Optional Standby Systems, Stand-Alone Systems, & Energy Storage Systems

Code: 2023 Electrical Code **Date:** December 1, 2024
Articles & Sections: 702, 702.4(A)(2), 705, 706, & 710

This interpretation uses terminology that has particular meaning in the National Electrical Code (NEC also known as NFPA-70). References to the NEC are specific to the First Edition that is published by the National Fire Protection Association (NFPA) unless otherwise noted. The State Electrical Code consists of the First Edition NEC for a certain publication year with State Amendments that have been adopted by the North Carolina State Building Code Council (Building Code Council).

All "Questions and Answers" of this interpretation are designed to be read together as part of a complete document. This interpretation is considered Formal.

Question 1:
What is the difference between nonautomatic load connection and an automatic load connection for optional standby systems, and is it possible for a load connection to be defined as both?

Answer 1:

> **2023 NEC Article 100 – Definitions**
>
> **Nonautomatic.** Requiring human intervention to perform a function.
>
> **Automatic.** Performing a function without the necessity of human intervention.

A nonautomatic load connection of an optional standby system requires someone, typically the user, to perform a function. Conventional functions may be turning off and on specific circuit breakers with built-in safety mechanisms in the panel, physically connecting a cord-and-plug to a receptacle, and operation of a manual transfer switch.

An automatic load connection of an optional standby system is the obverse of a nonautomatic load connection. For the load connection to be defined as "automatic", nothing may be required by the user, or anyone else, for the optional standby system to connect to the load.

A single system may possess multiple load connections. Each of the load connections could be a mix of either nonautomatic or automatic depending on the design. However, because the definitions of "nonautomatic" and "automatic" are mutually exclusive in that both cannot be true, a single load connection cannot be defined as both "nonautomatic" and "automatic" simultaneously.

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Question 2:
Where an optional standby system is connected to supply the load of a structure by means of an automatic transfer switch, must the optional standby system be sized large enough to supply the full load of the structure?

Answer 2:

> **2023 NEC Section 702.4(A)(2)**
>
> **Automatic Load Connection.** If the connection of the load is automatic, an optional standby system shall comply with 702.4(A)(2)(a) or (A)(2)(b) in accordance with Parts I through IV of Article 220 or by another approve method.
>
> (a) *Full Load.* The standby source shall be capable of supplying the full load that is automatically connected.
>
> (b) *Energy Management System (EMS).* Where a system is employed in accordance with 750.30 that will automatically manage the connected load, the standby source shall have a capacity sufficient to supply the maximum load that will be connected by the EMS.

According to section 702.4(A)(2), an optional standby system can either be sized such that the standby system is capable of suppling the full load or utilize an energy management system (EMS) once the automatic transfer switch connects the standby system with the load of the structure. An EMS "shall be permitted to monitor and control electrical loads and sources", frequently referred to as load sheading. (See Section 750.30). Load sheading can delay standby power from specific loads within the system for milliseconds to indefinitely. This protects the standby system from overload by ensuring amperage issues are resolved, such as heavy motor loads are not synchronously initiated causing all the inrush currents to spike simultaneously.

Therefore, an optional standby system may be sized less than the full load of the structure only if a properly installed EMS is implemented that will shed the load appropriately once the automatic transfer switch connects the standby system with the load of the structure.

Question 3:
Where an Energy Management System (EMS) is employed on an optional standby system with an automatic transfer switch such that the source is not capable of supplying all connected loads without implementing such management, can the energy management system direct the user to perform manual management of the system via electronic notification.

Answer 3:
Answer 1 of this document clarified that a single load connection cannot be defined as both "nonautomatic" and "automatic" simultaneously. Answer 2 of this document provides the requirements for an automatic load connection. Section 702.4(A)(2) describes the connection of the load be automatic, and such load will be automatically managed by an EMS. Using the definition of "automatic" in Article 100, there can be no human intervention involved.

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NFPA Code Making Panel 13 addressed the question of manual load shedding during First Draft Meeting of the 2023 NEC. During the meeting, Public Input No. 3012-NFPA 70-2020 [Section No. 702.4] (See Attachment 1) was considered for amending section 702.4(A)(2) for providing "a means for the installation of an automatic transfer switch for a generator source that may not be sized for the entire load and require manual load shedding". The phrase "generator source" is a generic example as section 702.4 is applicable to any type of standby source. CMP 13 rejected the proposal stating "[t]he NEC clearly prohibits an optional standby system installation that will transfer automatically to more load than it can supply. No technical substantiation was provided to permit automatic connection where the total load cannot be supplied".

