NFPA 70-2020: National Electrical Code (NEC)

Analysis of Impact Considerations on Design and Installation of AV/ICT Equipment

This analysis is intended to identify and analyze changes in the **2020 Edition of NFPA 70, National Electrical Code (NEC),** that have potential impact on safety and installation of AV/ICT equipment, including the National Differences/requirements in **CSA/UL 62368-1, Audio/Video, Information and Communication Technology Equipment – Part 1: Safety Requirements.**

The 2020 NEC is available from the NFPA: https://catalog.nfpa.org/2020-NFPA-70-National-Electrical-Code-NEC-C4022.aspx .

Explanation of Impact Statements:

Statement	Impact
None	Anticipate no impact on AV/ICT equipment due to the change.
Minor*	Anticipate limited impact on AV/ICT equipment due to the change.
Considerable*	Anticipate considerable impact on AV/ICT equipment due to the change.

* For new/revised requirements that are considered at this time **more onerous** than existing requirements, the Impact Statement (Minor, Considerable) will be followed by a (+). For new/revised requirements that are considered at this time **less onerous** than existing requirements, the Impact Statement (Minor, Considerable) will be followed by a (-). No symbol next to a Minor statement indicates that, although there could be limited impact associated with the change, it is indeterminate at this time whether it will be more or less.

Revision History:

May 13, 2020: Modifications to add entries for 725.139(D) and 840.160.

NEC Article / Section	Title	Summary	Impact Statement	Revision to be proposed as ND in CSA/UL 62368-1, Ed. No. 3
100	**Fault Current ;** **Fault Current, Available**	Two **new** definitions of the terms "fault current" and "fault current, available" have been added to Article 100. New Informational Note Figure 100.1, Available Fault Current, also has been added, which should be helpful. This revision to the NEC aligns with similar recent revisions in other standards that use the terms, such as *NFPA 70E, Standard for Electrical Safety in the Workplace.*	None. Definition.	No. Provided for informational purposes only.
100	**Labeled**	A new informational note has been added following the definition of the existing term/definition of "Labeled." The note is a clarification about where the label may be provided, including allowance for placement on the smallest unit container.	None. Definition. Reflects current Listing practice.	No. Provided for informational purposes only.
100	**Reconditioned**	A **new** definition of the term "reconditioned" has been added that provides clarification that the process of reconditioning equipment differs from normal servicing of equipment that remains in the place of installation.	None. Definition. Reflects current Listing practice.	Yes, in parallel to revisions to 110.21(A)(2), proposal to be associated with regulatory Annex DVA.

		The term “reconditioned” and related general requirements were introduced in the 2017 NEC in Section 110.21(A)(2). Such a term/definition was needed because multiple articles now have provisions that specify when recondition equipment is permitted and prohibited in accordance with the NEC.		
110.14(D)	**Electrical Connections - Terminal Connection Torque**	The 2017 NEC added new requirements for Terminal Connection Torque. Subsequently, the 2020 NEC provides several refinements, including, • The title of subdivision (D) of Section 110.14 has been changed from “Installation” to “Terminal Connection Torque.” • The term “calibrated” has been deleted from this section because use of a calibrated tool is already implied. • Three new informational notes provide practical guidance for installers and inspectors about methods that are used in the field to achieve the required torque values at terminations.	Minor. Clarification.	Yes, to permanent connection Annex DVH.
110.21(A)(2)	**Reconditioned Equipment -** **Exception and Informational Notes No. 2 & No. 3**	In the 2017 NEC, new requirements were added for Reconditioned Equipment for the first time. For the 2020 NEC, the requirements now stipulate, Reconditioned equipment shall be identified as	Minor. Reflects current UL certification practice, particularly for UL certified Rebuilt Equipment.	Yes, to regulatory annex, Annex DVA.

		"reconditioned" and the original listing mark is to be removed. Also, new Informational Note No. 2 explains that terms such as "refurbished," "rebuilt" or "remanufactured" that are often used interchangeably with the term "reconditioned." New Informational Note No. 3 explains that the removal of the original listing mark does not require the entire equipment label to be removed.		
209	**Means of Identification of Terminals**	Now permits for the terminal for connection of the grounded conductor (neutral) to be identified as substantially white or silver in color.	Minor (-). Provides another option for identification.	Yes, to Annex DVH for permanent connection.
242	**Overvoltage Protection**	Modified compared to the 2017 NEC, Articles 280, Surge Arrestors, Over 1000 Volts, and 285, Surge-Protective Devices (SPDs), 1000 Volts or Less, have been combined and replaced by new Article, 242, Overvoltage Protection make significant technical changes.	Minor. Primarily editorial restructuring.	No. Provided for informational purposes only.
404.7	**Switches - Indicating**	Clarifies that for switches and circuit breakers installed in an enclosure, which as a result only the operating means is external, there shall be an indicating means indicating open (off) or closed (on) position that is visible when accessing the external operating means.	Minor (+). Generally, reflects practice, although the new marking may be justified for any AV/ICT constructions with only the external operating means accessible (and the original on/ off markings no longer visible).	Yes, to regulatory annex, Annex DVA.

