PETITION FOR DECLARITORY STATEMNT
BEFORE THE FLORIDA BUILDING COMMISSION

DS 2016-058

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Statute(s), Agency Rule(s), Agency Order(s) and/or Code Section(s) on which the Declaratory Statement is sought:

Florida Statute 553.73(1)(a)
Florida Building Code – Building, 5th Edition (2014): Portions of Chapters 1, 16, 31, and 35
TIA-222-G: Portions of Section 2, Annex B, Annex N, and Appendix 1

Background:
Sprint Corporation (Sprint) is one of the nation's largest personal wireless communication providers. While maintaining and improving their network, Sprint wishes to upgrade their antenna equipment on several towers throughout south Florida which currently support their equipment. Several of these towers also support government communications equipment. The tower in question is classified as a Structure Class III structure in accordance with TIA-222-G, which is also classified as a Risk Category IV per the Florida Building Code. As a leader in the personal wireless communication industry, Sprint is seeking clarification on certain sections of the Florida Building Code – Building, 5th Edition (2014) (FBC), to ensure that their consulting engineers, whom are performing the proposed tower analyses, are doing so in compliance with the intent of the FBC, and, furthermore, to seek a uniform interpretation of the design criteria for tower analyses being perform by all licensed consulting engineers. Petitioner seeks clarification regarding conflicting information between the FBC and TIA-222-G *Structural Standard for Antenna Supporting Structures and Antennas*. Specifically, the determination of design wind speeds and the use of Risk Category/Structure Class.

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Florida Statute 553.73(1)(a)
The State of Florida has adopted, by law, a state-wide uniform building code titled the Florida Building Code (FBC), in which the 5th Edition (2014) is currently effective.
Florida Statute 553.73(1)(a:) The commission shall adopt, by rule pursuant to ss. 120.536(1) and 120.54, the Florida Building Code which shall contain or incorporate by reference all laws and rules which pertain to and govern the design, construction, erection, alteration, modification, repair, and demolition of public and private buildings, structures, and facilities and enforcement of such laws and rules, except as otherwise provided in this section.

FBC Chapter 35 – Referenced Standards
The Florida Building Code references several other standards within it. Chapter 35 was designated to clearly list these adopted standards and where they are referenced within the FBC. The current code, the Florida Building Code, 5th Edition (2014), references the following editions of these standards:
ASCE 7-10 *Minimum Design Loads for Buildings and Other Structures*
TIA-222-G-1&2 *Structural Standard for Antenna Supporting Structures and Antennas*

FBC Section 102 – Applicability
In accordance with FBC Section 102.4, the provisions of the Florida Building Code supersede all adopted standards.
102.4 Referenced codes and standards: The codes and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

FBC Section 1609 – Wind Loads
The Florida Building Code includes its own wind maps for determining the design wind speed for a specific location, which are congruent with the ASCE 7-10 wind maps. The maps are separated by Risk Category, which is determined by the nature of the structure's use or occupancy. Note that a structure in a higher Risk Category is subject to a higher design wind speed and that the wind speed contour lines also change location as well as magnitude between wind maps. Additionally, local jurisdiction amendments have adopted higher wind speeds for each Risk Category than required by the FBC.

FBC 1609.3 – Basic Wind Speed
FBC 3108 – Telecommunication and Broadcast Towers
Whereas the design wind speed is determined by the FBC/ASCE 7-10 maps, the wind loads for telecommunication towers must be determined by the TIA-222-G standard as referenced in FBC Section 1609.1.1 Exception #5 and Section 3108.1. The nominal wind speed must be calculated from the ultimate wind speed indicated in the FBC for use withTIA-222-G in accordance with FBC Table 1609.3.1, Note b.

FBC 1604.5 – Risk Category
Provided that the FBC accounts for structures of "higher importance" by using an increased Risk Category in accordance with FBC Table 1604.5 and FBC Figures 1609A-C, thus an increased wind speed, Structure Class II of TIA-222-G must be used (I = 1.0).

TIA-222-G Section 2.6.4 - Basic Wind Speed and Design Ice Thickness
The basic wind speed without ice, the basic wind speed with ice and the design ice thickness shall be as given in Annex B except as provided in 2.6.4.1. Wind shall be considered to come from any horizontal direction. Ice shall be considered to be glaze ice. Ice may be ignored for structures located in regions where the design ice thickness is less than or equal to 0.25 inches (6 mm).

