# Final Status Report:

## Update and Development of Wind Speed Line Maps for the Florida Building Code, 8th Edition (2023)

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**University of Florida GeoPlan Center**
**June 16th, 2023**

## About the GeoPlan Center

The **GeoPlan Center** is a Geographic Information Systems (GIS) research and teaching center, housed in the School of Landscape Architecture and Planning at the University of Florida (UF).

The UF GeoPlan Center works to support land use, transportation, and environmental planning in the State of Florida by providing geospatial and planning expertise, data, training, and education to the stakeholders involved in the planning process.

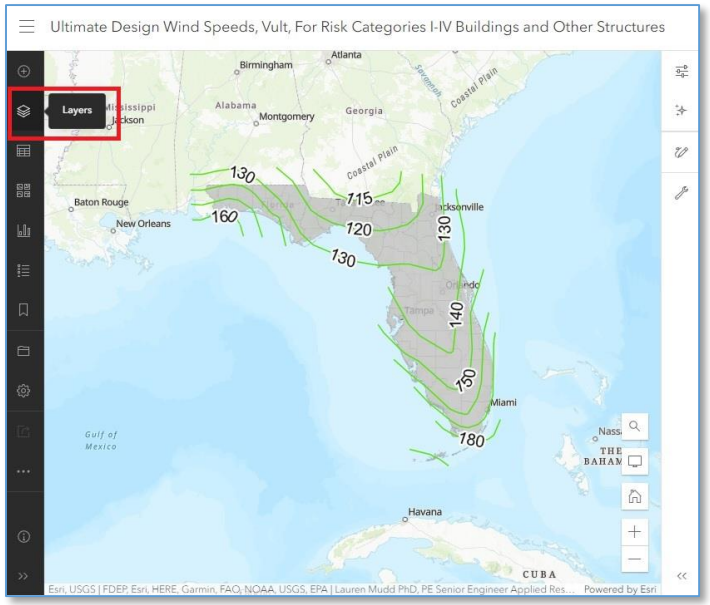
# Final Status Report

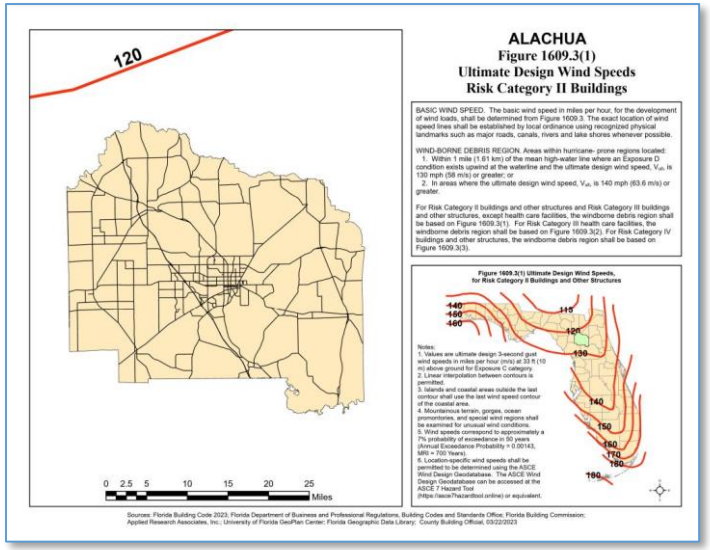
# Introduction

In this project, UF GeoPlan Center is providing GIS technical assistance:

- Creating updated Florida statewide Ultimate Design Wind Speed line maps for the 8th Edition (2023) update to the Florida Building Code (FBC). Updates to Figures: 1609.3(1), 1609.3(2), 1609.3(3) and 1609.3(4) will be based on the standards set forth in ASCE/SEI 7-22.
- Preparing local wind speed line maps for each county building code jurisdiction that is impacted by the newly updated wind speed contours.

This final report addresses details of the project's progress to date. **In summary, Task 1 is complete, and Task 2 is complete.**



# Task 1 Progress: Update Statewide Maps for the 8th Edition (2023) update to the Florida Building Code (Complete)

Created updated statewide maps for use in the 8th Edition (2023) update to the FBC for the following Figures: 1609.3(1), 1609.3(2), 1609.3(3), 1609.3(4), and the Wind-borne Debris Region Map.

Status: Task 1 is complete, with the following work conducted:

- Worked with Lauren Mudd PhD, PE at Applied Research Associates, IntraRisk to obtain the GIS data (line work) for the ASCE 7-22 GIS contours for Risk Categories I-IV.
- Using the GIS data obtained, created updated statewide maps for Figures: 1609.3(1), 1609.3(2), 1609.3(3), 1609.3(4) as well as the Wind-borne Debris Region Map.
- Maps are available in Appendix A