645.5 (E)(2)	**Supply Circuits and Interconnecting Cables**	Clarification in sections (4) and (5) on when Plenum (P)-rated cable is required and not required in the underfloor areas of ITE/Computer Rooms (Data Centers).	None. No impact directly on equipment since an Installation consideration.	No, since already covered by existing references in regulatory annex, DVA.
725.121 (A)(5)	**Power Sources for Class 2 and Class 3 Circuits. – Power Source - Batteries**	Change from 2017 NEC text that referenced “dry cell batteries” to: “A battery source or battery source system that is listed and identified as Class 2,” which better accommodates modern battery chemistries.	Minor. Provides battery additional clarification that batter chemistries other than dry cell can qualify as NEC Class 2.	No, since already covered by existing references to NEC 725.121 in regulatory annex, Annex DVA.
725.121(C)	**Power Sources for Class 2 and Class 3 Circuits - Markings**	The Marking subdivision C was revised to require rated current in addition to maximum voltage for circuits supplied by Limited Power Sources (LPS). Additionally, based on a TIA, the application of the requirement was delayed until January 1, 2021 for equipment with a rated current per conductor of 0.3 amperes. A new informational note provides clarification on what is the rated output current, and that it is as declared by the manufacturer. Also, a second new informational note provides an example of acceptable content to be provided on the label.	Minor (+). Additional clarity provided on intent and details of marking / labeling required by 725.121 (C).	Yes, as revision to existing material in regulatory annex, Annex DVA.

725.139(D)(1)	**Class 2 and Class 3 Circuits with Communications Circuits – Communication Cables.**	Provides conditions when Class 2 and Class 3 circuits may be routed together with communication circuits in the same cable.	None. Does not impact ICT equipment directly.	Yes, reference in regulatory annex, Annex DVA since important installation consideration.
725.144	**Class 1, Class 2, & Class 3 Remote-Control, Signaling, & Power-Limited Circuits - Power Sources for Class 2 and Class 3 Circuits – Transmission of Power and Data**	Expansive Informational Notes now provide information on cable standards.	None. Informative material.	Yes, as revision to existing material in regulatory annex, Annex DVA.
Chapter 8 **Articles 800, 805 (New), 820, 830 & 840**	**General Requirements for Communications Systems**	Article 800 of the 2017 NEC was renumbered as Article 805 in the 2020 NEC to make room for a new "General" section that begins to consolidate common requirements in the previous 800, 820, 830 and 840, including many of the grounding requirements. This consolidation was done with the intent of no technical changes being introduced. (There were other revisions that handled technical changes). These revisions were prompted by usability considerations, mainly significant redundant material.	Minor. Mostly editorial restructuring, although it will take time to familiarize with this latest structure of Chapter 8 since some things have moved around.	Yes, as revision of existing material in regulatory annex, Annex DVA.
805	**Communication Circuits**	As discussed previously, Article 800 has been revised to combine common general requirements from all Chapter 8 communications articles into a single article. The remaining specific rules in former Article 800 have been included in a new Article 805, "Communications Circuits," which also contains some general requirements that also apply to other Chapter 8	Minor. Mostly editorial restructuring.	Yes, as revision to existing material in regulatory annex, Annex DVA.

		articles, such as 805.18 and 805.170, which require all equipment connected to a communication network to be Listed.		
840.160	**Powering Circuits**	Extensive revisions to existing section to clarify types of circuits that may be associated with cables powering communications equipment, and what are the requirements when communications cables are substituted for Class 2 or Class 3 cables. Included is a reference to the existing listing requirement per 840.170(G). An important new exception to this main requirement (requiring 725.144 compliance) is provided for listed 4-pair communication cables where the rated current of the power source does not exceed 0.3 amperes in any conductor 24 AWG or larger. A new Informational Note specifically references PoE as a typical application.	Minor. The change is primarily a cable installation requirement as the listing requirement is in the NEC per 805.170 and 840.170(G).	Yes, as revision to regulatory Annex DVA for informational purposes since an important installation consideration.