City of St. Petersburg

Committee of the Whole

Meeting of July 25, 2019 @ 2:00 p.m.

Sunshine Center - Auditorium

A. Call to Order – Council Chair Charlie Gerdes

B. Discussion Items:

a. Continuation of 7/11/19 Committee of the Whole discussion on Ordinances/Referendum related to Affordable Housing Fund and HCIP – *Bradley Tenant and Brett Pettigrew, Assistant City Attorneys*

b. Coastal High Hazard Areas – *Elizabeth Abernethy, Director Planning and Development*

C. Next Meeting – August 8, 2019 @ 9:00 - Sunshine Center Auditorium Joint meeting of City Council and Community Planning & Preservation Commission regarding Third Party Historic Designation Process and Potential Eligible List

D. Adjournment

Attachments:

7/11/19 HCIP Back up:

a. Dedicated Funding Restrictions for Affordable Housing Presentation
b. Draft Ordinance re-designating HCIP Fund
c. Draft Ordinance for City Charter Referendum

Coastal High Hazard Area - Staff Memo and Presentation

COMMITTEE OF THE WHOLE PENDING/CONTINUING REFERRALS					July 25, 2019	
Topic	Return Date	Date of Referral	Prior Meeting	Referred by	Staff	Notes
HCIP FUND	7/25/19	6/13/19		Council	Gerdes Tenant	
Coastal High Hazard Areas	7/25/19	1/24/19		Staff	Abernethy	
City Council/CPPC Joint meeting Third Party Historic Designations Potential eligible list	8/8/19	5/16/19		Foster	Abernethy Kilborn	
Residential LDR Update	8/22/19			Administration	Abernethy	
Nexus Study	9/26/19	2/4/19		Administration	Gerdes	Moved from HLUT due to time sensitivity
Storefront Conservation Corridor	10/24/19	6/13/19		City Council	Abernethy Kilborn	
2020 Calendar Setting	12/12/19	Annual		City Council	Sheppard	
FY21 City Council Budget Priorities	1/23/20	Annual		Administration	Makofsky	
Facilities Maintenance Plan	TBD late 2019/early 2020	5/9/19		PSI	Gerdes	
Tropicana Field	TBD	2/17/19		Montanari	DeLisle	
Business Co-Op and Housing Co-Ops	TBD	1/17/19		BFT	Gerdes	BFT Report - CoOp Business; CM Gabbard req to add Housing CoOps

Dedicated Funding Restrictions for Affordable Housing

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Focus of July 11 C.O.W.

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- Distinguish between terminology expressing Council direction and terminology used for accounting per GASB
- Update Housing ordinance to reflect feedback from June 13 C.O.W.
- Discuss initial draft of Charter amendment referendum ordinance to prevent raids of City housing funding

"Designated Funding"

Terminology

- For purposes of finance and accounting, the ordinance and referendum will "designate funding"
- Once Council designates certain funding or money, it will always be so designated – no matter which "fund" or "safe" that money is actually kept in
  - i.e., once a dollar is marked, it can only be spent on affordable housing, regardless of where that dollar sits prior to being spent
  - Changes to designated funding limited by manner enacted
    - referendum required to un-designated funds if passed by referendum

HCIP Replacement Ordinance

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- **Changes**
  - Incorporates language to designate funding instead of creating "fund"
  - Money can only be used to support housing for those making 120% AMI or below
  - Name changed to "St. Petersburg Attainable Housing Funding"

HCIP Replacement Ordinance

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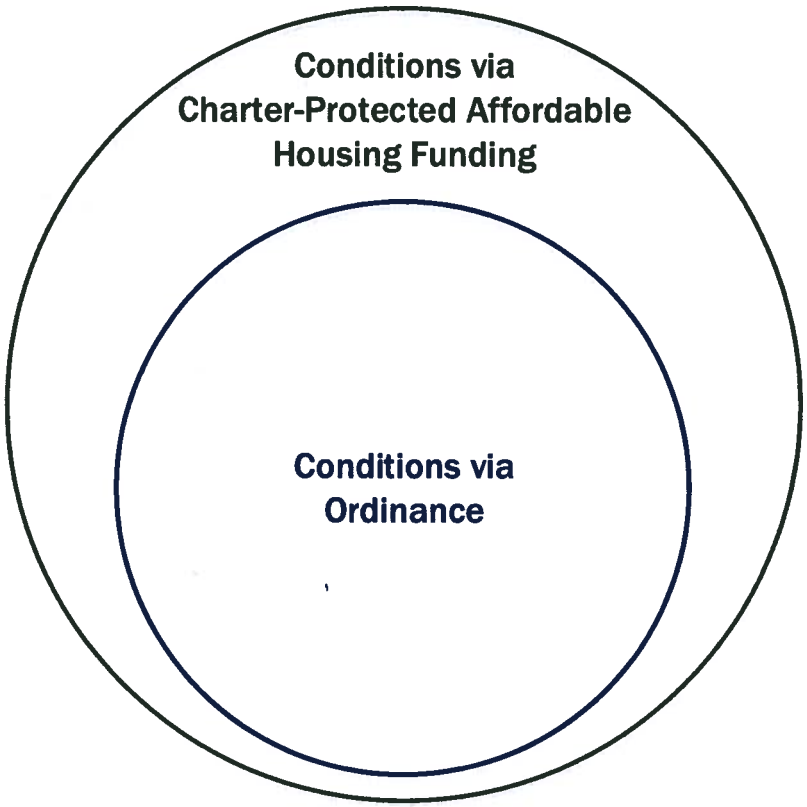
- **Also**
  - Designates HCIP fund as St. Petersburg Attainable Housing Funding
  - Automatically applies referendum language, if passed
  - Other Housing Department "housekeeping"
    - Clarifies varieties of programs and uses of funds
    - General statements of purpose

Charter Amendment Referendum

- The Charter is a framework for governance that grants and limits authority of the municipal government.
- Rather than providing a specific "lockbox," the proposed Charter amendment provides Council with authority to "lock" revenue so that it may be spent only as provided in the Charter.
- This would be effectuated through an ordinance designating a particular form of revenue as "Charter-Protected Attainable Housing Funding" subject to the new Charter provision.