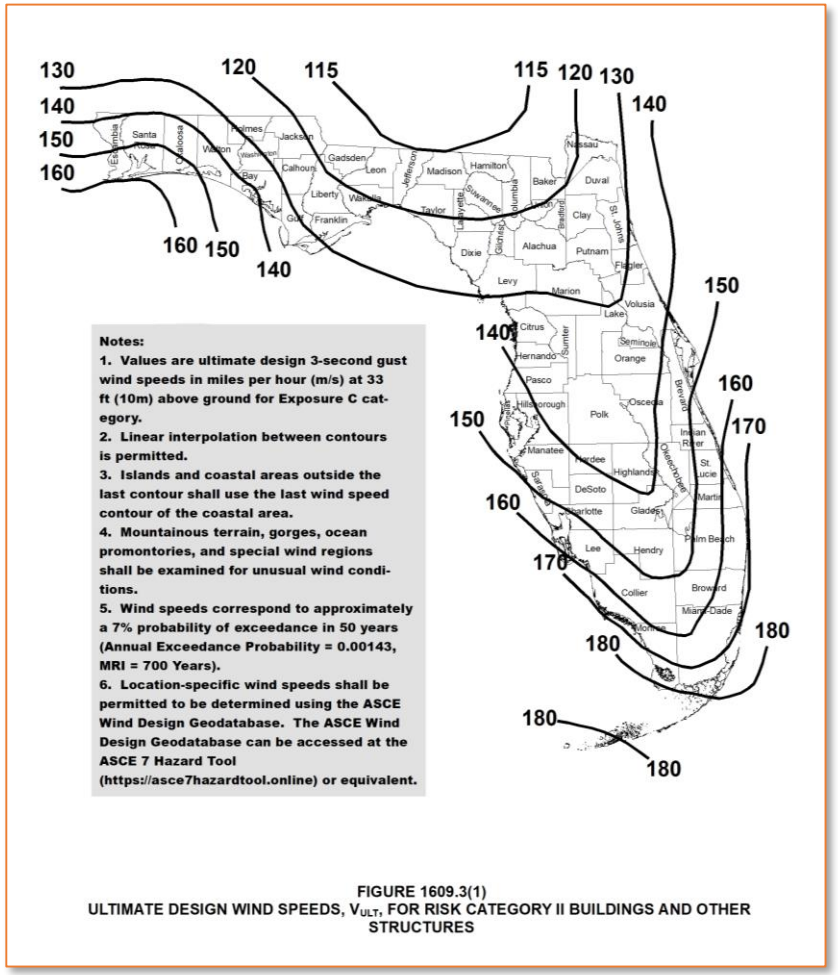



FIGURE 1609.3(1)
ULTIMATE DESIGN WIND SPEEDS, $V_{ULT}$, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES

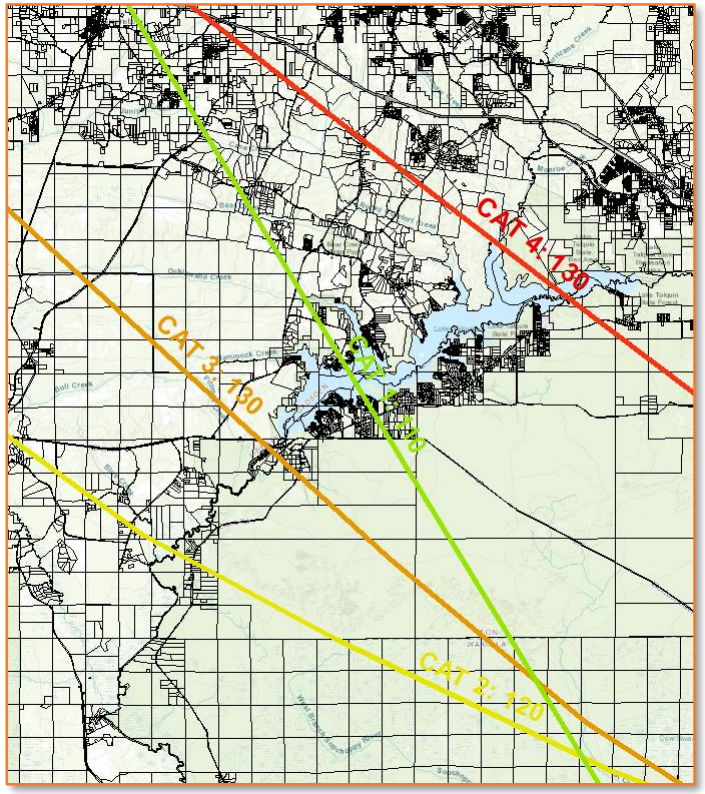
# Task 2 Progress: Develop Local Wind Speed Line Maps (Complete)

Create local wind speed line maps for impacted jurisdictions utilizing GIS maps and relevant data.

This task has three subtasks (Parts 1, 2, and 3).

1. Create preliminary local wind speed line maps for impacted jurisdictions utilizing GIS maps and relevant data.
2. Work with jurisdictions that require GIS support to make changes or updates to their local wind speed line maps.
3. Provide digital copies of the local wind speed line maps to the Department of Business and Professional Regulation.

Status: Task 2 is Complete



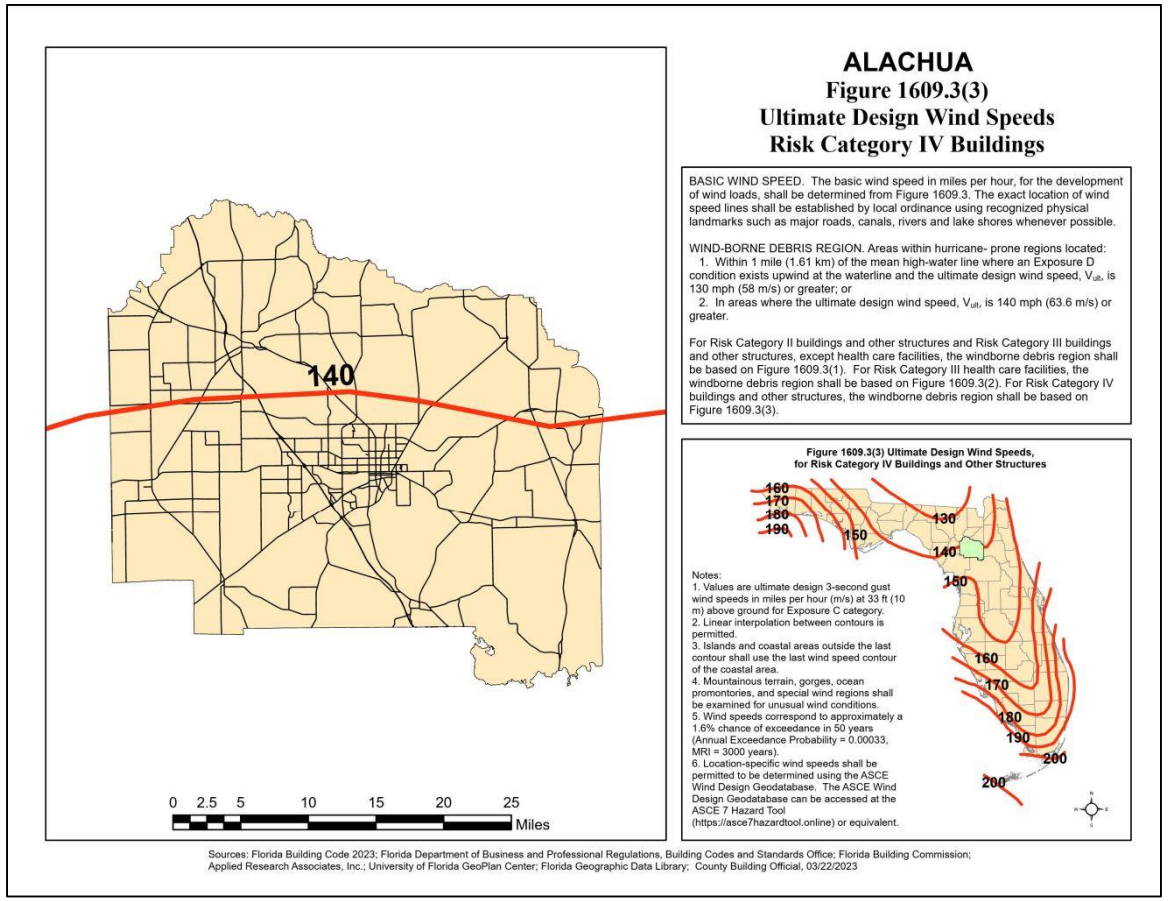

FBC 2020 Wind Speed Lines

# Task 2, Part 1: Complete

Using the ASCE/SEI 7-22 GIS data, created 268 Countywide Risk Category I-IV Wind Speed line maps. Maps are currently referred to as “preliminary” and can be found at:

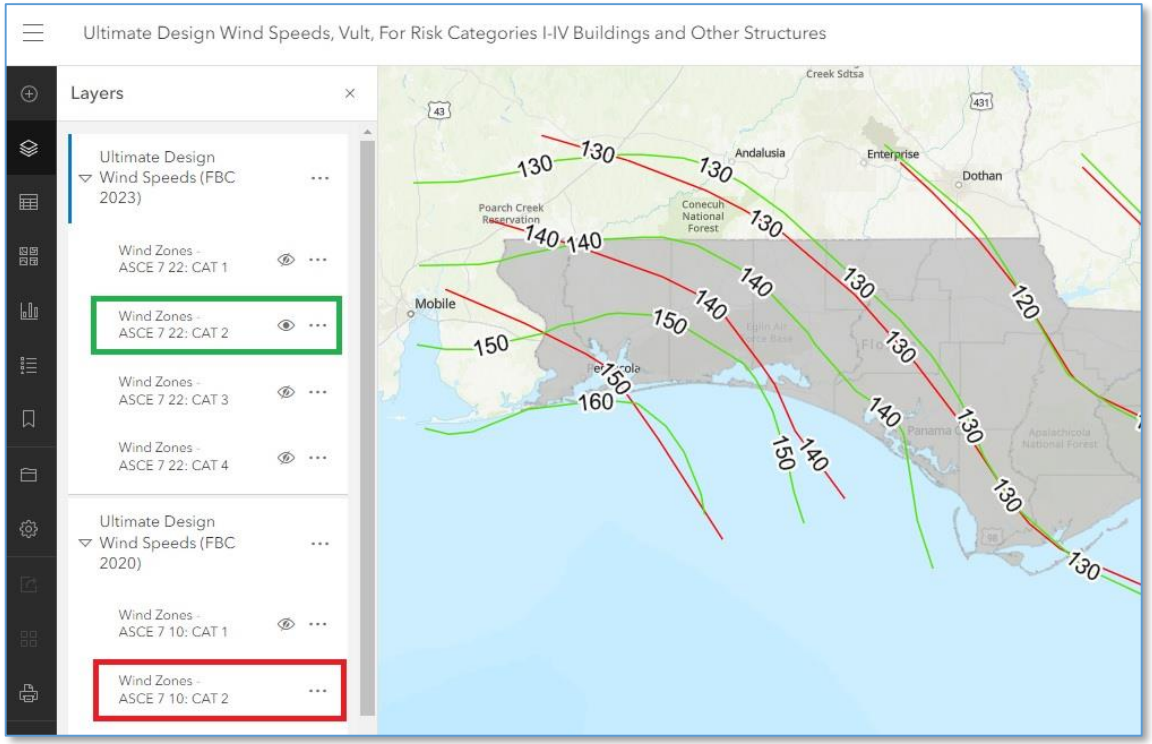
https://adhoc.geoplan.ufl.edu/downloads/kate/windspeed_2023/Preliminary_County_PDFs_Draft_20230322/

Alachua County Examples of the Risk Category I-IV Preliminary Countywide PDF Maps are displayed at the end of this presentation. Also included in Appendix B of the final report.



