals. See section for new table.	X		\$0

E3908.1 Flexible Metal Conduit	clarity, direction and understanding.	X		\$0
E3908.15 Metal Boxes	Added '#2 Machine screw-type fasteners that are secured with a Nut.'	X		\$0
E3909.1 Where Permitted	wall floors, ceilings or located above suspended or dropped ceilings; and shall not	X		\$0
Chapter 40				
E4001.1	"General use snap" (Deleted)	x		\$0
E4001.6 Exception	Not any change noted	x		\$0
E4001.11.1	"Metal Faceplates shall be grounded" (Added)	x	\$1.00 per box when used	
E4001.15	Specifies locations as "serving bathrooms, hallways, stairways or rooms suitable for human habitation"	x		
E4001.15 5.	Effective January 1, 2020 Grounded conductor to any location necessary	x		
E4002.9 Exception	Exception not requiring weatherproof enclosure when attachment plug is inserted	x	\$3.50 per box	
E4002.14	"and 250 volt nonlocking type" (Added)	x		\$13
E4002.15	Dimmer controlled receptacles section deleted. New Receptacles in countertops section added. Receptacles assemblies installed in work surfaces shall be listed for such applications.	x		0
E4002.16	New Receptacle position section added. Not to be installed face-up position unless listed for countertop or work surface application	x	140-200	0
E4003.2	Not any change noted	x		0
E4003.4	Where supplied by a circuit having a grounded conductor, it shall be connected to the screw shell.	x		0
E4005.3	"Lighting track shall be supplied by a branch circuit have a rating not greater than that of the track". (Added)	x		0
Chapter 41				
E4101.3	measured from the face of the attachment plug to the plane of the rear of the appliance. A receptacle for a built-in dishwasher shall be located in a space adjacent to the space occupied by the dishwasher.	x		0
E4101.3 Table	Built in Dishwasher maximum cord length increased from 48 to 78 inches Range hoods maximum cord length increased from 36 to 48 inches	x		0
E4101.5 Table	"where the switch or circuit breaker is within sight of the appliance or capable of being locked in the open position". (Added)	x		0

E4101.5 Table	"The provision for locking or adding a lock to the disconnecting means shall be installed on or at the switch or circuit breaker used as the disconnecting means and shall remain in place with or without the lock installed. (Deleted)	x	0
E4101.5 Table	"The Disconnecting means shall be within sight from the appliance or it shall be capable of being locked in the open position". (Added)	x	0
E4101.5 Table	deleted "redundant" and replaced with "other".	x	0
E4101.6	a listed locking support and mounting receptacle, and a compatible installed attachment fitting designed for support, (added)	x	0
E4101.8	New Lockable disconnecting means section added	x	0
	Where a disconnecting means is required to be lockable, it shall be capable of being locked in the open position. The provisions for locking shall remain in place with or without the lock installed.	x	0
E4101.8 Exception	New Exception added to this section Locking provisions for a cord and plug connection shall not be required to remain in place without the lock installed	x	0
Chapter 42	Swimming Pools		
4202.1	Added clarification in table of corrosive environment relations	x	0
4202.2	Added new section for corrosive environment and its locations	x	0
4203.1.1	removed distance of between 6 and 10 feet to only require if closer than 6	x	0
4203.4.7	Added language for low voltage gas fired equipment and lighting.	x	0
4203.7	Clarifies when wiring can be installed under pool for equipment	x	0
4204.2 (2)	clarifies types of surfaces requiring bonding	x	0
4205.2	now requires the use of liquid-flexible conduit to be used	x	\$80
4205.5	pool motor wiring added language and requirements for corrosive environment	x	0
4205.6	added language for corrosive environment and use of LFNMC	x	0
4205.9	terminals required to meet wet and corrosive identification	x	0
4206.11	adds two exceptions for pool cover motors.	x	0
4209.5	created new format for bonding requirements for hydromassage bathtubs	x	0