Conditions via
Charter-Protected Affordable
Housing Funding
Conditions via
Ordinance

Implications of this Designation

- Council may impose conditions that are more restrictive than those in Charter. But even if a subsequent Council expands or revokes those conditions, the overriding Charter conditions prevent a Sadowski-style "raid" of previously designated revenue.
- Subsequent Council may also revoke the designation. But because the Charter prohibits retroactive revocation, existing funds remain subject to Charter protection.

Questions?

ORDINANCE NO. _____

AN ORDINANCE SUPPLEMENTING ORDINANCE 2127-F FOR THE PURPOSE OF CLARIFYING THE ADMINISTRATION OF THE HOUSING DEPARTMENT AND AMENDING CITY CODE TO ADD A NEW PROVISION FOR THE DESIGNATION OF FUNDING FOR USE BY THE HOUSING DEPARTMENT SUBJECT TO CONDITIONS SET FORTH IN CITY CODE; RE-DESIGNATING EXISTING HOUSING CAPITAL IMPROVEMENT PROGRAM PURSUANT TO THE NEW PROVISION OF CITY CODE; PROVIDING FOR INTERPRETATION AND SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, in 1991, the City Council passed Ordinance 2127-F, which (1) made findings related to the need for affordable housing; (2) created a housing program to implement the housing element of the St. Petersburg Comprehensive Plan, (3) sought to create a program to eliminate substandard housing in the City, (4) provided safe housing for persons of Very Low, Low, Moderate and Middle Income levels, and (5) set up a fund to support City efforts in this regard, among other actions; and

WHEREAS, the City Housing and Community Development Department ("Housing Department"), as it is currently known, has continued to work toward these goals, using the established fund and other funding mechanisms, since inception; and

WHEREAS, the need for safe and affordable housing remains throughout much of the City; and

WHEREAS, the City now seeks to supplement the existing ordinance to better reflect the breadth of services provided by the Housing and Community Development Department and to amend City Code to provide for the designation of funds to be used by the Department.

THE CITY OF ST. PETERSBURG DOES ORDAIN:

Section 1. The recitals to this ordinance are expressly made a part of this ordinance.

Section 2. Findings of fact:

a. The City finds that the foregoing recitals are true and correct and that it is necessary and in fulfillment of a

paramount public purpose for the City to continue to undertake the activities authorized by this ordinance in order to improve the condition of housing, to improve neighborhoods, increase the property values in neighborhoods, and provide housing which persons and families can afford within the City.

b. The City finds that there is an ongoing need to continue to identify and develop other local sources of funding to assist with the development of newly constructed affordable housing, and the preservation of affordable housing, as well as allocate no more than 10% of these revenues for legal and administrative costs.

c. The City finds there is a need to continue to retain sufficient legal and actual control over the use of all funds distributed by the Housing Department to ensure that its funding shall be used by extremely low, very low, low, moderate or middle-income households.

d. The City finds there is a need to affirm the scope of operation of the Housing Department.

Section 3. This ordinance is intended to supplement ordinance 2127-F to explicitly affirm the existing uses of City funds and services provided by the Housing Department, which are created administratively or by City Council. Accordingly, the Housing Department is authorized to undertake the actions that include but are not limited to:

a. Administrating of State and Federally established programs related to housing and homelessness.

b. Creating, administering and maintaining programs for facilitating the construction of new units and preserving existing units.

c. Creating, administering and maintaining programs that provide incentives to developers of affordable housing.

d. Working with and supporting non-profit organizations that focus on housing and homelessness concerns.

e. Any other activities related to providing housing and improving housing conditions in the City of St. Petersburg and for its citizens.

DRAFT

Section 4. The St. Petersburg City Code is hereby amend to add the following provisions to Chapter 17.5, Article I, as new Section 17.5.10, with all other section numbers previously reserved in Article I remaining reserved:

Section 17.5.10 - St. Petersburg Attainable Housing Funding.

a. *Intent and name.* The intent of this section is to provide dedicated funding for use by the City's Housing and Community Development Department to assist in its core missions. All funds designated for this purpose pursuant to this section may be collectively referred to as "St. Petersburg Attainable Housing Funding" regardless of how those funds are accounted for.

b. *Designation.* City Council may designate one or more forms of revenue to be subject to this section, and once designated by the City, such revenue may be used only as authorized by this section.

c. *Authorized uses.* Unless a waiver is approved in accordance with subsection d., St. Petersburg Attainable Housing Funding may be used only if all of the following conditions are met:

(1) The funding is used by the Housing Department to further housing programs/strategies as approved by the Mayor and/or City Council.

(2) The funding is used to support housing for households making at or below 120% of the then-current area median income, adjusted for household size.

d. *Waiver.* An ordinance of Council approved by a unanimous vote, of at least six (6) Council members, may waive any condition set forth in subsection c. with respect to a particular expenditure of St. Petersburg Attainable Housing Funding.

e. *Implementation.* Implementation of this section is not limited to any particular form of revenue or any particular accounting mechanism.

Section 5. All funding previously falling under the Housing Capital Improvement Program fund established by Ordinance 2127-F is hereby re-designated as St. Petersburg Attainable Housing Funding pursuant to City Code Section 17.5.10.

Section 6. The provisions of this ordinance are supplemental and in addition to other housing programs or efforts of the City of St. Petersburg.

Section 7. The provisions of this ordinance shall only supersede City Codes or ordinances in effect on its effective date to the extent deemed necessary to avoid conflict. In the event of conflict, this ordinance shall govern.

Section 8. The provisions of this ordinance shall be deemed to be severable and the invalidity of any provision shall not affect the remaining provisions.