# Task 2, Part 2: Complete

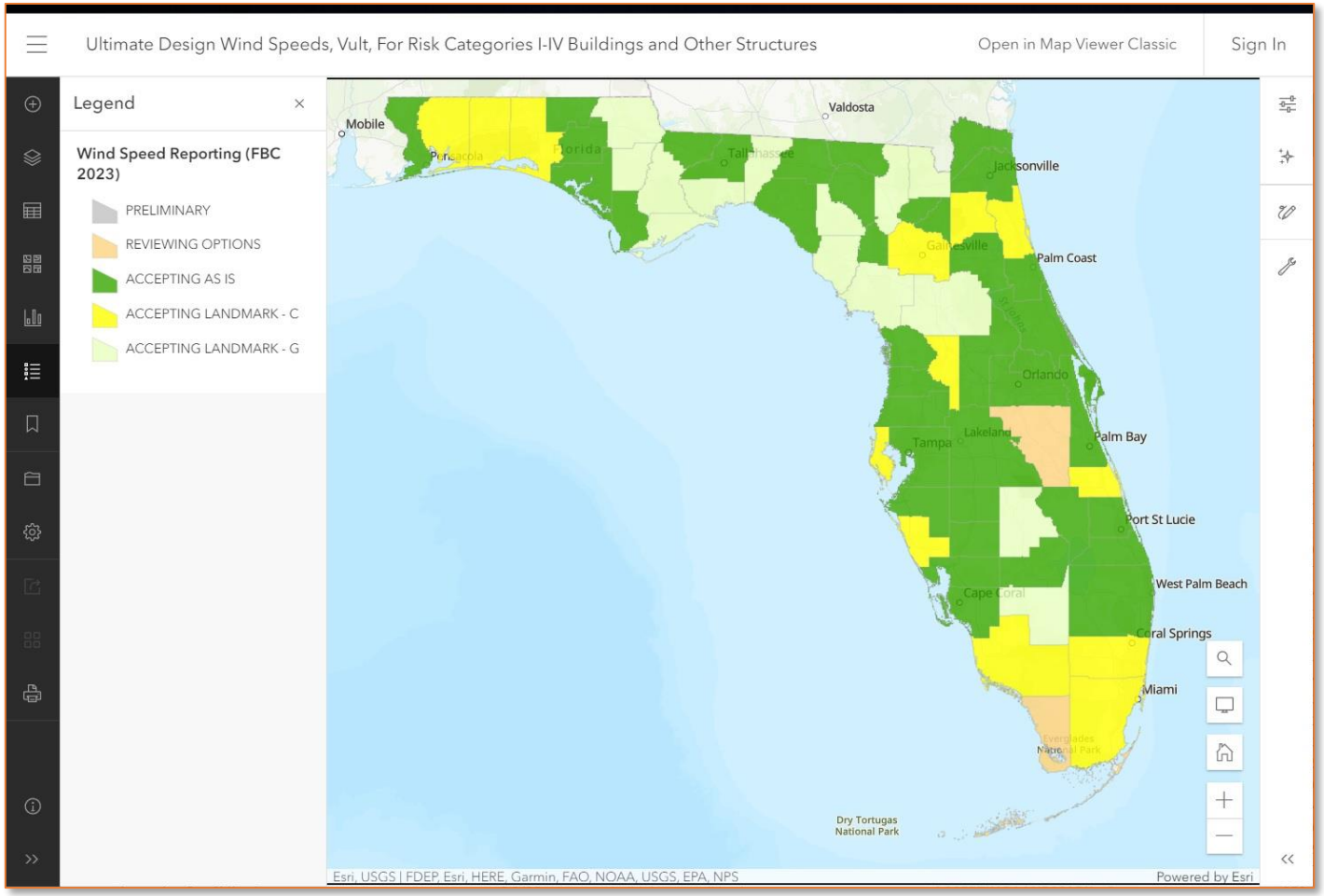
- Contacted 67 County Building Code Officials to notify them of the preliminary maps and to offer free technical assistance to update the maps. Follow-up phone calls placed to 67/67 counties.
- Created a web map viewer to facilitate the creation of updated local wind speed maps based off local landmarks.
- Created a supporting document for the web map viewer, Ultimate Design Wind Speeds, Vult, For Risk Categories I-IV Buildings and Other Structures Map Viewer (2023) Manual. Available in Appendix D.
- Contacted over 1,000 Licensed Florida Building Officials via email to notify them of the upcoming changes to the FBC.



# Task 2, Part 2: Complete

**Mapping Status for 65 of the 67 Counties:**

- 38 Counties are adopting the preliminary map “As Is.”
- 14 Counties have been assisted by GeoPlan and are adopting local landmarks maps.
- 13 Counties have developed their own local landmark maps.
- 2 Counties are still determining how they would like to move forward with their map.



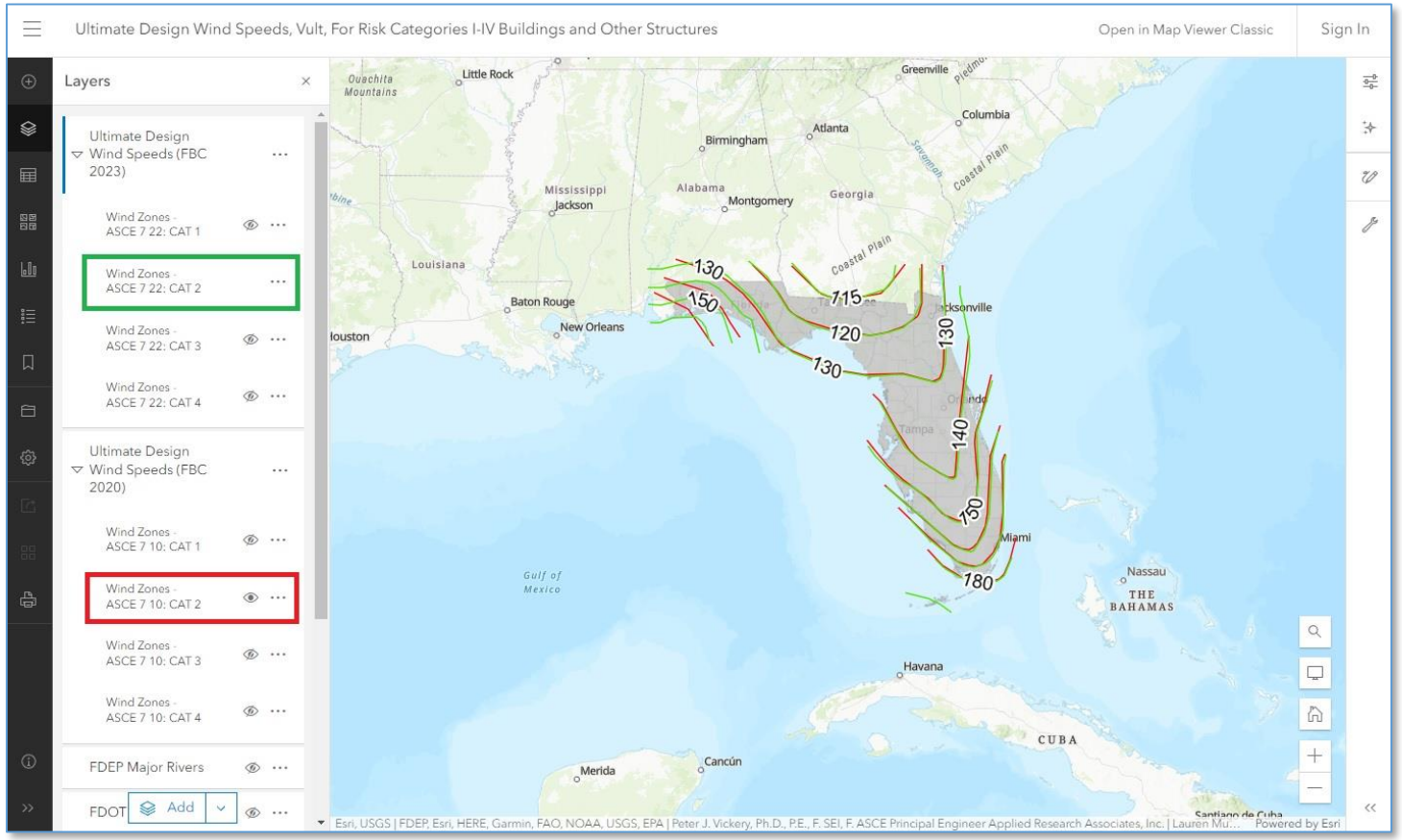

Additionally, the AGOL web map viewer is being used to track the status of each county’s wind speed map adoption.