Chapter 43

no significant changes

x

0



Article	2018-2021 Changes	Recommendation		Fiscal Impact
		support	deny	
Chapter 34				
E3404.4 Enclosure Types	Changed from "conduit" to "raceway"	x		0
E3404.11 Equipment Identification	Added the requirement to remove original listing label and added conditions on reconditioned equipment listing.	x		0
E3405.2 Working Clearances for energized equipment and panelboards.	Adds and allowance for support structures and concrete pads to be within the clearance space	x		0
E3405.7 Illumination	Added All illumination	x		0
E3406.2 Conductor Material	Added Copper-aluminum	x		0
E3406.3 Minimum size of conductors	Added Copper-aluminum	x		0
E3406.12 Installation	Added clarifications for torque tightening	x		0
E3407.4.2 Receptacles, plugs and connectors	Added clarification on color or grounded conductor	x		0
Chapter 35 Definitions				
Bathroom	Added the requirement to include a sink (basin)	x		0
Bonded Jumper, Main Ground-Fault Circuit Interrupter	Added the option for connecting to the supply-side bounding jumper, or both	x		0
Ground-Fault Circuit Current Path	Added clarification about what current is being looked at.	x		0
Grounding conductor, equipment (EGC)	Added a clarification by adding grounded conductors to the definitions	x		0
Habitable Room	Added a clarification that it needs to be "part of an effective" ground-fault path	x		0
Laundry Area	Added definition of a "Habitable Room"	x		0
Reconditioned Service	Added a definition of "Laundry Area"	x		0
Service Drop	Added a clarification of "Reconditioned" changed from "delivering energy" to "connecting"	x		0
Service Equipment	changed from "service conductors" to just "conductors" and changed from "utility electric supply system" to "serving utility"	x		0
	changed from "load end of the service conductors" to "serving utility" and added "disconnect" and changed "supply" to "serving utility"	x		0

Chapter 36 Services

Section was completely replaced with the following verbiage for added clarity and understanding '**E3601.7 Maximum number of disconnects**. Each service shall have only one disconnecting means unless installed using one or more of the methods specified in Sections E3601.7.1 through E3601.7.3. In all cases, the maximum number of disconnecting means for any service shall not exceed six and the multiple service disconnecting means shall be grouped. **E3601.7.1**

Separate enclosures. A service with two to six separate enclosures with a single main service disconnecting means in each enclosure shall be permitted.

E3601.7.2 Panelboards. A service with two to six separate panelboards with a single main service disconnecting means in each panelboard shall be permitted. **E3601.7.3**

Metering centers. A service with two to six metering center shall be permitted. [230.71 (B), 230.72 (A)]

Exception:

Disconnecting means installed as part of listed equipment and used solely for the following shall not be considered a service disconnecting means: 1. Power monitoring equipment. 2. Surge-protective device(s). 3. Power-operable service disconnecting means. [230.71 (A)]'

E3601.7

X

\$0

New Section E3601.8 added to help give direction on Emergency Disconnects. '**E3601.8 Emergency disconnects**. For one- and two-family dwelling units, all service conductors shall terminate in disconnecting means having a short-circuit current rating equal to or greater than the available fault current, installed in a readily accessible outdoor location. If more than one disconnect is provided, they shall be grouped. Each disconnect shall be one of the following: 1. Service disconnects marked as follows: EMERGENCY DISCONNECT, SERVICE DISCONNECT. 2. Meter disconnect switches that have a short-circuit current rating equal to or greater than the available fault current and all metal housings and service enclosures are grounded in accordance with Section E3908.7 and bonded in accordance with Section 3609. A meter disconnect switch shall be capable of interrupting the load served and shall be marked as follows: EMERGENCY DISCONNECT, METER DISCONNECT, NOT SERVICE EQUIPMENT. 3. Other listed disconnect switches or circuit breakers on the supply side of each service disconnect that are suitable for use as service equipment and marked as follows: EMERGENCY DISCONNECT, NOT SERVICE EQUIPMENT. Markings shall comply with Section E3404.12. [230.82(3), 230.85]'