Therefore, manual load management of an optional standby system is prohibited when supplied by an automatic transfer switch.

Question 4:
Where an optional standby system is connected to supply the load of a structure by means of an automatic transfer switch, must the standby system be operated in interactive mode or island mode?

Answer 4:

> **2023 NEC Article 100 – Definitions**
>
> **Interactive Mode.** The operating mode for power production equipment or microgrids that operate in parallel with and are capable of delivering energy to an electric power production and distribution network or other primary source.
>
> > Informational Note: Interactive mode is an operational mode of both interactive systems and of equipment such as interactive inverters.
>
> **Island Mode.** The operating mode for power production equipment or microgrids that allows energy to be supplied to loads that are disconnected from an electric power production and distribution network or other primary power source.

The answer depends on if the optional standby system is exclusively suppling the load to the structure in absence of an electrical utility being supplied to the structure or during periodic outages or if part of the system interacts with other sources while part is reserved for standby power.

Example: An optional standby system that consists of a photovoltaic system (PV) and an energy storage system (ESS) is connected to the load of a structure by a transfer switch and inverter in addition to an electric utility. In normal operation, the majority of the structure's load is supplied by the electric utility. The PV can work in Interactive Mode to supplement the electric utility and to charge the ESS. The ESS can sit in Island Mode and be used only when called by the transfer switch to take over for the loss of electrical utility.

It is not uncommon for ESS to be in Interactive Mode so that it can also supplement the electrical utility during normal operation. Generators typically remain in "Island Mode" as they are generally used only when normal power is interrupted.

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Question 5:
Where one power source of a transfer switch is a public electric utility, such as Duke Energy, and the other power source of the switch is an on-site power production source operating in island mode such as a generator, photovoltaic (PV) system, energy storage system (ESS), fuel cell, or wind electric system, can the on-site power production source be defined as a "Stand-Alone System" and be installed exclusively in accordance with Article 710 by omitting conflicting sections in Article 702?

Answer 5:

> **2023 NEC Article 100 – Definitions**
>
> **Stand-Alone System.** A system that is not connected to an electric power production and distribution network.
>
> **Electric Power Production and Distribution Network.** Power production, distribution, and utilization equipment and facilities, such as electric utility systems that are connected to premises wiring and are external to and not controlled by a system that operates in interactive mode.
>
> **2023 NEC Article 710 Stand-Alone Systems**
>
> **Section 710.1 Scope.**
> This article covers electric power production systems that operate in island mode not connected to an electric utility or other electric power production and distribution network.
>
> > Informational Note: These systems operate independently from an electric utility and include isolated microgrid systems. Stand-alone systems often include a single or a compatible interconnection of sources such as engine generators, solar PV, wind, ESS, or batteries.

A public electric utility, such as Duke Energy, Dominion Energy, Carteret-Craven Electric Co-op, etc., are defined in the NEC definitions as an "Electric Power Production and Distribution Network." By definition, a system that is connected to a public electric utility cannot be defined as a "Stand-Alone System". Every Article of the NEC begins with its scope that describes the authority of the Article. According to Section 710.1, an electric power production system operating in island mode covered by Article 710 cannot be connected to a public electric utility. The 2023 NFPA Handbook Commentary of Section 710.1 provides examples of stand-alone systems such as remote cabins, signs, lights, and irrigation systems; the intent of a stand-alone system is where an electrical utility would not be feasible or desired.

The transfer switch makes a mechanical connection so current can flow between either the public electric utility and the load, or the on-site power production source and the load. When the transfer switch is allowing current to flow between the on-site power production source and the load, the public electric utility is said to be in a disconnected or open state. However, a power source that is physically attached to the equipment within the design of the system remains part of and connected to the system regardless of its state.

A light in a bedroom remains connected to the electrical system regardless of the state of the light switch being in the off or on position because its conductors stay physically attached to the structure and equipment of the system. A water heater remains connected to the electrical system even after the pullout disconnect means has been removed and the water heater is taken out of service because its conductors stay physically attached to the disconnect lugs of the system.