Section 9. Coding: Language in the City Code not appearing in this ordinance continues in full force and effect unless the context clearly indicates otherwise. Sections of this ordinance that amend the City Code to add new sections or subsections are generally not underlined.

Section 10. In the event this Ordinance is not vetoed by the Mayor in accordance with the City Charter, it shall become effective upon the expiration of the fifth business day after adoption unless the Mayor notifies the City Council through written notice filed with the City Clerk that the Mayor will not veto this Ordinance, in which case this Ordinance shall become effective immediately upon filing such written notice with the City Clerk. In the event this Ordinance is vetoed by the Mayor in accordance with the City Charter, it shall not become effective unless and until the City Council overrides the veto in accordance with the City Charter, in which case it shall become effective immediately upon a successful vote to override the veto.

LEGAL: ADMINISTRATION:

_____ _____

DRAFT

7/5/2019 3:47 PM

ORDINANCE NO. _____

AN ORDINANCE CONCERNING CITY COUNCIL'S AUTHORITY TO MAKE A DESIGNATION OF REVENUE THAT SUBJECTS SUCH REVENUE, ONCE RECEIVED, TO CONDITIONS IN THE CITY CHARTER REQUIRING IT TO BE USED FOR THE SUPPORT OF AFFORDABLE HOUSING AS DESCRIBED IN THE CHARTER AND NOT FOR ANY OTHER PURPOSE; MAKING FINDINGS REGARDING THE NEED FOR CITY COUNCIL TO POSSESS SUCH AUTHORITY; CALLING A REFERENDUM TO AMEND THE CITY CHARTER TO PROVIDE CITY COUNCIL WITH SUCH AUTHORITY; PROVIDING THE TEXT OF THE CHARTER AMENDMENT THAT WOULD BE ADOPTED IF SUCH REFERENDUM WERE SUCCESSFUL; PROVIDING A BALLOT TITLE AND SUMMARY FOR THE REFERENDUM; AND PROVIDING AN EFFECTIVE DATE.

THE CITY OF ST. PETERSBURG ORDAINS THE FOLLOWING:

SECTION 1—FINDINGS: The City Council of the City of St. Petersburg, Florida, hereby makes the following findings:

(a) City Council is currently considering a variety of methods to help expand access to affordable housing in the City of St. Petersburg, including adoption of an ordinance concerning City funding for the support of affordable housing.

(b) In 1992, the Florida Legislature passed the William E. Sadowski Act, which required that a portion of documentary stamp taxes on the transfer of Florida real estate be placed into a fund dedicated to support of affordable housing. But for the last decade, the Florida Legislature has transferred billions of dollars out of the Sadowski fund and used that money for

programs unrelated to affordable housing. These raids of the Sadowski fund have reduced the support available for affordable housing throughout the state and have thwarted the original intent of the Sadowski Act.

(c) A City Charter provision authorizing the designation of revenue received by the City as "**Charter-Protected Attainable Housing Funding**" would allow City Council to prevent such raids from occurring with respect to City funds designated for the support of affordable housing. Specifically, this designation would subject the received revenue to conditions set forth in the City Charter so that it could be used only for the support of affordable housing as described in the Charter and not for any other purpose.

(d) City Council would impose such designation by ordinance in a form similar to the following "the following revenue _____ is hereby designated as Charter-Protected Attainable Housing Funding pursuant to City Charter section 4.06: _____." From that point forward, all applicable revenue would be subject to the conditions set forth in the Charter.

(e) Designation of revenue as Charter-Protected Attainable Housing Funding would not prevent City Council from imposing more restrictive conditions on the revenue through an ordinance or other mechanism. But in the event those non-Charter conditions were later revoked or amended, the Charter-Protected Attainable Housing Funding designation would continue to apply, and the revenue would remain subject to the conditions set forth in the Charter.

(f) Similarly, in the event a subsequent ordinance revoked designation of a certain form of revenue as Charter-Protected Attainable Housing Funding, that revocation would apply only to revenue received after the revocation. As a result, any revenue received prior to the revocation would remain Charter-Protected Attainable Housing Funding subject to the conditions set forth in the Charter.

(g) This approach would help ensure that revenue received as Charter-Protected Attainable Housing Funding could never be diverted to a purpose other than the one set forth in the Charter—even if underlying restrictions or the designation itself were later amended or revoked. This would protect City funding from Sadowski-style raids while maintaining the ability of future City Councils to adopt and amend funding ordinances to respond to changing conditions and unforeseen circumstances.

(h) Because the Charter is a document of broad applicability that provides a framework for governance and because the Charter-Protected Attainable Housing Funding would serve as an outer limit for use of revenue received subject to that designation, the conditions imposed on Charter-Protected Attainable Housing Funding would be relatively broad in

nature. Specifically, City Council believes that it would be appropriate to require that Charter-Protected Attainable Housing Funding be used only for the support of housing for households making at or below 120% of the then-current area median income, adjusted for household size.

(i) In view of the finding set forth above, Council believes that a Charter amendment referendum should be held to authorize City Council to designate received revenue as Charter-Protected Attainable Housing Funding as generally described in these findings and as specifically set forth in the Charter amendment set forth in section 3.

(j) Pursuant to Florida Statutes section 166.031, the Charter may be amended pursuant to a referendum put to a vote of the electors at a general election held within the municipality, and a referendum to amend the Charter as described in this section should be held as a part of the municipal general election scheduled for November 5, 2019.

SECTION 2—DATE OF REFERENDUM: The City Council hereby calls the Charter amendment referendum described in this ordinance (the "**Referendum**") to be placed on the ballot of the municipal general election scheduled for November 5, 2019.

SECTION 3—CHARTER AMENDMENT: If the Referendum is approved by a majority vote, the City shall file a revised version of the St. Petersburg City Charter with the Department of State. That revised version of the City Charter will be effective upon filing with the Department of State and will reflect the addition of new section 4.06 to article IV of the City Charter, as set forth below.