E3601.8

X

Minimal \$10

E3603.1.1	Added sentence at the end to give clarification on when no adjustment or correction factors are required. It states, 'If no adjustment or correction factors are required, Table E3603.1.1 shall be permitted to be applied.'	X	\$0
Table E3603.1.1	New Table was added for additional clarification.	X	\$0
E3603.1.2	Added the following sentence at the end to allow utilization of the new Table E3603.1.1. It States, 'If no adjustment or correction factors are required, Table E3603.1.1 shall be permitted to be applied.'	X	\$0
E3604.5.1	Added the descriptive work 'wires' to Guy wires as clarification.	X	\$0
E3605.3	Added sentence to the end as a matter of clarification to a specific type of splice method. It states, 'Power distribution blocks, pressure connectors, and devices for splices and taps shall be listed. Power distribution blocks installed on service conductors shall be marked "suitable for use on the line side of the service equipment" or equivalent. (230.33, 230.46)'	X	\$50 May be a cost savings if utilized in certain applications.
3606.5	Added requirements to Section E3606 for Surge Protection. It states, ' <u>E3606.5 Surge protection.</u> All services supplying one- and two-family dwelling units shall be provided with a surgeprotective device (SPD) installed in accordance with Sections E3606.5.1 through E3606.5.3. <u>E3606.5.1 Location.</u> The SPD shall be an integral part of the service equipment or shall be located immediately adjacent thereto. <u>Exception:</u> The SPD shall not be required to be located in the service equipment if located at each next-level distribution equipment downstream toward the load. <u>E3606.5.2 Type.</u> The SPD shall be a Type 1 or Type 2 SPD. <u>E3606.5.3 Replacement.</u> Where service equipment is replaced, all of the requirements of this section shall apply. [230.67]'	X	Up to \$125 to supply a SPD for Installation.
E3607.3	Added words for clarity in the sentence, 'A building or structure supplied by a feeder(s) or branch circuit(s) shall have a grounding electrode <u>system</u> and grounding electrode <u>conductor</u> installed in accordance with Section E3608.'	X	\$0
E3608.2	Added sentence at the end to give clarification. It states, 'Rebar shall not be used as a conductor to interconnect the electrodes of grounding electrode systems. [250.53(C)]'	X	\$0
E3608.7	Reference added at the end of the sentence. '[250.52 (B)(3)]'	X	\$0
E3609.4.2	Added the word 'listed' to describe the requirements for the threaded hubs on enclosures.	X	\$0

Added the following list to give more clarification on what is expected. It states, 'Bare aluminum or copper-clad aluminum grounding electrode

conductors **shall comply with the following:**

1. Bare or covered conductors without an extruded polymeric covering shall not be installed where subject to corrosive conditions or be installed in direct contact with concrete.

2. Terminations made within outdoor enclosures that are listed and identified for the environment shall be permitted within 18 inches (457 mm) of the bottom of the enclosure.

3. Aluminum or copper-clad aluminum conductors external to buildings or equipment enclosures shall not be terminated within 18 inches (457 mm) of the earth. [250.64(A)]'

Added an additional method of 'Cable Armor' to the list four different times in the section. For Example, 'Ferrous metal raceways, enclosures and cable armor for grounding electrode conductors.'

E3610.2

E3610.3

X \$0
X Additional method could be a slight cost savings in the right application. \$0

E3611.5

Entire Section has been replaced with new information and list. It now states, '**E3611.5 Rebar-type concrete-encased electrode**. A rebar-type concrete-encased electrode installed in accordance with Section E3608.1.2 with an additional rebar section extended from its location within the concrete foundation or footing to an accessible location that is not subject to corrosion shall be permitted for connection of grounding electrode conductors and bonding jumpers in accordance with the following:

1. The additional rebar section shall be continuous with the grounding electrode rebar or shall be connected to the grounding electrode rebar and connected together by the usual steel tie wires, exothermic welding, welding or other effective means.

2. The rebar extension shall not be exposed to contact with the earth without corrosion protection.

3. The rebar shall not be used as a conductor to interconnect the electrodes of grounding electrode systems. [250.68 (C) (3)]'

Added the word 'bonded' to the phrase for added clarification. It states, 'Nonconductive coatings (such as paint, enamel and lacquer) on equipment to be grounded or **bonded** shall be removed from threads and other contact surfaces to ensure good electrical continuity or shall be connected by fittings that make such removal unnecessary. (250.12)'