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Section 710.1 underwent a revision in the 2023 version. The Correlating Committee for Code Making Panel 4 drafted the current Code language and stated "[p]ower sources that operate in island mode and operate interconnected to the electric utility and other power sources are covered in Article 705 and power sources that only operate in standby mode are covered by Article 702." See Attachment 2. Section 705.40 describes an interactive system supplying loads once the electric utility is interrupted. The last sentence permits the interactive power production equipment to operate in island mode until the utility power is restored; there is no reference to any specific section or Article describing the current system now that it has ceased being interactive other than converting to island mode. Standby systems (Articles 700, 701, & 702) and a stand-alone system (Article 710) operate in island mode; however, the physical connection of the utility eliminates the stand-alone system leaving by default one of the three standby systems as the non-interactive system until the utility is reestablished. It is logical that 705.40 does not reference a specific Article as there are three standby systems from which to choose.

Therefore, if an electric utility is part of the electrical system, the on-site power production source cannot be defined as a "stand-alone system" nor will Article 710 be applicable.

Question 6:
If an energy storage system (ESS) is employed as an optional standby system through a transfer switch, does Article 702 apply to the installation?

Answer 6:

> **2023 NEC Article 702 Optional Standby Systems**
>
> **Section 702.1 Scope.**
> This article applies to the installation and operation of optional standby systems.
>
> The systems covered by this article consist of those that are permanently installed in their entirety, including prime movers, and those that are arranged for a connection to a premises wiring system from a portable alternate power supply.
>
> > Informational Note: Optional standby systems are typically installed to provide an alternate source of electric power for such facilities as industrial and commercial buildings, farms, and residences and to serve loads such as heating and refrigeration systems, data processing and communications systems, and industrial processes that, when stopped during any power outage, could cause discomfort, serious interruption of the process, damage to the product or process, or the like.

A source of power that is permanently installed to provide an alternate source of electric power when the primary source is interrupted and is not considered an "emergency system" in section 700.1 or a "legally required system" in section 701.1, is then by default an "optional standby system" in section 702.1. The NEC provides three different Articles for standby power (commonly referred to as backup power) beginning with the strictest (emergency) to the least severe (optional).

The types of alternate sources allowed in both the emergency (Article 700) and legally required (Article 701) systems are listed by name. Conversely, optional standby (Article 702) does not limit itself to a list of permitted type of systems nor mention any source directly, except for providing specific rules for

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portable generators. Both the emergency (Article 700) and legally required (Article 701) specifically recognize ESS is an approved system. Because the more stringent Articles for standby power identify and regulate ESS, the more liberal Article 702 must also incorporate ESS when the system is not considered emergency or legally required.

Article 702 does apply to the installation of an energy storage system (ESS) when employed as an optional standby system through a transfer switch.

Question 7:
If an energy storage system (ESS) is employed as an optional standby system through a transfer switch and also interconnected to a public electric utility in parallel, does Article 702 or Article 705 apply to the installation?

Answer 7:

> **2023 NEC Article 705 Interconnected Electric Power Production Sources**
>
> **Section 705.1 Scope.**
> This article covers installation of one or more electric power production sources operating in parallel with a primary source(s) of electricity.
>
> > Informational Note No. 1: Examples of the types of primary sources include a utility supply or an on-site electric power source(s). . . .

Article 705 is specific to electric power production sources operating in parallel with each other. The ESS is anticipated to adequately perform either parallel or backup source duties depending on status of the utility; therefore, the installation is subject to both regulations from both Articles. There is nothing in Article 702 or Article 705 that deem the requirements exclusive to each Article. While no sections between the two Articles are directly known to conflict, any section in an Article that requires a higher standard for the same element of the system than the other Article, the higher standard will prevail; this logic applies throughout the NEC where multiple sections concurrently regulate components of the system.

Because the ESS in Question 7 provides both functions of an optional standby and an interconnected electrical power production source, both Article 702 and Article 705 apply to the installation.

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Question 8:
Where a structure has an electric utility as a primary source connected interactively with a photovoltaic (PV) system and an energy storage system (ESS) as a secondary source that can also be isolated with an automatic transfer switch to serve the structure in the event the utility power is interrupted, is the transfer switch isolation of the PV and ESS during the utility interruption considered "operating in stand-alone mode" as described in 706.16(F) and thereby evoking Article 710 by reference on an ESS standby system?