TIA-222-G Table 2-1 – Classification of Structures

Description of Structure	Class
Structures that due to height, use or location represent a low hazard to human life and damage to property in the event of failure and/or used for services that are optional and/or where a delay in returning the services would be acceptable.	I
Structures that due to height, use or location represent a substantial hazard to human life and/or damage to property in the event of failure and/or used for services that may be provided by other means.	II
Structures that due to height, use or location represent a high hazard to human life and/or damage to property in the event of failure and/or used primarily for essential communications.	III

TIA-222-G Table 2-3 – Importance Factors

Structure Class	Wind Load Without Ice	Wind Load With Ice	Ice Thickness	Earthquake
I	0.87	N/A	N/A	N/A
II	1.00	1.00	1.00	1.00
III	1.15	1.00	1.25	1.50
Note: Ice and earthquake loads do not apply to Class I structures				

TIA-222-G Annex B [Portion] - U.S. County Listings of Design Criteria (Normative)
This Annex contains tables listing design criteria for the counties of the United States and its Territories. Design criteria maps are provided in Appendix 1.

The design criteria for wind, ice, and earthquake loads provided in this Annex, are based on ASCE 7-05 and additional validated data. The minimum frost depth values are based on NAVFAC DM 7.01.

The design criteria for sites located on islands and coastal areas or locations not designated as a county shall be equal to the design criteria for the closest location shown on the maps in Appendix 1. Mountainous terrains and gorges shall be examined for unusual wind, wind on ice and ice conditions.

State	County	Min. Basic Wind Speed V (mph)	Max. Basic Wind Speed V (mph)	Min. Basic Wind Speed with Ice V_i (mph)	Max. Basic Wind Speed with Ice V_i (mph)	Min. Design Ice Thickness t_i (in.)	Max. Design Ice Thickness t_i (in.)	Design Frost Depth (in.)	Min. S_S	Max. S_S	Notes
FL	CLAY	100	115	30	30	0.00	0.00	0	0.12	0.14	-
FL	COLLIER	120	140	30	30	0.00	0.00	0	0.07	0.09	-
FL	COLUMBIA	100	105	30	30	0.00	0.00	0	0.12	0.15	-
FL	DADE	125	150	30	30	0.00	0.00	0	0.05	0.05	-
FL	DE SOTO	110	115	30	30	0.00	0.00	0	0.08	0.09	-
FL	DIXIE	105	120	30	30	0.00	0.00	0	0.09	0.12	-
FL	DUVAL	105	120	30	30	0.00	0.00	0	0.14	0.16	-
FL	ESCAMBIA	120	145	30	30	0.00	0.25	0	0.10	0.13	-
FL	FLAGLER	110	120	30	30	0.00	0.00	0	0.12	0.12	-
FL	FRANKLIN	120	130	30	30	0.00	0.00	0	0.08	0.10	-
FL	GADSDEN	105	110	30	30	0.00	0.00	0	0.11	0.12	-
FL	GILCHRIST	100	110	30	30	0.00	0.00	0	0.11	0.12	-
FL	GLADES	110	115	30	30	0.00	0.00	0	0.09	0.09	-
FL	GULF	120	135	30	30	0.00	0.00	0	0.08	0.10	-
FL	HAMILTON	100	100	30	30	0.00	0.00	0	0.12	0.14	-
FL	HARDEE	105	110	30	30	0.00	0.00	0	0.09	0.10	-
FL	HENDRY	115	120	30	30	0.00	0.00	0	0.08	0.09	-
FL	HERNANDO	100	120	30	30	0.00	0.00	0	0.09	0.11	-
FL	HIGHLANDS	105	115	30	30	0.00	0.00	0	0.09	0.10	-
FL	HILLSBOROUGH	105	120	30	30	0.00	0.00	0	0.07	0.10	-
FL	HOLMES	110	120	30	30	0.00	0.25	0	0.11	0.11	-
FL	INDIAN RIVER	115	140	30	30	0.00	0.00	0	0.08	0.10	-
FL	JACKSON	105	115	30	30	0.00	0.25	0	0.11	0.12	-
FL	JEFFERSON	105	115	30	30	0.00	0.00	0	0.10	0.12	-
FL	LAFAYETTE	105	110	30	30	0.00	0.00	0	0.11	0.12	-
FL	LAKE	100	110	30	30	0.00	0.00	0	0.11	0.12	-
FL	LEE	115	130	30	30	0.00	0.00	0	0.07	0.09	-
FL	LEON	105	110	30	30	0.00	0.00	0	0.11	0.12	-
FL	LEVY	100	125	30	30	0.00	0.00	0	0.09	0.12	-
FL	LIBERTY	110	120	30	30	0.00	0.00	0	0.09	0.11	-
FL	MADISON	100	105	30	30	0.00	0.00	0	0.11	0.13	-
FL	MANATEE	110	130	30	30	0.00	0.00	0	0.07	0.09	-
FL	MARION	100	110	30	30	0.00	0.00	0	0.10	0.12	-
FL	MARTIN	115	140	30	30	0.00	0.00	0	0.07	0.09	-
FL	MIAMI-DADE	125	150	30	30	0.00	0.00	0	0.05	0.08	-
FL	MONROE	130	150	30	30	0.00	0.00	0	0.02	0.07	-
FL	NASSAU	105	120	30	30	0.00	0.00	0	0.14	0.17	-
FL	OKALOOSA	115	135	30	30	0.00	0.25	0	0.09	0.12	-
FL	OKEECHOBEE	110	120	30	30	0.00	0.00	0	0.08	0.10	-
FL	ORANGE	105	120	30	30	0.00	0.00	0	0.10	0.11	-
FL	OSCEOLA	105	120	30	30	0.00	0.00	0	0.09	0.11	-
FL	PALM BEACH	115	140	30	30	0.00	0.00	0	0.07	0.09	-
FL	PASCO	100	125	30	30	0.00	0.00	0	0.08	0.10	-
FL	PINELLAS	120	130	30	30	0.00	0.00	0	0.08	0.08	-
FL	POLK	100	110	30	30	0.00	0.00	0	0.09	0.11	-
FL	PUTNAM	100	115	30	30	0.00	0.00	0	0.12	0.13	-
FL	SAINT JOHNS	115	120	30	30	0.00	0.00	0	0.12	0.15	-