E3611.7

X \$0
X

Chapter 37 Branch Circuit and Feeder Requirements

E3701.2.1	<p>Additional clarity given in new subsection for continuous loads. It states, 'E3701.2.1 Continuous load. Where a branch circuit or feeder supplies continuous loads or any combination of continuous and noncontinuous loads, the minimum branch-circuit or feeder conductor size shall have an ampacity not less than the noncontinuous load plus 125 percent of the continuous load in accordance with Table E3705.1.'</p>	X	<p>Minimal cost effect due to potential wire upsizing. Potentially increase \$10 - \$25 typically for a branch circuit when this applies.</p>
E3701.2.2	<p>Additional clarity given in new subsection for Ampacity adjustment or correction. 'E3701.2.2 Ampacity adjustment or correction. The minimum branch-circuit or feeder conductor size shall have an ampacity not less than the maximum load to be served after the application of any adjustment or correction factors in accordance with Tables E3705.1, E3705.2 and E3705.3. [210.19(A)(1) and 215.2(A)(1)]'</p>	X	<p>Minimal cost effect due to potential wire upsizing. Potentially increase \$10 - \$25 typically for a branch circuit when this applies.</p>
E3701.3	Reference to the table was changed from '[310.15(A)(2)]' to '[310.14(A)(2)]'	X	\$0
E3701.3 Exception	Reference to the table was changed from '[310.15(A)(2)]' to '[310.14(A)(2)]'	X	\$0
E3702.10	<p>Reference was completely change to read as follows: 'E3702.10 Branch circuits serving heating loads. Branch circuits supplying space heating and water heating equipment shall be sized in accordance with the following:</p> <ol style="list-style-type: none"> 1. The branch circuit conductors and overcurrent protective device supplying fixed storage-type water heaters having a capacity of 120 gallons (450 L) or less shall be sized not less than 125 percent of the water heater rating. [422.13] 2. The branch circuit conductors supplying electric space-heating equipment and any associated motors shall be sized not less than 125 percent of the equipment load. Branch circuits supplying two or more outlets for fixed electric space-heating equipment shall be rated not over 30 amperes. [424.3(A) & (B)]' 	X	\$20
E3702.13	<p>Additional direction on how to approach the load of an electric vehicle car charger. The new sentence states, 'Electric vehicle charging loads shall be considered to be continuous loads. [625.40 and 625.42]' This may require the wiring to be upsized due to the nature of load.</p>	X	\$25

Chapter 38 Wiring Methods no significant changes

Chapter 39 Lighting and power

E3901.1 General, Item #3.	3. Controlled by a wall-switch listed wall-mounted control device in accordance with Section E3903.2, Exception 1; or ... The change added the requirement for a listed device.	X	\$0
E3901.3 Small appliance receptacles, Exception #1	1. In addition to the required receptacles specified by Sections E3901.1 and E3901.2, switched receptacles supplied from a general-purpose 15- or 20-ampere branch circuit as defined required in Section E3903.2, Exception 1 shall be permitted. [210.52(B)(1) Exception No. 1]... The change is symantics only.	X	\$0
E3901.4 Countertop and work surface receptacles	E3901.4 Countertop and work surface receptacles. In kitchens pantries, breakfast rooms, dining rooms and similar areas of dwelling units, receptacle outlets for countertop and work surfaces that are 12 inches (305 mm) or wider shall be installed in accordance with Sections E3901.4.1 through E3901.4.3 and shall not be considered as the receptacle outlets required in Section E3901.2. For the purposes of this section, where using multioutlet assemblies, each 12 inches (305 mm) of multioutlet assembly containing two or more receptacles installed in individual or continuous lengths shall be considered to be one receptacle outlet (see Figure E3901.4)....		\$0
E3901.4.1 Wall spaces.	Deleted the designation of "wall countertop space" to "Wall spaces". Symantics only	X	\$0