Answer 8:

> **2023 NEC Article 706 Energy Storage Systems**
>
> **Section 706.1 Scope.**
> This article applies to all energy storage systems (ESS) having a capacity greater than 3.6 MJ (1 kWh) that may be stand-alone or interactive with other electric power production sources. These systems are primarily intended to store and provide energy during normal operating conditions.
>
> **Section 706.16 Connection to Energy Sources.**
> The connection of an ESS to sources of energy shall comply with 706.16(A) through (F).
> . . .
> **(F) Stand-Alone Operation.**
> Where the output of an ESS is capable of operating in stand-alone mode, the requirements of 710.15 shall apply.

Similar to Answer 7, Article 706 may regulate the ESS in addition to any other applicable Articles depending on the functions and design of the system; for example, Article 480 may also be relevant depending on the battery composition. The last sentence of section 706.1 implies that the Article has no relationship with a standby system. That does not mean that an ESS that complies with Article 706 cannot also be used for standby power if it also complies with the other appropriate Articles, rather the language within Article 706 itself does not extend to conditions of a standby system. In other words, Article 706 is read as if the ESS is either interconnected in accordance with Article 705 or stand-alone in accordance with Article 710, but neither one nor both have to be true for Article 706 to apply generally.

The system in Question 8 shall comply with Article 706. When applying section 706.16, subsections (A) through (E) have merit as the system is interconnected when in normal operation. Reviewing Answer 5, the system is never defined as "stand-alone" because the electric utility is mechanically connected to the system. Therefore, section 706.16(F) has no effect for the system described in Question 8.

Because the utility's connection nullifies 706.16(F), there is no incorporation of Article 710 by reference to the ESS design of Question 8.

Joseph Daniel Starling, PE
Chief of Operations | Engineering
Deputy State Fire Marshal

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Attachment 1

Public Input No. 3012-NFPA 70-2020 [Section No. 702.4]

702.4 Capacity and Rating.

(A) Available Fault Current.

Optional standby system equipment shall be suitable for the available fault current at its terminals.

(B) System Capacity.

(1) Manual Transfer Equipment.

Where manual transfer equipment is used, an optional standby system shall have adequate capacity and rating for the supply of all equipment intended to be operated at one time. The user of the optional standby system shall be permitted to select the load connected to the system.

(2) Automatic Transfer Equipment.

Where automatic transfer equipment is used, an optional standby system shall comply with 702.4(B)(2)(a) or (B)(2)(b) in accordance with Article 220 or by another approved method.

(a) ~~*Full*~~ *Manual Load* ~~. The standby source shall be capable of supplying the full load that is transferred by the automatic transfer equipment. *Management.* Where load management is controlled manually, the standby source shall have adequate capacity and rating for the supply of all equipment intended to be operated at one time. The user of the system shall be permitted to select the load connected to the system~~

~~A permanent label shall be applied to the distribution equipment containing branch circuit overcurrent protection devices supplied by the system that states the total system capacity available to supply loads continuously and contains the following or equivalent wording:~~

~~NOTICE: Equipment is supplied by a power system incapable of operating all loads at one time. Manual disconnection of loads is required for system to operate independent of a utility source.~~

~~Informational Note: The opening of switches or circuit breakers to select loads is a common method of controlling loads manually.~~

(b) *Automatic Load Management.* Where a system is employed that will automatically manage the connected load, the standby source shall have a capacity sufficient to supply the maximum load that will be connected by the load management system at one period of time .

(c) *No Load Management* . Where load management is not used, the system shall have adequate capacity and rating equal to or greater-than the full load that is transferred by the automatic transfer equipment.

Additional Proposed Changes

File Name	Description	Approved
NFPA-70_2023_AAC-AETG_Draft_PI_702_4_capacity_language.doc.docx		

Statement of Problem and Substantiation for Public Input

This public input was prepared by the correlating committee task group focused on alternative energy requirements. This task group consisted of the following members: Derrick Atkins (CMP 5), Greg Ball (CMP 13) Ken Boyce (CMP 1), Bill Brooks (CMP 4), Bruce Campbell, Thomas Domitrovich (CMP 2, CMP 10), Jason Fisher (CMP 4), Scott Harding (CMP 5), Pete Jackson (CMP 8), David Kendall (CMP 8, CC), Chad Kennedy (CMP 13), Christine Porter (CMP 5, CC), Timothy Windey (CMP 13).