TIA-222-G Annex N - References (Normative)

ACI, "Building Code Requirements for Structural Concrete", ACI 318-05, American Concrete Institute, 2005.

AISC, "Load and Resistance Factor Design Specification for Structural Buildings, AISC-LRFD-99, 3rd ed., American Institute of Steel Construction, 2001.

AISI, "North American Specification for the Design of Cold-formed Steel Structural Members", AISI-2001, American Iron and Steel Institute, 2001.

ASCE, "Design of Latticed Steel Transmission Structures", ASCE 10-97, American Society of Civil Engineers, 1997.

ASCE, "Design of Steel Transmission Pole Structures", ASCE Manual No.72, American Society of Civil Engineers, 1990.

ASCE, "Minimum Design Loads for Buildings and Other Structures", SEI/ASCE 7-02, American Society of Civil Engineers, New York, NY, 2003.

AASHTO, "Standard Specifications for Structural Support for Highway Signs, Luminaries and Traffic Signals ", AASHTO 2001 with interims, American Association of State Highway and Transportation Officials, Washington, DC, 2002.

ASTM, Material specifications, ASTM International, West Conshohocken, PA.

AWS, "Structural Welding Code – Steel, ANSI/AWS D1.1-00, American Welding Society, 2002. BS, "Lattice towers and masts - Part 1: Code of practice for loading", BS8100, British Standards, 1995.

CEN, "Eurocode 3: Design of steel structures – Part 3-1: Towers, masts and chimneys – Towers and masts", ENV 1993-3-1, European Committee for Standardization, 1997.

CSA, "Antennas, Towers, and Antenna-Supporting Structures", S37-01, Canadian Standards Association, 2001.