# Plans for Continued Assistance through the end of June 30th, 2023.

The UF GeoPlan Center is continuing to contact the remaining 2 counties by phone and email to determine how best to assist them.

The UF GeoPlan Center will continue to provide GIS technical support and mapping assistance to counties until Friday June 30th, 2023.

Based on the results of the 2020 wind speed mapping project, GeoPlan is estimating that 1 county will need mapping assistance, and 1 will most likely adopted the maps “As Is.”

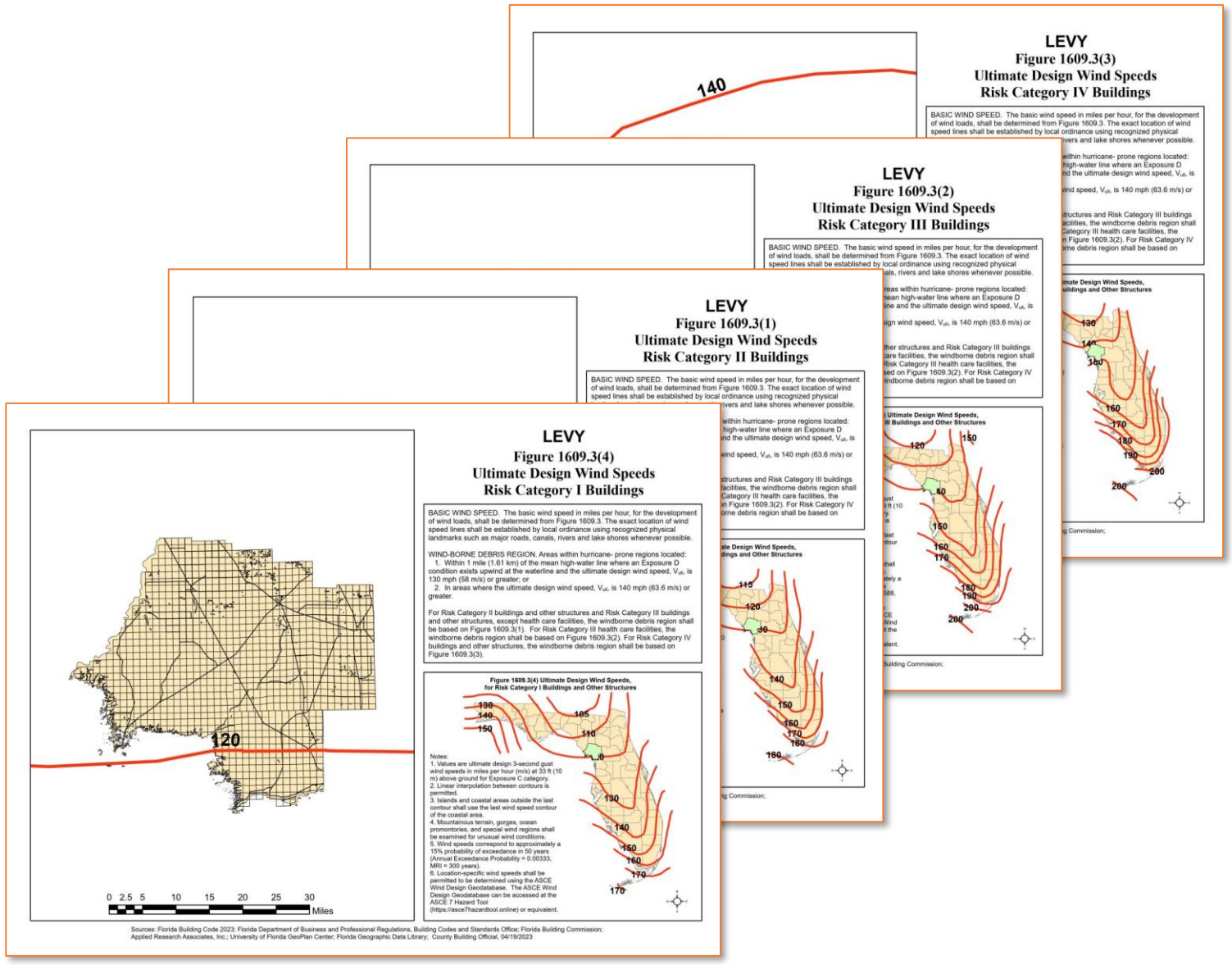


# Task 2, Part 3: Complete

The UF GeoPlan Center is working with Mo Madani to provide the final product to the State of Florida.

The final product (JPG and PDF Files) are being provided to the state via four zip-file packages, which are discussed in detail in the final report, and available for download from the following link.

Final Product Location: https://adhoc.geoplan.ufl.edu/downloads/kate/windspeed_2023/final/



# Appendix A

# Statewide Maps for the 8th Edition (2023) update to the Florida Building Code. Figures: 1609.3(1), Wind-borne Debris Region, and 1609.3(4)