This input seeks to correlate revised requirements as proposed by this task group located in Article 705 (new Article 689) with those in Article 702.

Manual load management was specified which provides a means for the installation of an automatic transfer switch for a generator source that may not be sized for the entire load and require manual load shedding. When this option is selected transparency is provided to the end customer, contractor, inspector and others to ensure awareness of this selection by the installer / designer.

Clarity was added to the option of when automatic load shedding is employed noting that the load to be compared is that maximum load connected by the load management system at a given period in time.

A new option was provided when no load management is selected at which time the system must be designed to serve the entire load.

This public input provides options to the installer / designer / owner while also providing the transparency through marking and labeling requirements to identify those instances when the system requires manual load shedding to possibly operate properly.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 2541-NFPA 70-2020 [New Section after 705.70]	

Submitter Information Verification

Submitter Full Name: Thomas Domitrovich
Organization: Eaton Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Thu Sep 03 21:37:52 EDT 2020
Committee: NEC-P13

Committee Statement

Resolution: The NEC clearly prohibits an optional standby system installation that will transfer automatically to more load than it can supply. No technical substantiation was provided to permit automatic connection where the total load cannot be supplied.

Attachment 2

First Revision No. 9420-NFPA 70-2021 [Section No. 710.1]

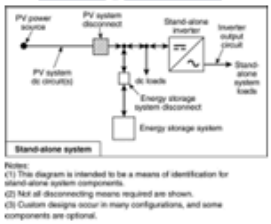
710.1 Scope.

This article covers electric power production systems that operate in island mode ~~and installations~~ not connected to an electric utility or other electric power production and distribution network.

Informational Note No. 1: These systems ~~are capable of operating in island mode, independent~~ operate independently from an electric ~~power production and distribution network~~ utility, and include isolated microgrid systems ~~or interactive with other power sources~~. Stand-alone systems often include a single or a compatible interconnection of sources such as engine generators, solar PV, wind, ESS, or batteries.

Informational Note No. 2: See Informational Note Figure 710.1.

Figure Informational Note Figure 710.1 Identification of Stand-Alone System Components in a Common Configuration.



Notes:
(1) This diagram is intended to be a means of identification for stand-alone system components.
(2) Not all disconnecting means required are shown.
(3) Custom designs occur in many configurations, and some components are optional.

Supplemental Information

File Name	Description	Approved
FR_9420_Figures_710_FRIDAY_.docx	For staff use	

Submitter Information Verification

Committee: NEC-P04

Submittal Date: Thu Jan 21 16:15:44 EST 2021

Committee Statement

Committee Statement: The scope of Article 710 is recommended to the Correlating Committee to be restricted to only those systems that only operate in island mode and cannot be interconnected to the electric utility or other power production and distribution network. Power sources that operate in island mode and operate interconnected to the electric utility and other power sources are covered in Article 705 and power sources that only operate in standby mode are covered by Article 702.

Informational Note No. 2 and the diagrams are added to Section 710.1 to illustrate various terms used in Article 710 for a variety of power sources.

Response Message: FR-9420-NFPA 70-2021

Public Input No. 1955-NFPA 70-2020 [Section No. 710.1]

Public Input No. 2200-NFPA 70-2020 [Section No. 710.1]

2018 NC Administrative Code
Appendix E. (210309 Item B-1)

APPENDIX E
APPEALS
NORTH CAROLINA
BUILDING CODE COUNCIL
325 North Salisbury Street, Room 5_44
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(919) 647-0009

APPEAL TO NCDOI/NCBCC

GS ~~153A-374, GS 160A-434~~ 160D-1127
Formal Interpretation by NCDOI ✓
Appeal of Local Decision to NCDOI _____

Hearing Date_____/_____/_____
GS 143-140, GS 143-141
Appeal of Local Decision to NCBCC _____
Appeal of NCDOI Decision to NCBCC _____

APPELANT Usman Noor, PE PHONE: (919) 710 - 8463 x
REPRESENTING: 8MSolar LLC, Southern Energy Management, NC Solar Now, David Whitney, PE
ADDRESS: 5112 Departure Drive
CITY: Raleigh STATE: NC ZIP: 27616
E-MAIL: info@8msolar.com FAX: ( ) -

North Carolina State Building Code, Volume NFPA NEC 2020 & 2017 - Section 690, 706, 710

REQUEST ONE: [✓] Formal Interpretation by NCDOI [ ] Appeal of Local Decision to NCBCC
[ ] Appeal of Local Decision to NCDOI [ ] Appeal of NCDOI Decision to NCBCC

Type or print. Include all background information as required by the referenced General Statutes and the attached policies. Attach additional supporting information.