Sec. 4.06. – Charter-Protected Attainable Housing Funding.

(a) *Imposition of designation.* City Council may, by ordinance, designate one or more forms of revenue to be subject to this section, and any revenue received by the City while that designation is in effect is considered "Charter-Protected Attainable Housing Funding" that may be used only as authorized by this section.

(b) *Authorized uses.* Charter-Protected Attainable Housing Funding may be used only to support housing for households making at or below 120% of the then-current area median income, adjusted for household size.

(c) *More restrictive conditions allowed.* This section does not prohibit the imposition of any condition on Charter-Protected Attainable Housing Funding that is more restrictive than the conditions set forth in this section.

(d) *Revocation is not retroactive.* Although City Council may, by ordinance, revoke any existing designation of revenue pursuant to this section, such revocation is not retroactive and applies only to revenue received after the revocation goes into effect. Accordingly, any revenue received prior to such revocation remains Charter-Protected Attainable Housing Funding subject to this section.

(e) *Implementation.* Implementation of this section is not limited to any particular form of revenue or any particular accounting mechanism.

SECTION 4—BALLOT TITLE: The City shall use the following caption as the ballot title for the Referendum:

> Authorizing City Council to designate certain received revenue as Charter-Protected Attainable Housing Funding

SECTION 5—BALLOT SUMMARY: The City shall use the following explanatory statement as the ballot summary for the Referendum:

> Shall the City Charter be amended as shown in ordinance _____ to authorize designation of revenue as "Charter-Protected Attainable Housing Funding" that, once received, must be used to support housing for households making at or below 120% of the then-current area median income? Such Charter-based designation would not prohibit imposition of more restrictive conditions on such revenue but would continue to apply even if those conditions were later amended or revoked.

YES NO

SECTION 6—SEVERABILITY: The provisions of this ordinance are intended to be severable, and a determination that any portion of this ordinance is invalid should not affect the validity of the remaining portions of this ordinance.

SECTION 7—EFFECTIVE DATE: In the event this ordinance is not vetoed by the Mayor in accordance with the City Charter, it will become effective upon the expiration of the fifth business day after adoption unless the Mayor notifies the City Council through written notice filed with the City Clerk that the Mayor will not veto this ordinance, in which case this ordinance will become effective immediately upon filing such written notice with the City Clerk. In the event this ordinance is vetoed by the Mayor in accordance with the City Charter, it will not become effective unless the City Council overrides the veto in accordance with the City Charter, in which case it will become effective immediately upon a successful vote to override the veto.

Approved as to form and content:

City Attorney (Designee)	Administration

Committee of the Whole

COASTAL HIGH HAZARD AREA (CHHA)

July 25, 2019

PURPOSE

The purpose of this Committee of the Whole (COW) is a follow-up to the January 24, 2019 COW, to discuss matters pertaining to the Coastal High Hazard Area (CHHA), and possible text amendments to the City's Comprehensive Plan and Land Development Regulations (LDRs), see attached Staff Memo dated January 24th. The presentation and discussion considered methods for allowing safe and reasonable increases in residential density within the CHHA, while also leading to a higher standard of construction for all new multi-family development, regardless of whether or not an increase in density was considered. Such elevated design standards are intended to result in structures which are more resilient to storm surge and sea level rise, mitigate for service and infrastructure needs during and immediately following a major storm event, and enable safe re-occupation as quickly as possible following an evacuation.

Following the January 24th COW, staff prepared a draft LDR amendment for stakeholder review. Staff presented the proposed Comprehensive Plan and LDR changes to the St. Pete Ocean Team on April 23rd and held a stakeholder meeting on May 21st. The City was also awarded a grant from the Urban Land Institute (ULI) for technical assistance in developing these innovative zoning and development standards to ensure that coastal developments are more resilient to various coastal hazards. The ULI Technical Advisory Committee convened on June 18th and 19th and the final technical memo is attached.

The ULI report references consideration of sea level rise, which will be incorporated into the proposed design standards. In support of the proposed elevation requirements, a report prepared by the Tampa Bay Climate Science Advisory Panel, dated April 2019, is attached, titled "Recommended Projections of Sea Level Rise in the Tampa Bay Region". The report recommends NOAA Low projections not be utilized for Planning Purposes.

Staff incorporated changes to the proposed LDR text amendment based on information from further research and feedback from stakeholders and the ULI committee. Attached is the latest draft of the proposed Comprehensive Plan Amendment text and Land Development Regulation text for consideration by council.

NEXT STEPS

1. Refine Proposed LDR CHHA Design Standards amendment and provide for further stakeholder review (August/September):
    - Provide cost estimates for the elevated development criteria
    - Provide points required for unit ranges
    - Provide points earned for elevated

2. Schedule for COW (October 24th)/Adoption Public Hearings

ATTACHMENT A: STAFF MEMO – COW January 24, 2019

Committee of the Whole

COASTAL HIGH HAZARD AREA (CHHA)

January 24, 2019

PURPOSE

The purpose of this Committee of the Whole (COW) is to discuss matters pertaining to the Coastal High Hazard Area (CHHA), and possible text amendments to the City's Comprehensive Plan and Land Development Regulations (LDRs). The presentation and discussion shall consider methods for allowing safe and reasonable increases in residential density within the CHHA, while also leading to a higher standard of construction that is more resilient to storm surge, mitigates for service and infrastructure needs during and immediately following a major storm event, and enables safe re-occupation as quickly as possible following an evacuation.

Commitments to support future changes or final decisions regarding proposed text is not the purpose of this meeting, rather the purpose is to have a high-level discussion that will help City staff discern future direction on several critical points. The direction learned from this meeting will help City Staff prioritize next steps, coordinate research needs and partnerships.

INTRODUCTION OF TERMS

COASTAL HIGH HAZARD AREA (CHHA). The CHHA is defined as the area below the elevation of the Category 1 storm surge line as established by a Sea, Lake and Overland Surges from Hurricanes ("SLOSH") computerized storm surge model.