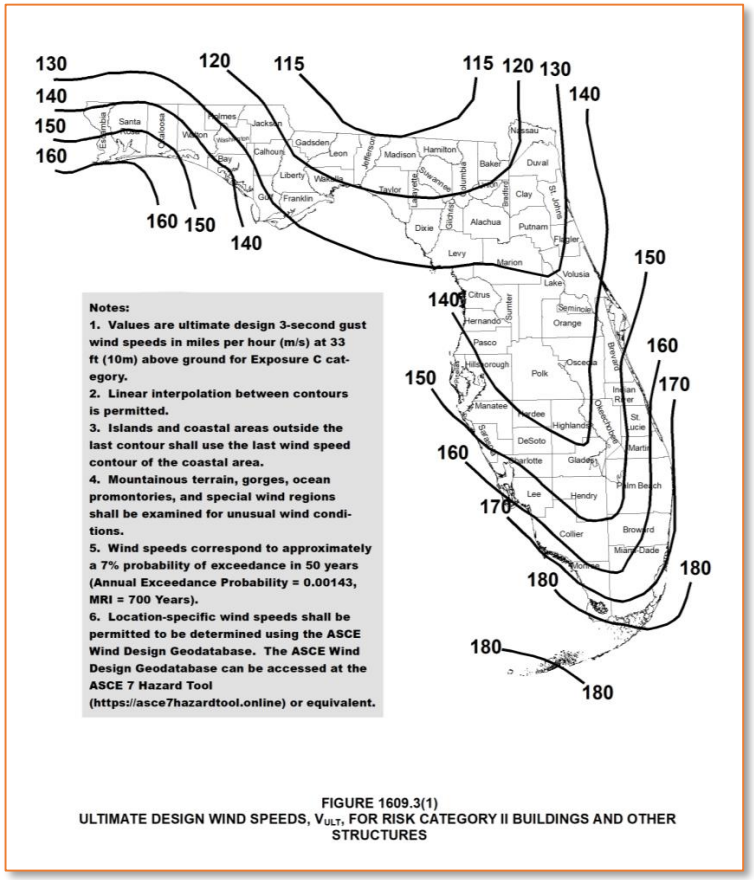
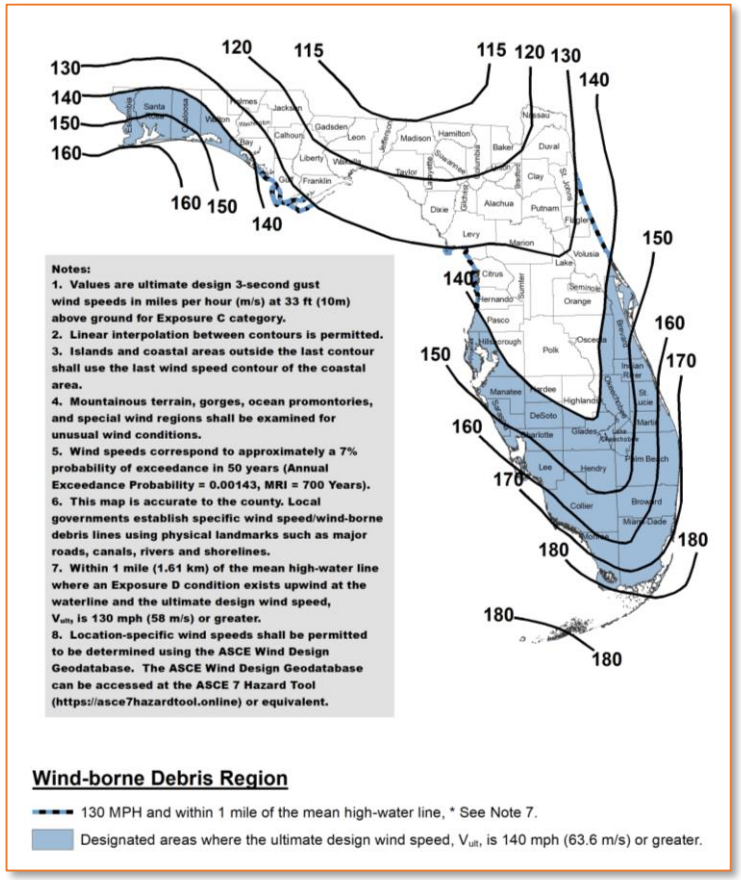