REASON:
Requesting a formal interpretation of Ben Wesley's emailed guidance to AHJs requiring automatic load shedding on ESS connected to Solar PV systems.
Please see details attached.

APPEAL TO NCDOI/NCBCC
Signature: _____ Date: _____ FORM 3/14/17

The delayed effective date of this Rule is January 1, 2021.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

March 14, 2023

Usman Noor <u.noor@8msolar.com>

FW: [External] Re: 710.15A

1 message

Wesley, Ben <ben.wesley@ncdoi.gov> Wed, Jul 24, 2024 at 2:05 PM
To: Usman Noor <u.noor@8msolar.com>, "brinson@southern-energy.com" <brinson@southern-energy.com>

Good afternoon,

The forwarded email chain is the interpretation that was issued. This has been shared within multiple jurisdictions either through email or direct conversations, but it applies State-wide, regardless of jurisdiction once either the AHJ or the contractor becomes aware of its existence.

Feel free to respond with any questions or concerns.

Thank you,

Benjamen (Ben) Wesley

Assistant Chief Electrical Code Consultant

State Electrical Inspector

Deputy State Fire Marshal

Division of Engineering | Field Operations

North Carolina

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From: Wesley, Ben
Sent: Monday, May 6, 2024 7:48 PM
To: 'Calli Hudgins' <chudgins@renuenergysolutions.com>; Hunter Dockery <hlewis@renuenergysolutions.com>
Cc: Brandon Herman <bherman@renuenergysolutions.com>; Daniel Blake <dblake@renuenergysolutions.com>; Joshua West <jcwest@cabarruscounty.us>; Mike Sfura <msfura@tesla.com>; Thomas, Daniel J <daniel.thomas@ncdoi.gov>
Subject: RE: [External] Re: 710.15A

Good evening, all,

This email is a brief review of the discussions that have been had. A more formal response will be provided at a later date.

To clear any misunderstandings, I at no point interpreted that an ESS used with an Article 705" Interconnected Electric Power Production Source" system would be permitted to be installed per Article 710 or a "Stand Alone System". It is my understanding that Article 710 deals only with systems that at no time are connected to a utility power source. This appears to be the purpose of creating Article 710 for the 2017 version of the NEC. To my knowledge I have been consistent with this fact. Article 702 is the appropriate standard to use when sizing an ESS used for an optional system and must meet the requirements of 702.4 & 702.5.

I am unable to draw a connection directly from Section 705.40 to Article 710 or Section 710.15. The presence of the term " island mode" or " stand alone system" do not immediately send a user to Article 710. The text does not send the user to either Article 710 or Section 710.15. Neither Articles 705 nor 710 are exclusive to ESSs. Both of these articles could also apply to wind, prime movers, or other power production sources. A building or structure that is not connected to a serving utility but has only a generator as its power source may fall under Article 710, and a generator that is interconnected and is in parallel with the serving utility would then fall under Article 705. If the latter is able to operate separately from the utility in "island or stand alone" mode, this generator, if not used as an emergency or legally required system, when then be required to meet the applicable requirements of Article 702.

As I stated above, a more extensive and thorough interpretation is being authored and will be released in the near future as soon as it is vetted.

This interpretation will include all three versions of the State Electrical Code currently posted on our website so that it will be consistent through all that would apply.

Feel free to reach out to me with any further questions or concerns.

Thank you,

Benjamen (Ben) Wesley

Assistant Chief Electrical Code Consultant

State Electrical Inspector

Deputy State Fire Marshal

Division of Engineering | Field Operations

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From: Calli Hudgins <chudgins@renuenergysolutions.com>
Sent: Monday, May 6, 2024 5:47 PM

To: Hunter Dockery <hlewis@renuenergysolutions.com>
Cc: Brandon Herman <bherman@renuenergysolutions.com>; Daniel Blake <dblake@renuenergysolutions.com>; Joshua West <jcwest@cabarruscounty.us>; Mike Sfura <msfura@tesla.com>; Wesley, Ben <ben.wesley@ncdoi.gov>
Subject: [External] Re: 710.15A

Good evening,

Our team here at Renu just wanted to follow up with you all on this chain. It'd be greatly appreciated if there is an update on any movement.