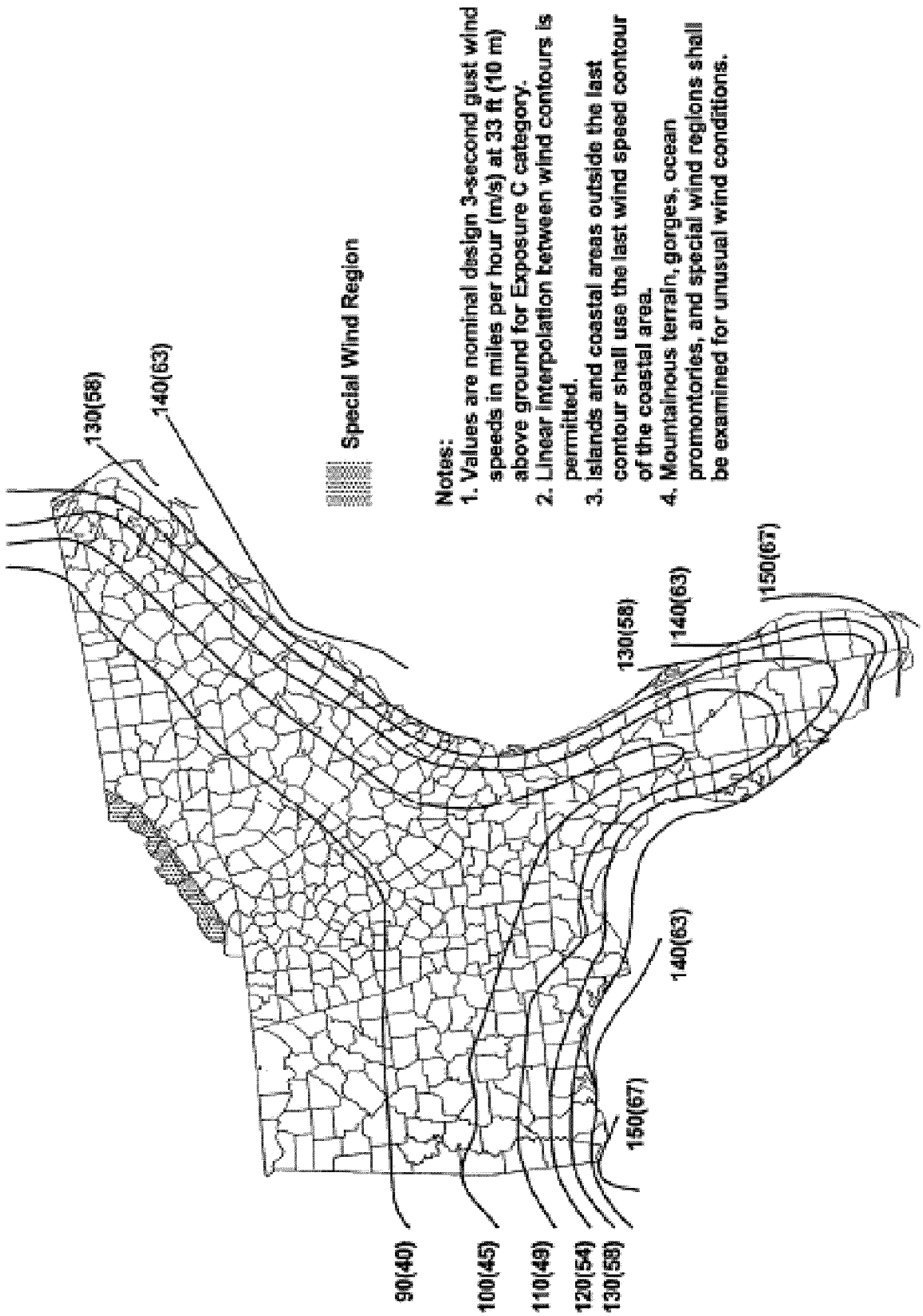
EPRI, "Local Buckling Strength of Polygonal Tubular Poles", Report TLMRC-87-R3, Electric Power Research Institute, 1987.

IASS, "Recommendations for Guyed Masts", International Association for Shell and Spatial Structures, Working Group Nr 4, 1981.

IEEE, "Grounding of Industrial and Commercial Power Systems", IEEE 142-1991, Institute of Electrical and Electronics Engineers, 1991.

NAVFAC, "Soil Mechanics", NAVFAC DM 7.01, Naval Facilities Engineering Command, VA, 1996.

TIA-222-G Appendix 1, Figure A1-1d Basic Wind Speed Without Ice, V mph [m/s]



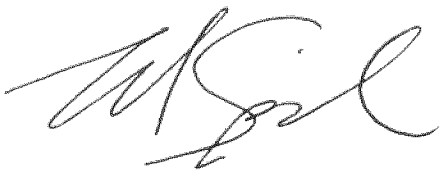
Questions

1. Should the design wind speeds for telecommunication towers be determined by converting the FBC ultimate wind speeds to a nominal wind speed or should the design wind speeds indicated in TIA-222-G be used?
2. For telecommunication towers supporting essential communications equipment, should the FBC Risk Category III/IV converted nominal wind speed be used in conjunction with TIA-222-G Structure Class II (I = 1.0) for towers of this nature?

Summary:

The petitioner respectfully believes that the answer to question #1 will be "yes" based on the background information provided. Furthermore, the petitioner respectfully believes that the answer to question #2 will be "yes", also based on the background information provided.

Respectfully submitted,



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