FIGURE 1609.3(1)
ULTIMATE DESIGN WIND SPEEDS, $V_{ULT}$, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES



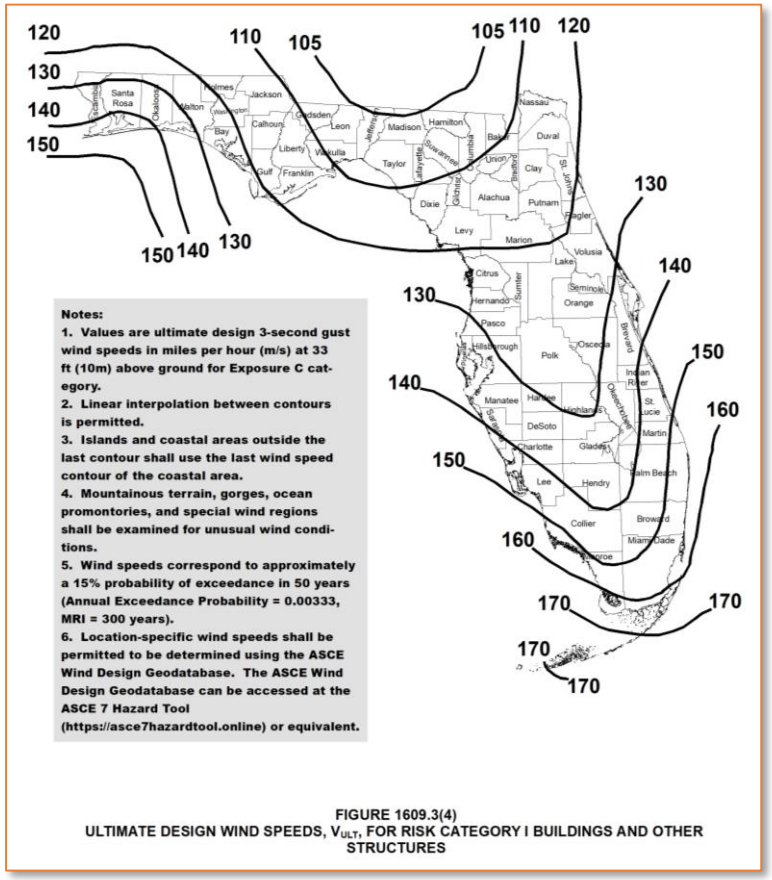




FIGURE 1609.3(4)
ULTIMATE DESIGN WIND SPEEDS, $V_{ULT}$, FOR RISK CATEGORY I BUILDINGS AND OTHER STRUCTURES

# Statewide Maps for the 8th Edition (2023) update to the Florida Building Code. Figures: 1609.3(2), and 1609.3(3)

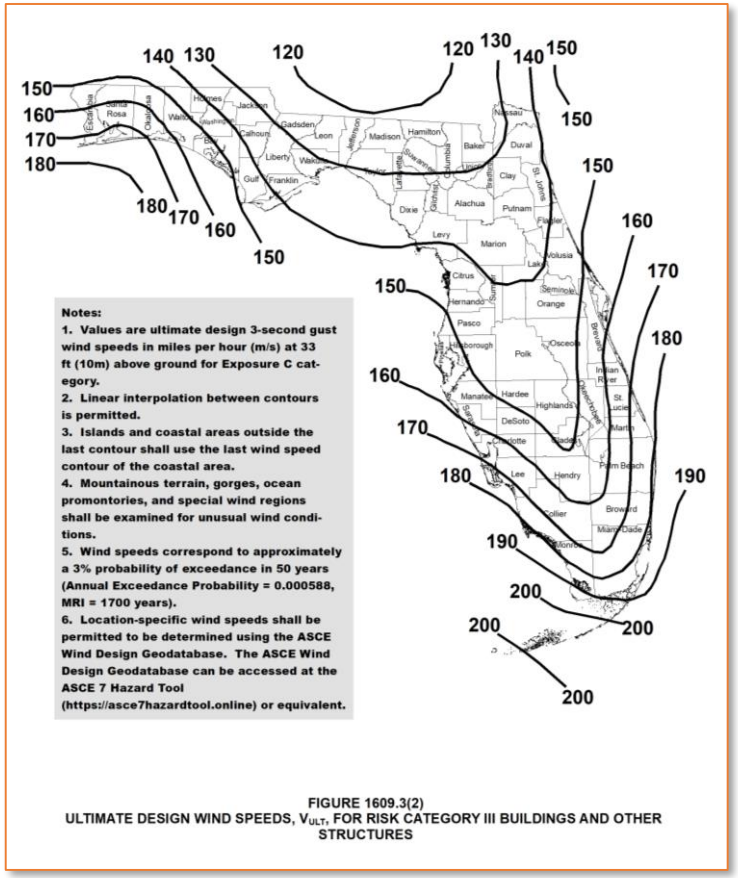



FIGURE 1609.3(2)
ULTIMATE DESIGN WIND SPEEDS, $V_{ULT}$, FOR RISK CATEGORY III BUILDINGS AND OTHER STRUCTURES

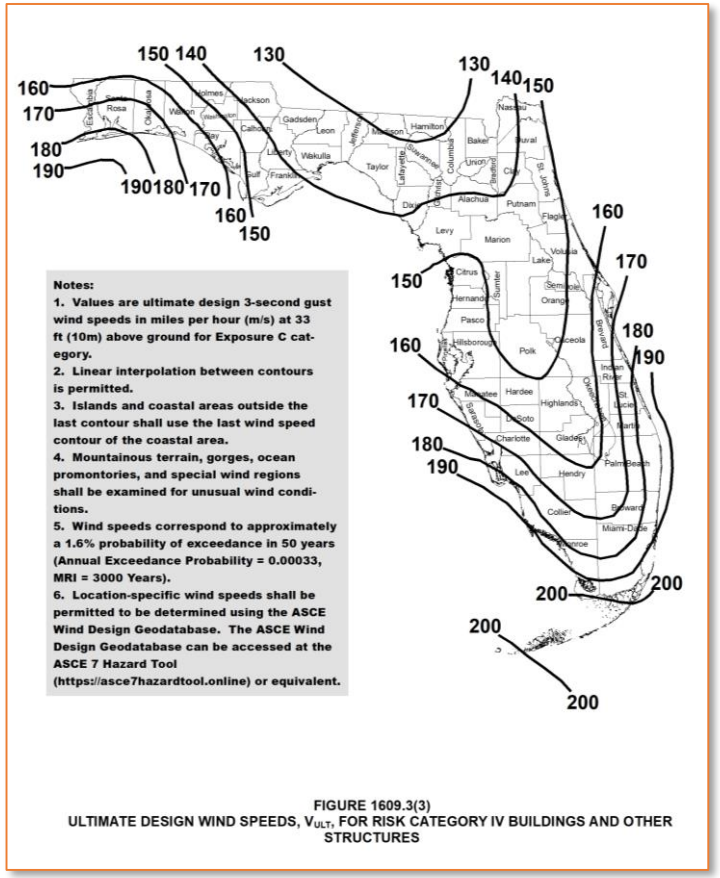
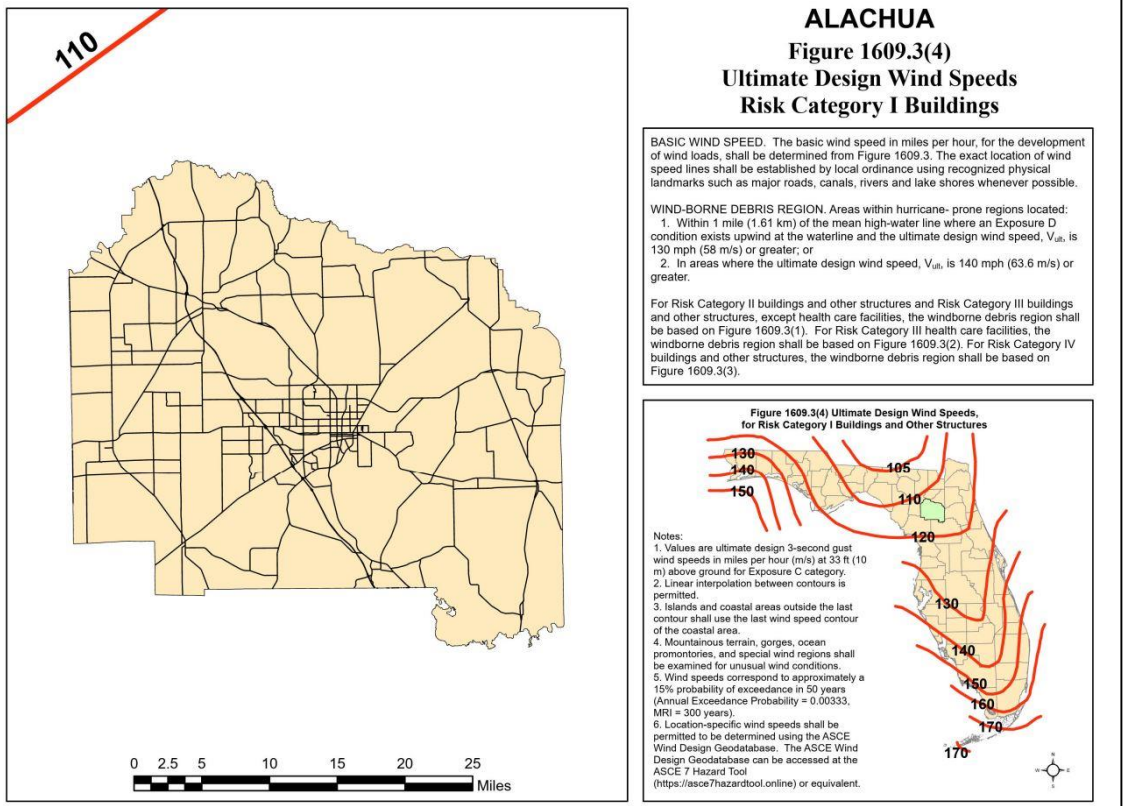



FIGURE 1609.3(3)
ULTIMATE DESIGN WIND SPEEDS, $V_{ULT}$, FOR RISK CATEGORY IV BUILDINGS AND OTHER STRUCTURES

# Appendix B

# Alachua County Examples of the Risk Category I-IV Preliminary Countywide PDF Maps




**ALACHUA**

**Figure 1609.3(4)**
**Ultimate Design Wind Speeds**
**Risk Category I Buildings**

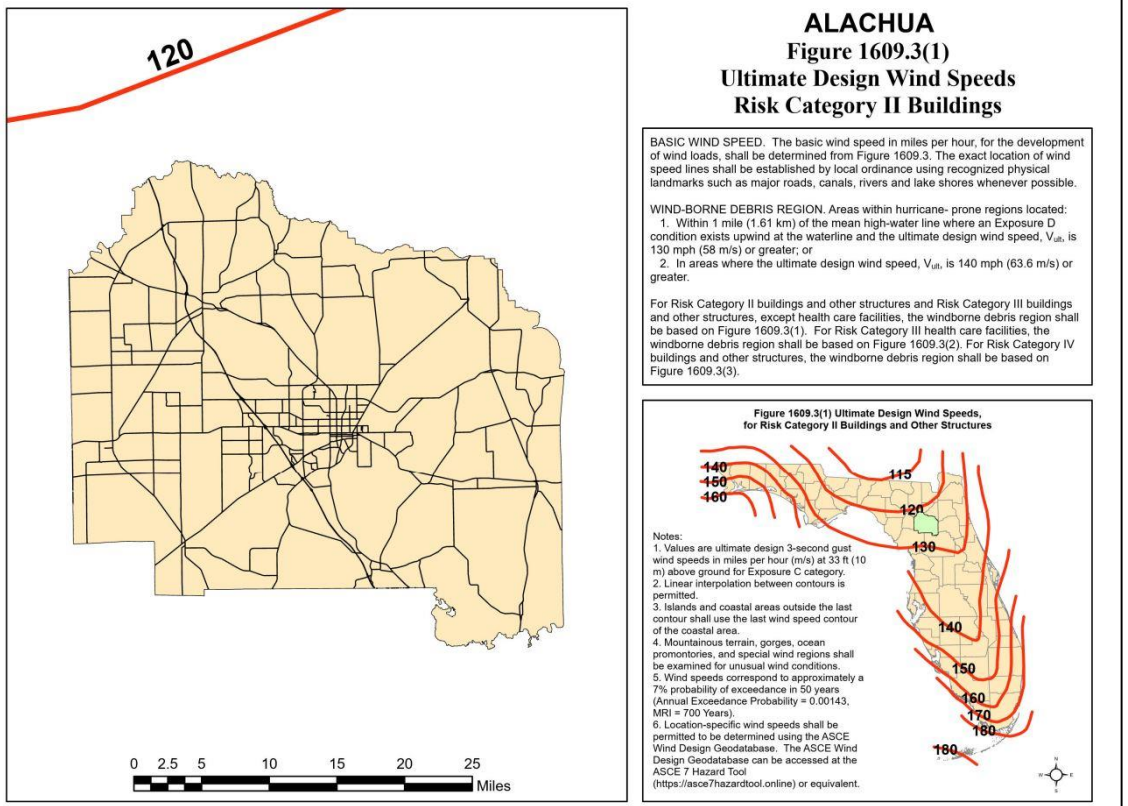
BASIC WIND SPEED. The basic wind speed in miles per hour, for the development of wind loads, shall be determined from Figure 1609.3. The exact location of wind speed lines shall be established by local ordinance using recognized physical landmarks such as major roads, canals, rivers and lake shores whenever possible.