Thanks!

CALLI HUDGINS

OPERATIONS MANAGER

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On Thu, Apr 25, 2024 at 10:51 AM Hunter Dockery <hlewis@renuenergysolutions.com> wrote:

> Replying back with Ben Wesley CC'd.
>
> Good morning Ben,
>
> My name is Hunter Dockery with Renu Energy Solutions. Our electrician, Daniel Blake, is also on this email. We were talking with Josh West about how the North Carolina Office of the State Fire Marshall is no longer considering NEC 710.15A when sizing an ESS for a home, even though that is basically what that code is for. We are also talking with our rep at Tesla/the department that handles any code compliance related questions and are waiting for a response on what their stance may be. We just wanted to have you added to this thread since I think Josh has been talking with you about it and he's the one who made us aware.

On Tue, Apr 23, 2024 at 1:10 PM Joshua West <jcwest@cabarruscounty.us> wrote:

> Wesley, Ben ben.wesley@ncdoi.gov
>
> ---
>
> **From:** Daniel Blake <dblake@renuenergysolutions.com>
> **Sent:** Thursday, April 18, 2024 12:02 PM
> **To:** Joshua West <jcwest@cabarruscounty.us>
> **Cc:** Mike Sfura <msfura@tesla.com>; Calli Hudgins <chudgins@renuenergysolutions.com>; Hunter Dockery <hlewis@renuenergysolutions.com>; Brandon Herman <bherman@renuenergysolutions.com>
> **Subject:** Re: 710.15A
>
> CAUTION: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!
>
> ---
>
> Hey Joshua, I'm not seeing him added on this thread currently. What is his email address?
>
> On Thu, Apr 18, 2024 at 11:58 AM Joshua West <jcwest@cabarruscounty.us> wrote:
>
> > Hey, I appreciate you including me in on the email chain. I have CC Ben Wesley with the office of State Farm Marshall to this as well.
> >
> > Just to be clear, I do not think that the office of State Farm Marshall ever recognize And S being able to figure that load calculation. I think the installation prior to this time. We're just not caught under this standard. I would love to know Tesla stance on this and will be looking forward to your reply. Thank you.
> >
> > > On Apr 18, 2024, at 11:54 AM, Daniel Blake <dblake@renuenergysolutions.com> wrote:
> > >
> > > CAUTION: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!
> > >
> > > ---
> > >
> > > Hey Mike, to give you a brief rundown on what I was talking about on the phone: The North Carolina Office of the State Fire Marshall is no longer considering NEC 710.15A when sizing an ESS for a home. They believe that the output of the ESS should match or exceed the load determined by the standard or optional load calculation for the protected loads panel. This would greatly increase the amount of energy storage units necessary for a whole home backup. I personally don't believe that is applicable, since it is spelled out in 710.15A, but I wanted to see what Tesla's stance was.
> > >
> > > --
> > >
> > > Thanks,
> > >
> > > Daniel Blake

DANIEL BLAKE

ELECTRICAL FOREMAN

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Renu Energy Solutions

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Fax: 704-713-8385

801 Pressley Road, Suite 100

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--

Thanks,

Daniel Blake

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E-mail correspondence to and from this address may be subject to the North Carolina Public Records Law and may be disclosed to third parties.

--

HUNTER DOCKERY

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APPENDIX E
APPEALS
NORTH CAROLINA
BUILDING CODE COUNCIL

1429 Rock Quarry Road, Suite 105
Raleigh, North Carolina 27610
(919) 647-0008
david.rittlinger@ncdoi.gov

APPEAL TO NCDOI/NCBCC **Hearing Date** _____ / _____ / _____

GS 153A-374, GS 160A-434
Formal Interpretation by NCDOI_____
Appeal of Local Decision to NCDOI_____

GS 143-140, GS 143-141
Appeal of Local Decision to NCBCC_____
Appeal of NCDOI Decision to NCBCC_____

APPELLANT Karl Stupka **PHONE (** 252 **)** 367 **-** 3720 **x** _____
REPRESENTING NC Solar Now Inc.
ADDRESS 2509 Atlantic Ave
CITY Raleigh **STATE** NC **ZIP** 27604
E-MAIL Karl@ncsolarnow.com **FAX (** _____ **)** _____ **-** _____

North Carolina State Building Code, Volume NEC **- Section** 690, 705, 706, 710

REQUEST ONE:
[☑] Formal Interpretation by NCDOI
[ ] Appeal of Local Decision to NCDOI
[ ] Appeal of Local Decision to NCBCC
[ ] Appeal of NCDOI Decision to NCBCC

Type or print. Include all background information as required by the referenced General Statutes and the attached policies. Attach additional supporting information.