HURRICANE EVACUATION ZONES. Hurricane evacuation zones (A to E) reflect storm surge vulnerability and the appropriate evacuation level for Category 1 to 5 storm (hurricane) events.

SPECIAL FLOOD HAZARD AREAS (SFHA). The SFHA was previously known as the 100-year flood plain. These areas are identified on FEMA's Flood Insurance Rate Map. Designations within the SFHA include the V-Zone (Velocity) and A- or AE Zone (properties located in the latter have a 1% probability of flooding every year).

TIMELINE FOR CITY FILE: LGCP-2017-02

City File: LGCP-2017-02 pertains to a series of City-initiated amendments to the Future Land Use and Coastal Management elements of the Comprehensive Plan to address the City's new Coastal High Hazard Area (CHHA) boundary. The proposed amendments include adoption of the new 2016 CHHA Map, amending policies that prohibit requests for residential density increases within the CHHA, and adding balancing criteria to be considered when requests are made to increase density within the CHHA.

It cannot be emphasized enough that these proposed Comprehensive Plan text amendments, if ultimately approved, ***do not*** increase density or intensity in the CHHA. Only specific amendments to the City's Future Land Use Map and/or Official Zoning Map, if approved, will allow for an increase in density or intensity. Requests for such amendments, whether they are City-initiated or private applications, will be subjected to the City's normal application process, including public notice, CPPC and City Council public hearings, and state, regional and county review. All applications are reviewed and considered on a case-by-case basis.

Community Planning & Preservation Commission (CPPC)

On **August 8, 2017** the CPPC conducted a public hearing regarding these proposed changes, but before rendering a final decision, they requested that the language set forth in Section 163.3178(8), F.S., be added to the amendment. This section of the Florida Statutes addresses compliance of a comprehensive plan amendment with state coastal high-hazard provisions. Staff agreed to add the language, however, a final vote was not taken, and the matter was continued to a future date.

On **July 10, 2018** the CPPC conducted a new public hearing regarding these proposed amendments and voted 4 to 3 to recommend APPROVAL to City Council. Two CPPC members voiced concerns about Plan amendments or rezonings that could increase density in the CHHA.

City Council

On **August 23, 2018** the City Council's first reading and first public hearing for the ordinance addressing the proposed amendments was tabled/deferred until after a COW was convened.

BACKGROUND

How are the CHHA boundaries determined?

The CHHA boundary is determined using a computerized numerical model developed by the National Weather Service (NWS) called the Sea, Lake and Overland Surges from Hurricanes (SLOSH) model. The model estimates storm surge heights resulting from historical, hypothetical, or predicted hurricanes by considering the atmospheric pressure, size, forward speed, and track data.

NOAA's SLOSH Model web page (https://www.nhc.noaa.gov/surge/slosh.php) states that there are three different modeling methods that can be used to estimate surge. The National Hurricane Center (NHC) and Florida Emergency Management officials use the "Composite Approach" which runs several thousand times with hypothetical hurricanes under different storm conditions. The products generated from this approach are regarded by the NHC as the best approach for determining storm surge vulnerability for an area since it takes into account forecast uncertainty.

Areas included in the CHHA are governed both by state law and the policies adopted to administer those provisions in the local government comprehensive plans. To reduce loss of life and property caused by natural disasters, the State of Florida requires local governments to identify the CHHA and plan accordingly with the emphasis on reducing vulnerability to hurricane impacts (Section 163.3178, Florida

Statutes).

How long has the CHHA been around?

The CHHA has existed since 1985. The definition and applicable standards have changed several times - in 2006, 2010, and most recently 2016. The most recent changes have led to a major expansion of the CHHA and have caused the City to re-evaluate its adopted policies.

What was the size of the expansion?

The 2016 CHHA Map shows a Category 1 storm surge area of 16,328 acres, more than double the 7,705 acres identified on the 2010 Map. [See attached map.]

Why did the CHHA double in size?

The Tampa Bay Regional Planning Council's 2017 Regional Evacuation Study states that the CHHA expansion is due to an update to the Composite SLOSH model's physics parameters which now include the use of Kelvin Wave dynamics which is thought to resolve coastal reflections of surges caused by trapped Kelvin Waves. In other words, the model update accounts for variation in tide waves caused by shallow seas and coastal waters. Wave amplitude increases when Kelvin waves move into shallow water. In coastal regions, Kelvin waves can also be generated as storm surges are diffracted by vertical boundaries and scattered by irregular coastlines.

What City Comprehensive Plan policies or objectives need to be re-evaluated?

There are several Comprehensive Plan policies and objectives that need to be examined (replaced or amended), including Land Use Policy LU7.1 which states that "Requests for residential density increases within the Coastal High Hazard Zone shall not be approved," and Coastal Management Objective CM10B which states that "The City shall direct population concentrations away from known or predicted coastal high hazard areas consistent with the goals, objectives and policies of the Future Land Use Element."

A Future Land Use Map (FLUM) amendment or rezoning within the CHHA is not always about residential development; often it is about an office or retail (commercial) project. However, such an amendment or rezoning almost always allows for an increase in residential density too, as most of the future land use categories allow both. As it relates to increasing density in the CHHA, the language of Policy LU7.1 and Objective CM10B is quite different (stricter) from the language that exists in the Florida Statutes, TBRPC's Strategic Regional Policy Plan and the Countywide Plan Rules.

What general areas of the City are located within the expanded CHHA boundary?

- Innovation District and the entire Salt Creek area
- USF St. Petersburg Campus
- Skyway Marina District: both sides of 34th Street South
- Coquina Key Shopping Plaza (minor portion)
- 4th Street North, both sides between 54th Avenue North and Howard Frankland Bridge
- Dr. ML King Jr. Street North, between 62nd Avenue and Gandy Blvd.