E3901.4.2 Island and peninsular countertops and work spaces	<p>The entire subsection was changed and added 2 components: "Receptacle outlets shall be installed in accordance with the following: [210.52(C)(2)]</p> <p>1. At least one receptacle outlet shall be provided for the first 9 square feet (0.84 m2), or fraction thereof, of the countertop or work surface. A receptacle outlet shall be provided for every additional 18 square feet (1.7 m2), or fraction thereof, of the countertop or work surface. [210.52(C)(2)(a)]</p> <p>2. At least one receptacle outlet shall be located within 2 feet (600 mm) of the outer end of a peninsular countertop or work surface. Additional receptacle outlets shall be permitted to be located as determined by the installer, designer or building owner. The location of the receptacle outlets shall be in accordance with Section E3901.4.3. [210.52(C)(2)(b)]</p>	X	\$0
E3901.4.3 Receptacle outlet location	<p>The entire subsection has been changed to the following: "Receptacle outlets rendered not readily accessible by appliances fastened in place, appliance garages, sinks, or rangetops as covered in the exception to Section E3901.4.1, or appliances occupying assigned spaces shall not be considered as these required outlets. Required receptacle outlets shall be located in one or more of the following:</p> <p>1. On or above, but not more than 20 inches (508 mm) above, the countertop or work surface.</p> <p>2. Receptacle outlet assemblies listed for the use in countertops or work surfaces shall be permitted to be installed in countertops or work surfaces.</p> <p>3 Not more than 12 inches (305 mm) below the countertop or work surface. Receptacles installed below a countertop or work surface shall not be located where the countertop or work surface extends more than 6 inches (152 mm) beyond its support base. [210.52(C)(3)]</p>		\$0

E3902.1 - E3902.13	Each subsection has been changed thus: "...125-volt through 250-volt receptacles installed in bathrooms and supplied by single-phase branch circuits rated 150 volts or less to ground..."	\$50-75/240-volt receptacle	
E3902.15 Location of ground-fault circuit interrupters.	The location of the GFCI shall be determined by the shortest path the supply cord travels without piercing a floor, wall, ceiling or fixed barrier, or the shortest path without passing through a window. No significant change as it clarifies that the supply cord could pass through a door or doorway.	\$0	
E3902.17 Arc-fault circuit interrupter protection	Item 5 clarified types of metal components thus: "5. Where metal raceways, metal wireways, metal auxiliary gutters or Type MC or Type AC cable meeting the applicable requirements of Section E3908.9 with metal boxes, metal conduit bodies and metal enclosures are installed for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, a listed outlet branch-circuit type AFCI installed at the first outlet shall be considered as providing protection for the remaining portion of the branch circuit. [210.12(A)(5)]	\$0	
E3902.17 Arc-fault circuit interrupter protection - Exception	The language of the exception cleans up previous dialogue thus: "Exception: AFCI protection shall not be required where the extension of the existing branch circuit conductors is not more than 6 feet (1.8 m) in length and does not include any additional outlets or devices other than splicing devices. This measurement shall not include the conductors inside an enclosure, cabinet, or junction box. [210.12(B) Exception]."	\$0	X
E3902.18 Arc-fault circuit-interrupter protection for branch circuit extensions or modifications. Exception	The Exception has added new clarifications thus: "Exception: AFCI protection shall not be required where the extension of the existing branch circuit conductors is not more than 6 feet (1.8 m) in length and does not include any additional outlets or devices other than splicing devices. This measurement shall not include the conductors inside an enclosure, cabinet, or junction box. [210.12(B) Exception]."	\$0	X
E3903.4 - Lighting Outlets E3905.2 Metal Boxes	Each subsection has been changed to require a listed wall-mounted control device. uses bonded instead of grounded	\$15-25/switch	