Regarding ESS and Solar PV Design Interpretation. As I understand it an intrepretation was issued to installers and AHJs across the state. I first learned of this situation from one of the electricians operating under my licence who was informed via a phone call. It seems that other companies and AHJs were made aware of this decision at various times in the recent past.
I have yet to receive a formal intrepretation to myself the licence holder or to the company NC Solar Now. I am writing to first appeal this interpretation based on the 2017 and 2020 NEC code articles and to second appeal the application of this interpretation. I understand and respect the NCOSFM and DOI's responsibiliy to issue and enforce interpretations. I appeal the method of implementation exicuted in this case. My company has hundreds of issued permits accross the state with systems designed in conformance with the curent interpretation for designing these systems. If the DOI is to issue an interpretation altering these existing permitted project without any window of adjustment it will cause millions in damages and negativly impact thousands of customers across the state. It is unfair to our industry as a whole to issue a rulling based on a 2023 interpretation of the code that will happen in 2025 regardless. Preemptivley applying code in lue of any actual safety concern is targeting our industry unfairly. Regarless of the final interpretation I hope that you will reivaluate the massive impact of this decision on business that are operating in good faith to provide safe, reliable, code compliant electrical installation for customers across our state.

REASON:

Signature _____ **DATE:** 8/6/2024 **FORM 3/14/17**

APPENDIX E
APPEALS
NORTH CAROLINA
BUILDING CODE COUNCIL

1429 Rock Quarry Road, Suite 105
Raleigh, North Carolina 27610
(919) 647-0008
david.rittlinger@ncdoi.gov

APPEAL TO NCDOI/NCBCC **Hearing Date** _____ / _____ / _____

GS 153A-374, GS 160A-434
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Appeal of Local Decision to NCDOI_____

GS 143-140, GS 143-141
Appeal of Local Decision to NCBCC_____
Appeal of NCDOI Decision to NCBCC_____

APPELLANT Nate Jones **PHONE (** 919 **)** 836 **-** 0330 **x** _____
REPRESENTING Southern Energy Management
ADDRESS 5908 Triangle Dr.
CITY Raleigh **STATE** NC **ZIP** 27617
E-MAIL nate@southern-energy.com **FAX (** _____ **)** _____ **-** _____

North Carolina State Building Code, Volume NEC **- Section** 690, 705, 706, 710

REQUEST ONE:
[✓] Formal Interpretation by NCDOI
[ ] Appeal of Local Decision to NCDOI
[ ] Appeal of Local Decision to NCBCC
[ ] Appeal of NCDOI Decision to NCBCC

Type or print. Include all background information as required by the referenced General Statutes and the attached policies. Attach additional supporting information.

This is in regards to the recent ESS and Solar PV Design Interpretation. A couple of months back there was an interpretation on providing load calculations that was issued to AHJs across the state regarding ESS. I became aware of the situation from one of our electricians who was informed during an inspection that we needed to provide load calculations for a project that had already been approved by the AHJ without the load calculations. I am writing to first appeal this interpretation based on the 2017 and 2020 NEC code articles and to second appeal the application of this interpretation. I understand and respect the NCOSFM responsibility to issue and enforce interpretations. I appeal the method of implementation executed in this case. My company has hundreds of issued permits across the state with systems designed in conformance with the current interpretation for designing these systems. If the NCOSFM is to issue an interpretation altering these existing permitted project without any window of adjustment it will cause millions in damages and negatively impact thousands of customers across the state. It is unfair to our industry as a whole to issue a ruling based on a 2023 interpretation of the code that will happen in 2025 regardless. I hope that you will reevaluate the massive impact of this decision on business that are operating in good faith to provide safe, reliable, code compliant electrical installation for customers across our state.

REASON:

Signature _____ **DATE:** 08/13/24 **FORM 3/14/17**