- ASI/Progressive Insurance Headquarters (Dr. ML King Jr. Street and 94th Avenue)
- Metropointe Commerce Park and Carillon Office Park
- Jabil Headquarters Campus
- Echelon Town Center
- Several mobile home parks

If the City's Comprehensive Plan policies are not amended, what types of Future Land Use Map amendments will not be processed?

- Approximately 4,000 acres (or 27%) of the CHHA is designated Residential Low or Residential Urban, which permit a density range from 5 to 7½ units per acre. City-initiated or private applications would typically be processed to amend the designation to Residential Medium, which permits up to 15 units per acre. Such applications would not be processed due to location within the CHHA.

- Approximately 1,575 acres (or 11%) of the CHHA is designated Residential Medium or Residential/Office General, which permit up to 15 units per acre. City-initiated or private applications (especially for R/OG designated land) would typically be processed to amend the designations to Planned Redevelopment-Mixed Use, which permits up to 24 units per acre. Such applications would not be processed due to location within the CHHA.

- Finally, numerous applications, both City-initiated and private, have been processed over the years for incremental expansion of commercial zoning along 4th Street North and Dr. ML King/9th Street North, often just one lot or two, to accommodate office and retail redevelopment. The typical request would be to amend the lower density residential designation to Residential/Office General or Planned Redevelopment-Mixed Use, which permit a residential density range from 15 to 24 units per acre. Such applications would not be processed due to location within the CHHA.

Why is this expanded area, or the entire CHHA, of concern?

It is understood that CHHA residents are the first to evacuate when a tropical system or hurricane threatens Pinellas County. Evacuation times and shelter capacity are always a concern, however, a land use amendment within the CHHA is not always about residential development; often it is about accommodating an office or retail project. Prohibiting a land use amendment in a 16,000-acre area could/would arguably hamper economic development in the City, and prevent (again, arguably) rational land use amendments from being enacted.

The ability for City Council to approve, on a case-by-case basis, requests to increase density/intensity within the CHHA would be consistent with Comprehensive Plan policies that address the efficient use of existing infrastructure and encourage development and redevelopment in areas where infrastructure exists, and excess capacity is available. The *inability* to increase density/intensity within the CHHA, on a case-by-case basis, could have a negative effect on the City's economic development efforts by:

- decreasing the size of development/redevelopment projects
- reducing private financial investment/reinvestment in real property
- decreasing the number of construction and permanent jobs created

- hindering the expansion of existing businesses
- making business recruitment more difficult
- limiting potential/probable increases in the tax base
- providing less diversification of the City's economic base
- reducing the number of multifamily units constructed, leading to fewer housing choices (e.g., workforce and affordable housing)
- hindering redevelopment efforts in impacted neighborhoods and business districts
- delaying the redevelopment or replacement of structures that do not conform to flood and wind hazard construction standards

EVOLUTION OF THE CITY STAFF PROPOSAL

What is City staff proposing?

The proposed text amendments to the Comprehensive Plan include adoption of the new 2016 CHHA Map, amending policies that prohibit requests for residential density increases within the CHHA and adding balancing criteria to be considered when requests are made to increase density within the CHHA.

The balancing criteria are found in the Countywide Plan Rules, administered by Forward Pinellas. Specifically, Section 4.2.7.1 of the Countywide Plan Rules states that "the Countywide Planning Authority shall deny an amendment to the Countywide Plan Map within the CHHA which results in an increase of density or intensity; except that they may, at their sole and absolute discretion, consider approving such amendment based upon a balancing of the following criteria, as are determined applicable and significant to the subject amendment." These criteria include:

1. Access to Emergency Shelter Space and Evacuation Routes. The uses associated with the requested amendment will have access to adequate emergency shelter space as well as evacuation routes with adequate capacities and evacuation clearance times.

2. Utilization of Existing and Planned infrastructure. The requested amendment will result in the utilization of existing infrastructure, as opposed to requiring the expenditure of public funds for the construction of new, unplanned infrastructure with the potential to be damaged by coastal storms.

3. Utilization of Existing Disturbed Areas. The requested amendment will result in the utilization of existing disturbed areas as opposed to natural areas that buffer existing development for coastal storms.

4. Maintenance of Scenic Qualities and Improvement of Public Access to Water. The requested amendment will result in the maintenance of scenic qualities, and the improvement of public access, to the Gulf of Mexico, inland waterways (such as Boca Ciega Bay), and Tampa Bay.

5. Water Dependent Use. The requested amendment is for uses which are water dependent.

6. Part of Community Redevelopment Plan. The requested amendment is included in a Community Redevelopment Plan, as defined by Florida Statues for a downtown or other designated redevelopment areas.

7. Overall Reduction of Density or Intensity. The requested amendment would result in an increase in density or intensity on a single parcel, in concert with corollary amendments which result in the overall reduction of development density or intensity in the surrounding CHHA.

8. Clustering of Uses. The requested amendment within the CHHA provides for the clustering of uses on a portion of the site outside the CHHA.

9. Integral Part of Comprehensive Planning Process. The requested amendment has been initiated by the local government as an integral part of its comprehensive planning process, consistent with the local government comprehensive plan.

These nine criteria have been in the Countywide Rules since 2005. They were readopted in 2015, with a new requirement that they also be adopted locally (for those communities to whom it applies). There are 12 local governments in Pinellas County, in addition to St. Petersburg, that have addressed or are in the process of addressing the balancing criteria.

At the request of the CPPC, it is further proposed that the language set forth in Section 163.3178(8), F.S., be added to the amendment. This section of the Florida Statutes addresses compliance of a comprehensive plan amendment with state coastal high-hazard provisions. It specifically states that "A proposed comprehensive plan amendment shall be found in compliance with state coastal high–hazard provisions if:

- The adopted level of service for out-of-county hurricane evacuation is maintained for a category 5 storm event as measured on the Saffir-Simpson scale; or
- A 12-hour evacuation time to shelter is maintained for a category 5 storm event as measured on the Saffir-Simpson scale and shelter space reasonably expected to accommodate the residents of the development contemplated by a proposed comprehensive plan amendment is available; or
- **Appropriate mitigation is provided** (emphasis added) that will satisfy subparagraph 1 or subparagraph 2. Appropriate mitigation shall include, without limitation, payment of money, contribution of land, and construction of hurricane shelters and transportation facilities. Required mitigation may not exceed the amount required for a developer to accommodate impacts reasonably attributable to development. A local government and a developer shall enter into a binding agreement to memorialize the mitigation plan."