WIND-BORNE DEBRIS REGION. Areas within hurricane- prone regions located:
1. Within 1 mile (1.61 km) of the mean high-water line where an Exposure D condition exists upwind at the waterline and the ultimate design wind speed, $V_{ult}$, is 130 mph (58 m/s) or greater; or
2. In areas where the ultimate design wind speed, $V_{ult}$, is 140 mph (63.6 m/s) or greater.

For Risk Category II buildings and other structures and Risk Category III buildings and other structures, except health care facilities, the windborne debris region shall be based on Figure 1609.3(1). For Risk Category III health care facilities, the windborne debris region shall be based on Figure 1609.3(2). For Risk Category IV buildings and other structures, the windborne debris region shall be based on Figure 1609.3(3).




Sources: Florida Building Code 2023; Florida Department of Business and Professional Regulations, Building Codes and Standards Office; Florida Building Commission; Applied Research Associates, Inc.; University of Florida GeoPlan Center; Florida Geographic Data Library; County Building Official, 03/22/2023




**ALACHUA**

**Figure 1609.3(1)**
**Ultimate Design Wind Speeds**
**Risk Category II Buildings**

BASIC WIND SPEED. The basic wind speed in miles per hour, for the development of wind loads, shall be determined from Figure 1609.3. The exact location of wind speed lines shall be established by local ordinance using recognized physical landmarks such as major roads, canals, rivers and lake shores whenever possible.

WIND-BORNE DEBRIS REGION. Areas within hurricane- prone regions located:
1. Within 1 mile (1.61 km) of the mean high-water line where an Exposure D condition exists upwind at the waterline and the ultimate design wind speed, $V_{ult}$, is 130 mph (58 m/s) or greater; or
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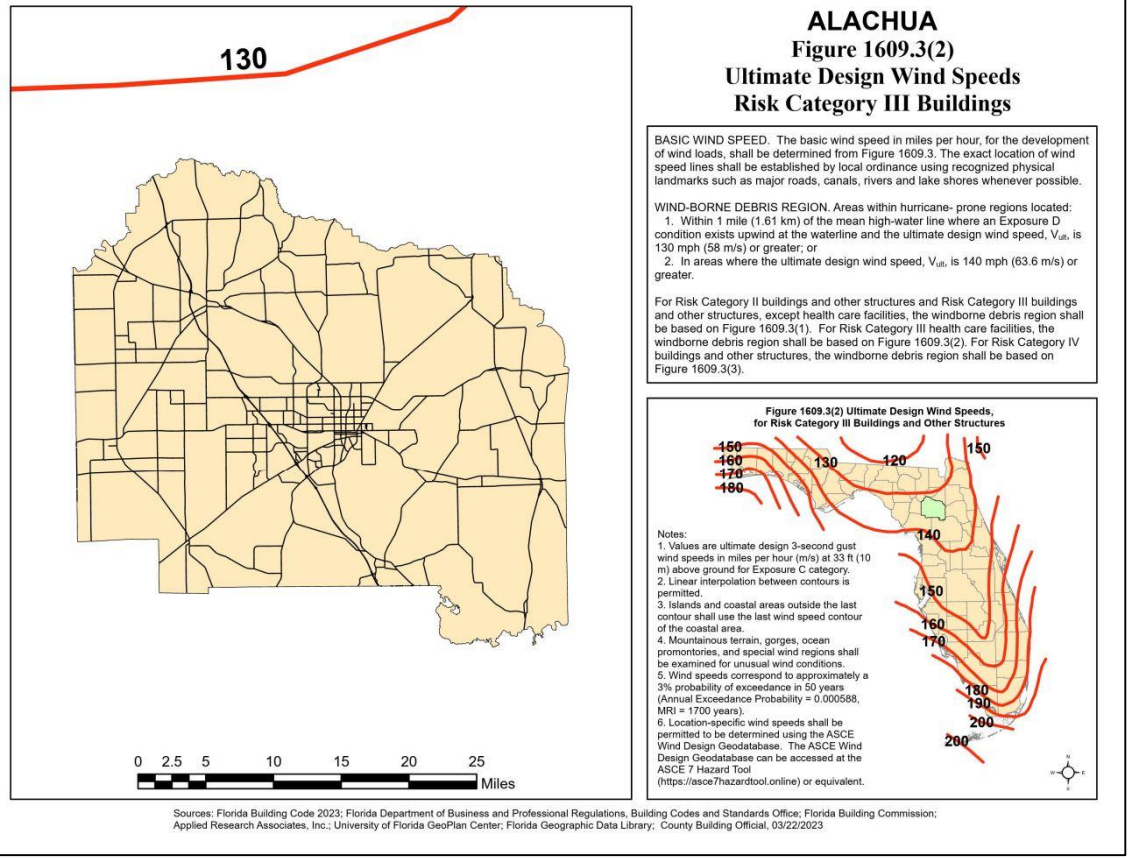
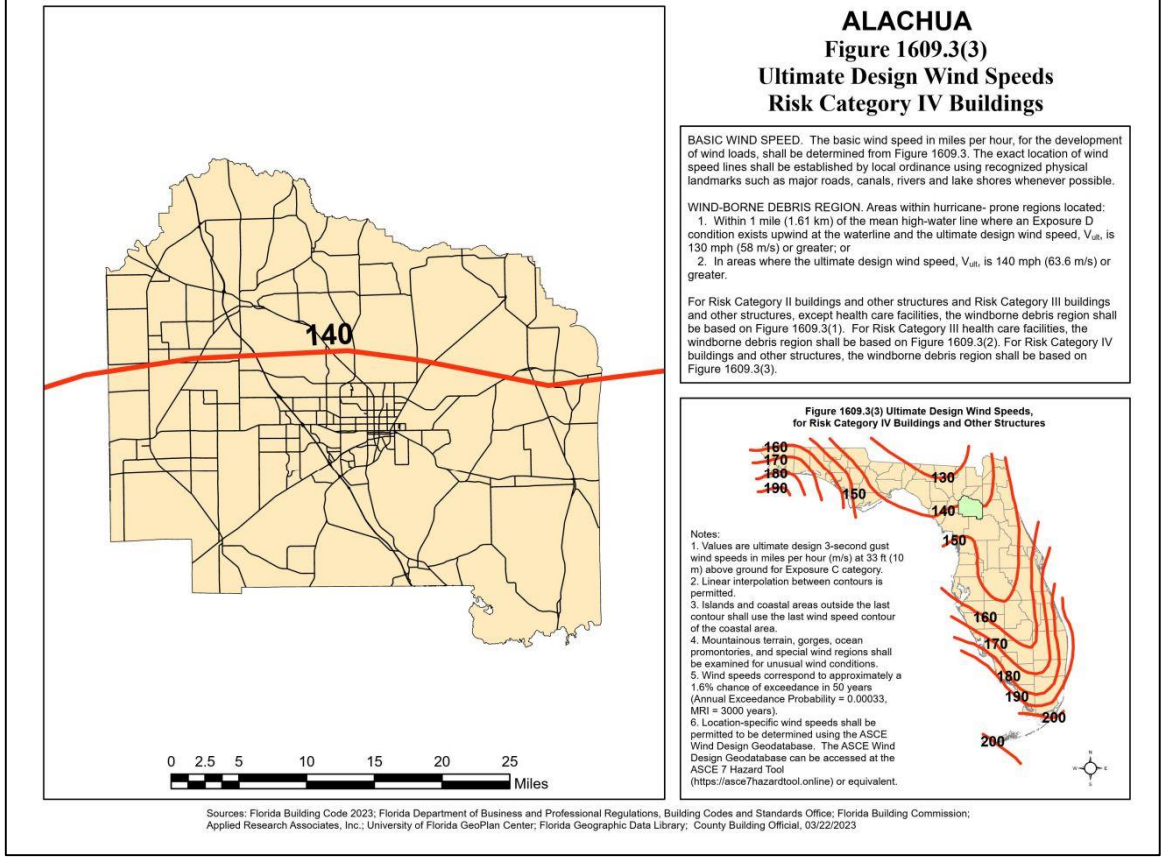
Sources: Florida Building Code 2023; Florida Department of Business and Professional Regulations, Building Codes and Standards Office; Florida Building Commission; Applied Research Associates, Inc.; University of Florida GeoPlan Center; Florida Geographic Data Library; County Building Official, 03/22/2023