sheathed cable entering	adds language for cable extend beyond cable clamp and shall be secured to the box		
3905.4.2 Utilization equipment attachment fittings	adds language for #4 AWG conductors and exception for installation practices Adds language for identification of these types of fitting for weight and mounting limits		
3905.8 boxes at fan outlets	gives new language for ceiling fan type boxes		
grounding conductor fill	1/4 there after---unlimited prior		
3906.1.1 Insulated fittings	reformated section giving better clarification		
3906.2 Openings	changed wording from approved to identified for use.		
3906.8.2.1 Nails and screws	adds language to include "one or more sides"		
E3907.1.1 Splices Taps and Feed	conductors.	X	\$0
E3907.1.2 Power Monitoring or energy management	Power Monitoring Equipment - Added the following Subsection -	X	\$0
Table 3907.9.1(1)	placed. Swapped Inches and Millimeters in Note 2 and added 'e. 3 inches (76.2 mm)'	X	\$0
Section E3908 Heading	Added 'And Bonding' to the heading for clarification and intent purposes	X	\$0
E3908.6 Line-side Grounded (neutral) Conductor	'E3908.6 Line-side grounded (neutral) conductor. A grounded circuit conductor shall be	X	\$0
E3908.7 - E3908.21	to the insertion of E3908.6	X	\$0
E3908.12.1 Aluminum and Copper Clad aluminum	clarification - 'E3908.12.1 Aluminum and copper-clad aluminum equipment grounding	X	\$0
E3908.13.1 Multiple circuits.	Multiple circuits. A single equipment grounding conductor shall be permitted to be	X	\$0
E3908.14 Continuity of equipment grounding	Also added the phrase 'wire-type' in describing all equipment grounding conductors in	X	\$0
E3908.15	Made several verbiage changes to Section E3908.15 to add clarity - It reads:	X	\$0
E3908.16 Metal Boxes	Added additional verbiage for clarity, the section now reads: 'E3908.16 Metal boxes. A	X	\$0
E3908.17 Nonmetallic boxes.	Added additional verbiage for clarity, the section now reads: 'E3908.17 Nonmetallic boxes. One or more equipment grounding conductors brought into a nonmetallic outlet box shall be arranged to allow connection of any fittings or devices installed in that box to an equipment grounding conductor. [250.148(D)]'	X	\$0
E3908.18 Clean surfaces.	Added additional verbiage for clarity, the section now reads: 'E3908.18 Clean surfaces. Nonconductive coatings such as paint, lacquer and enamel on equipment to be grounded or bonded shall be removed from threads and other contact surfaces to ensure good electrical continuity or the equipment shall be connected by means of fittings designed so as to make such removal unnecessary. (250.12)'	X	\$0
E3909 Flexible Cords and Flexible Cables	Added the phrase 'Flexible Cables to this Section to include additional industry standard names for products that are flexible.	X	\$0
Chapter 40			
E4001.1	"listed and" (Deleted)		
	4. Electric discharge lamp loads not exceeding the marked ampere and voltage	X	\$0

	rating of the switch. (Added)		
	5. Electronic ballasts, self ballasted lamps, compact fluorescent lamps, and LED lamp loads with their associated drivers, not exceeding 20 amperes and not exceeding the ampere rating of the switch at the voltage supplied (Added)	X	\$0
E4001.3	"in a location that is visible when accessing the external operating means" (Deleted)	X	0
E4001.10	"Flush-type" replaced with "General use, "dimmers and control" (Added)	X	0
E4001.11.1	"Grounded" was replaced with "bonded to the equipment grounding conductor".	X	minimal increase \$1 per location
E4001.11.1 Exception 2.1	The device is provided with a nonmetallic faceplate that cannot be installed on any type of device.	X	0
E4001.12	Heading change "Dimmer and electronic control switches".	X	0
E4001.15	No changes noticed.	X	0
E4002.11	Receptacles shall not be installed within a zone measured 3 feet horizontally and 8 feet vertically from the top of the bathtub rim or shower stall threshold. The identified zone is all-encompassing and shall include the space directly over the tub or shower stall. (Added)	X	0
E4002.11 Exception	In bathrooms with than less than the required zone, the receptacle(s) shall be permitted to be installed opposite the bathroom rim or shower stall threshold on the farthest wall in the room. (New Exception)	X	0
E4002.14	406.12(A) to 406.12 ((A) was deleted.)	X	0
E4002.14 Exception 3	406.12(A) Exception to 406.12 Exception ((A) was deleted.)	X	0
E4003.3	Exposed conductive parts that are accessible to unqualified persons shall be connected to an equipment grounding conductor or be separated from all live parts and other conducting surfaces by a listed system of double insulation. Small isolated parts shall not require connection to an equipment grounding conductor. Portable luminaires with a polarized attachment plug shall not require connection to an equipment grounding conductor. (Added)	X	0
E4003.5	410.115(C) was changed to 410.115 (B)	X	0
E4003.5 Exception 1	410.115(C) was changed to 410.115 (B)	X	0
E4003.5 Exception 2	410.115(C) was changed to 410.115 (B)	X	0