Thus, the Florida Statutes allow for the mitigation of impacts reasonably attributable to development that results from a density increase within the CHHA. In discussions with officials from the Florida Department of Economic Opportunity (DEO), Bureau of Community Planning, it was made clear that the LOS standards set forth in the state statutes could be dealt with successfully by local governments *with mitigation*, and that amendments impacting the CHHA are reviewed and considered by DEO staff on a case-by-case basis.

Consideration of Additional Balancing Criteria

City staff is recommending that two other balancing criteria be considered when increases in density are requested, in addition to the nine discussed above. They are as follows:

- Location within an Activity Center or Target Employment Center. The requested amendment area is located within a designated Activity Center or Target Employment Center.

- Furthers the Goals and Policies of the Integrated Sustainability Action Plan (ISAP). The requested amendment results in the furthering of goals and policies identified in the ISAP, including but not limited to green infrastructure, green building, and low impact design.

- Reduction of Storm Vulnerable Structures. The reduction or elimination of substandard flood hazard and wind load bearing structures will be accelerated because of the redevelopment allowed by the plan amendment.

Mandatory or Prioritized Criteria

The criteria are proposed as a balancing test *meaning* certain criteria may be weighted more than others at the discretion of the evaluator. City staff recommends that consideration be given toward making one or more criteria *mandatory*.

Mitigation: A Countywide Conversation

For several months, Planning and Development Services Department staff has been working with the City's Office of Emergency Management (St. Petersburg Fire Rescue), as well as staff from Forward Pinellas, Pinellas County Planning Department, and Pinellas County Emergency Management. An informal "working group" has been formed, and to date has met four times.

It is anticipated that the agreed upon mitigation plan (necessitated by an increase in density within the CHHA) will likely involve the payment of money to provide additional shelter space in Pinellas County, with the developer paying a "to be determined" amount of money to build more shelter spaces for the additional persons attributed to the development. Pinellas County Emergency Management will likely set up a fund to account for this money. No details have been discussed, to date.

CHAPTER 16, CITY CODE (LAND DEVELOPMENT REGULATIONS)

What City Code (LDR) changes are being considered?

Section 16.30.040 of the City Code addresses development in the Coastal High Hazard Area (CHHA). It is proposed that the following development regulations be considered:

- New construction of residential dwelling units (resulting from a density/intensity increase from a plan amendment after (date of this change) shall provide for hurricane shelter mitigation. Such mitigation for the impacts attributable to the development shall include one or a combination of

the following: payment of money, contribution of land, or construction of hurricane shelters. Payment for construction of hurricane shelter space shall be provided prior to issuance of the certificate of occupancy for the dwelling unit(s), in accordance with the following formula:

[*Formula to be Determined in Consultation with Emergency Management*]

If the property owner elects to contribute land or construct hurricane shelter space, a binding agreement shall be executed regarding such mitigation prior to issuance of a building permit for construction of the residential units.

- New construction of hotels and multi-family, residential dwelling units shall provide a Hurricane Evacuation Plan requiring mandatory evacuation in accordance with Emergency Management directives. Such requirements shall be incorporated into a legally binding document such as lease documents, condominium rules, homeowner rules, or other such method approved by the POD.

- Establish CHHA design standards based on the following model from Norfolk, Virginia.

CITY OF NORFOLK EXPERIENCE (RESILIENCE QUOTIENT SYSTEM)