# Alachua County Examples of the Risk Category I-IV Preliminary Countywide PDF Maps



# Appendix D

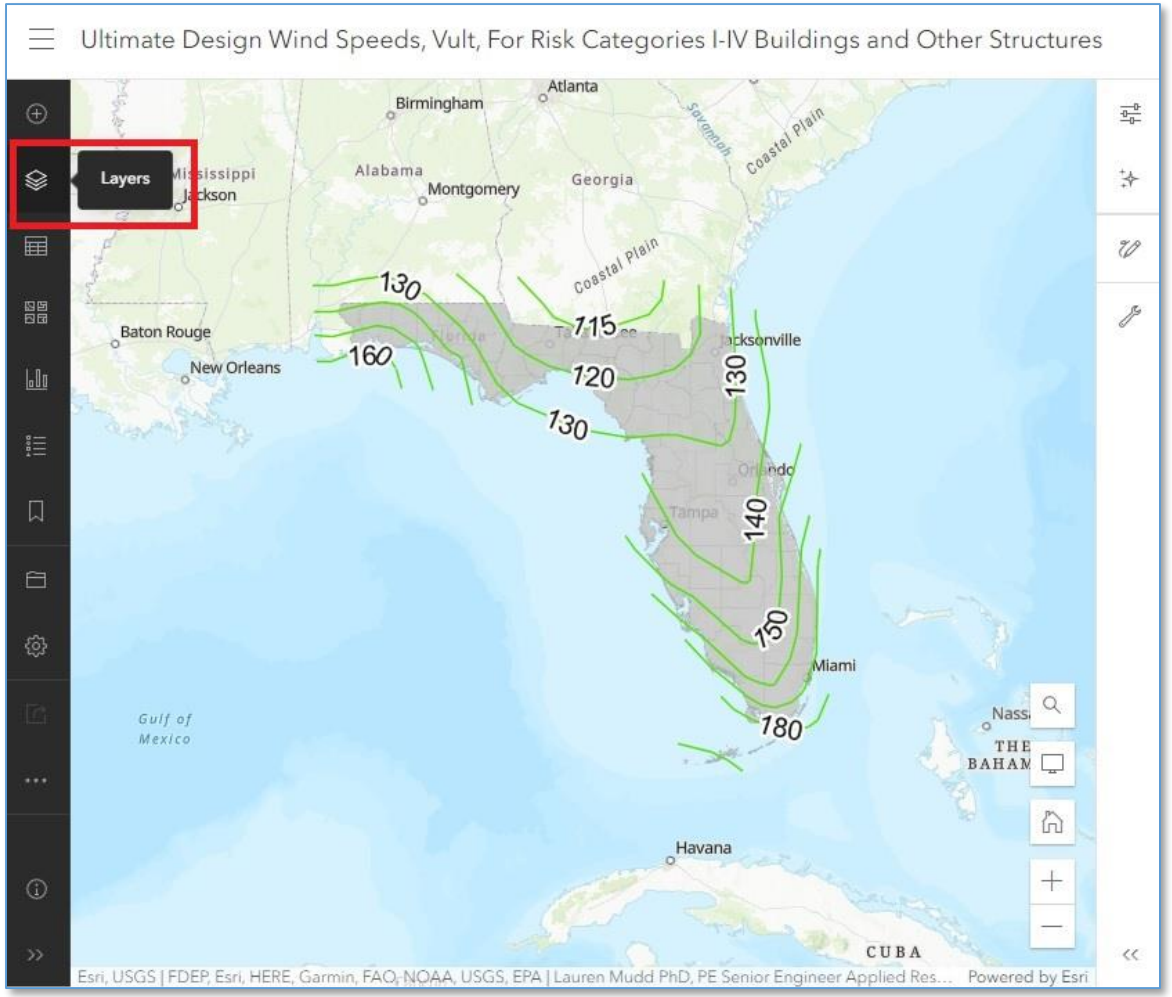
# Ultimate Design Wind Speeds Web Viewer Manual 20230323.pdf

**Ultimate Design Wind Speeds, Vult, For Risk Categories I-IV Buildings and Other Structures Map Viewer (2023) Manual**

This document contains instructions on how to access and use the Ultimate Design Wind Speeds Map Viewer to compare 2020 and 2023 wind speed lines (pages 1-3), how to use the ASCE 7 Hazard Tool to look up design parameters (page 4), and how to download wind speed data (page 5).

**Manual Link:**
https://adhoc.geoplan.ufl.edu/downloads/kate/windspeed_2023/Ultimate%20Design%20Wind%20Speeds%20Web%20Viewer%20Manual%2020230323.pdf

**Map Viewer Link:**
https://ufl.maps.arcgis.com/apps/mapviewer/index.html?webmap=3a5d5dd7d44744eeb9537b76534a72a9



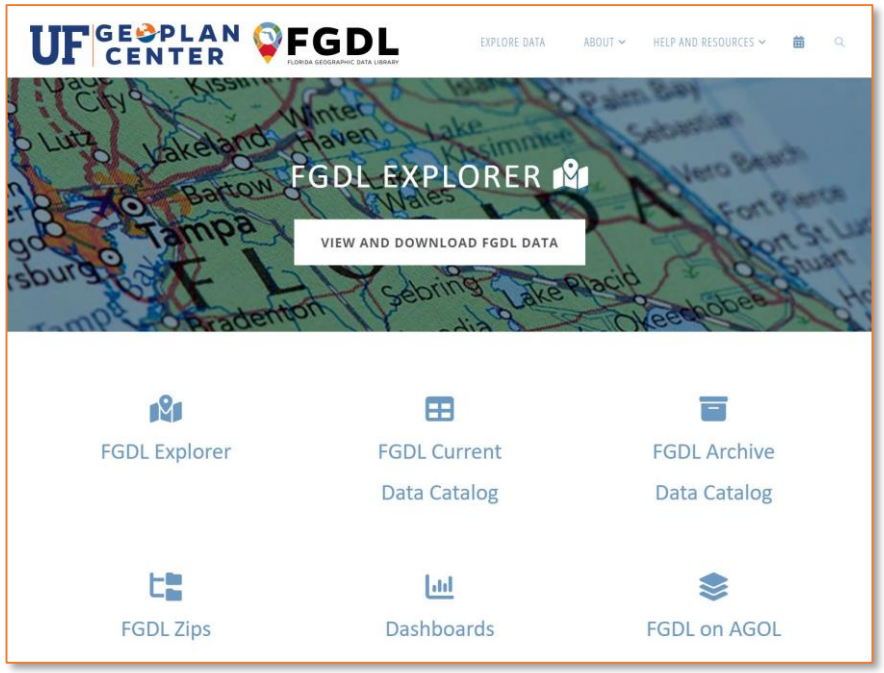
# Ultimate Design Wind Speeds 2023 GIS Data Download Location: https://fgdl.org/

**ASCE/SEI 7-22 Risk Category I Basic Wind Speed Map (300yr) for Florida - 2021**
Data Download:
https://fgdl.org/zips/geospatial_data/archive/windzones_cat1_asce7_22_jun21.zip

**ASCE/SEI 7-22 Risk Category II Basic Wind Speed Map (700yr) for Florida - 2021**
Data Download:
https://fgdl.org/zips/geospatial_data/archive/windzones_cat2_asce7_22_jun21.zip

**ASCE/SEI 7-22 Risk Category III Basic Wind Speed Map (1700yr) for Florida - 2021**
Data Download:
https://fgdl.org/zips/geospatial_data/archive/windzones_cat3_asce7_22_jun21.zip

**ASCE/SEI 7-22 Risk Category IV Basic Wind Speed Map (3000yr) for Florida - 2021**
Data Download:
https://fgdl.org/zips/geospatial_data/archive/windzones_cat4_asce7_22_jun21.zip



# Questions & Comments

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