E4003.6	410.130(E)(1) was changed to 410.130(E)(1),(2)	X		0
E4003.11	410.4(D) was changed to 410.10(D)	X		0
E4003.12	Heading was changed to "Luminaries in clothes-closet storage space." (New section added) "Recoditioned equipment. Luminaries, lampholders and retrofit kits shall not be permitted to be reconditioned. If a retrofit kit is installed in a luminaire in accordance with the installation instructions,the retrofitted luminaire shall not be considered reconditioned."	X		0
E4003.14	"or device with a face plate" was replaced with "receptacle that covers the box or is provided with a faceplate or simolar device."	X		0
E4004.1	Luminaries shall be permitted to be supported by outlet boxes or fittingsinstalled as required by Sections E3905 and E3906. Outlet boxes complying with section E3906.12 shall be considered ighting outlets as required by Section E3903.[410.36(A)]	X		0
E4004.5		X		0
Chapter 41				
E4101.3	"and where the flexible cord passes through an opening, it shall be protected against damage by a bushing gromet or other approved means." (Added)	X		0
E4101.6	E3906.12 was changed to E3905.6.3	X		0
E4101.8 Exception	110.25 reference was deleted.	X		0
Table E41010.5 Heading	Reference 422.33 was added	X		0
Table E41010.5	"and supplementary overcurrent protective devices" was deleted	X		0
Chapter 42				
Swimming pools				
4201.2	clarification definitions only apply to this chapter	X		0
Corrosive environment				
4202.2	new definition	X		0
4202.2	corrosive environment use for wiring shall be identified for such use	X		0
4202.4	connection of equipment to the equipontential bonding means is now required	X		20
4203.1	clarifies the distance of measurement	X		0
4203.1.1	receptacle shall of grounding type	X		0
4203.1.4	adds three phase to list of GFCI protection	X	80-150 rare	

4203.1.5	adds language for general purpose use circuit	X	75
4203.1.7	Adds receptacle requirement for pool equipment room to be GFCI protected	X	75
4203.6	Adds section covering other equipment and restrictions to proximity to pool edge	X	0
4203.8	allows wiring within 5 feet of pool edge	X	0
4204.2	exceptions section bonding list adds language for listed devices or exothermic welding	X	0
4204.2 (5)	adds directions for exceptions for bonding of pool cover anchors	X	0
4204.5 (5)	adds clarification for noncurrent-carrying metal parts	X	0
4205	adds word bonding to several locations	X	0
4205.9	adds use of terminals in this section for clarity	X	0
4206.5.1	adds language to clarify for bench location acceptance for servicing	X	0
4206.1	underwater audio equipment to be identified as underwater audio equipment use	X	0
4207.1	clarification of grounding means to be provided	X	0
4209.5	clarifies the bonding requirements for noncurrent-carrying devices	X	0
Chapter 43			
4302.1	clarifies types of battery that are covered under this section	X	0

amendments

Article	Utah Code 15A-3-206. Amendments to Chapter 39	Recommendation		Fiscal Impact
		support	deny	
Section E3901.4.5	<p>The last sentence in the exception is deleted and replaced with the following: "Receptacles mounted below the countertop in accordance with this exception shall not be located more than 14 inches from the bottom leading edge of the countertop."</p> <p>The following exception is added: "Exception: Receptacles or other outlets adjacent to the exterior walls of the garage, outlets adjacent to an exterior wall of the garage, or outlets in a storage room with entry from the garage may be connected to the garage branch circuit."</p>	X		\$0
Section E3901.9	<p>Deleted this section which reads: "Branch circuits that supply 120-volt, single-phase, 15- and 20- ampere outlets installed in kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreations rooms, closets, hallways, laundry areas and similar rooms or areas shall be protected by any of the following:</p>	X		\$0
Section E3902.16			X	\$50 - \$140/per GFCI circuit
Section E3902.17	<p>(a)following the word "Exception" the number "1." is added; and (b)at the end of the section, the following sentences are added: "2. This section does not apply for a simple move or an extension of a branch circuit or an outlet which does not significantly increase the existing electrical load. This exception does not include changes involving remodeling or additions to a residence."</p>			\$0