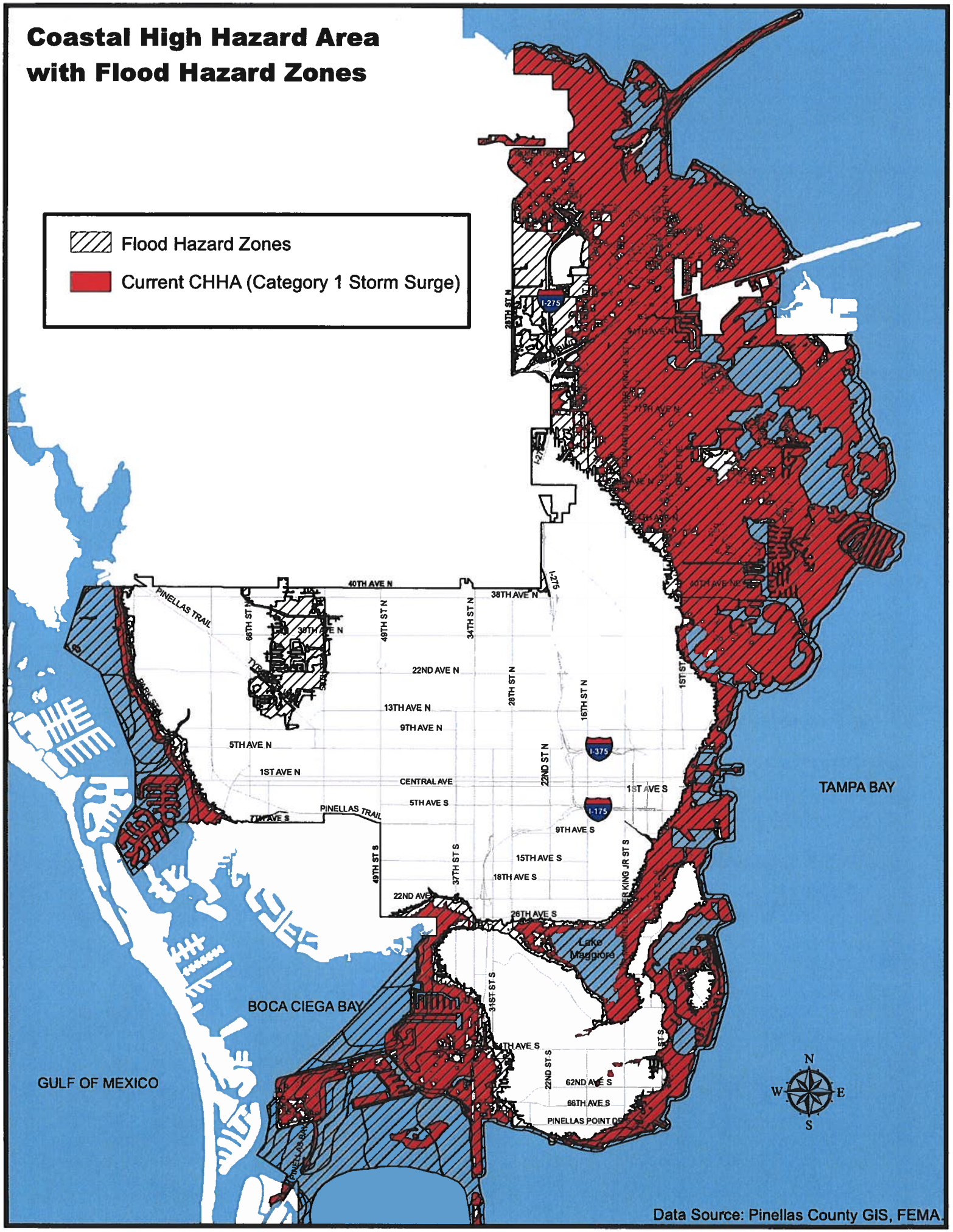
In an effort to foster more flood resilient development and redevelopment, the City of Norfolk, Virginia adopted a new zoning ordinance in January 2018, with an effective date of March 1, 2018. The ordinance includes a new *resilience quotient system,* where developers earn points for incorporating different resilient measures that promote flood risk reduction, stormwater management and energy resilience, among other practices. New development is required to meet different resilience point values based on the development type (e.g., residential, nonresidential, mixed-use) and development size (e.g., number of residential units, square footage).

Section 5.12 of the Norfolk Zoning Ordinance, titled Resilience Quotient, is attached. City staff recommends that this *overall concept* be considered for incorporation into the land development regulations. If the City Council would like to evaluate further, City staff will prepare next steps for additional research and stakeholder engagement.

If interested, City staff recommends a limited scope than refines the model with particular attention given to reducing flood risk by establishing higher standards of construction that is more resilient to storm surge, mitigates for service and infrastructure needs during and immediately following a major storm event, and enables safe re-occupation as quickly as possible following an evacuation. These needs would be considered in consultation with the City's Construction Services and Permitting staff and Certified Floodplain Manager, and City and County Emergency Management staff.

ATTACHMENT: COASTAL HIGH HAZARD MAP

Coastal High Hazard Area with Flood Hazard Zones



Data Source: Pinellas County GIS, FEMA

ATTACHMENT: NORFOLK RESILIENCY QUOTIENT

CITY OF NORFOLK, VA
RESILIENCE QUOTIENT

5.12.1. PURPOSE

The City of Norfolk is committed to be the coastal community of the future, with the capacity to endure and quickly recover from climatic and environmental shocks and stresses and bounce back quickly and stronger. All proposed development shall be reviewed to identify how it will enhance resilience for both the development specifically and the city generally. This section is intended to ensure development practices that promote resiliency in the following ways:

A. Reduce risks from flooding;
B. Conserve energy;
C. Promote the use of alternative energy;
D. Conserve water resources;
E. Protect water quality;
F. Manager stormwater;
G. Support walkable, mixed-use development in appropriate places;
H. Support multiple modes of mobility;
I. Promote a healthy landscape;
J. Support urban agriculture; and
K. Promote healthy and safe lifestyles

5.12.2. APPLICABILITY

Unless exempted by this section, all development shall comply with the resilience quotient standards of this section.

A. EXEMPTED DEVELOPMENT

The following development is exempted from the standards of this section:

(1) New buildings or redevelopment that have achieved or will achieve LEED requirements necessary to receive certification from the U.S. Green Building Council at the gold level or above;

(2) Renovation or rehabilitation of a building constructed prior to March 1, 2018 when the cost of the work is less than 50 percent of the appraised value of the development prior to the renovation or rehabilitation; and

(3) Expansion of a building constructed prior to March 1, 2018 whose expansion is less than 50 percent of the gross floor area of the building.

(4) Historic or architecturally significant buildings which meet at least one of the following criteria:

(a) Individually listed on the US Department of the Interior's National Register of Historic Places; or
(b) Individually listed in the Virginia Landmarks Register; or
(c) Noted as a contributing structure in a district listed within the US Department of the Interior's National Register of Historic Places or the Virginia Landmarks Register or a local historic district designated in accordance with this Ordinance; or

(d) Designated as a Norfolk Historic Landmark in accordance with Section 3.9.20, HL: Historic Landmark Designation.

5.12.3. TIMING OF REVIEW

Review for compliance with the standards of this section shall occur during review of a development application for either a conditional rezoning (see Section 2.4.4, Conditional Rezoning), planned development (see Section 2.4.5, Planned Development District), conditional use (see Section 2.4.8, Conditional Use Permit), site plan (see Section 2.4.18, Major Site Plan, or Section 2.4.19, Minor Site Plan), or Zoning Certificate (see Section 2.4.14, Zoning Certificate), as appropriate.

A. GENERALLY

Unless an alternative option is specified below, all new development and redevelopment to which the resilience quotient applies shall undergo site plan review during which the following conditions shall be reviewed and addressed:

(1) Reducing risks from flooding;
(2) Managing stormwater;
(3) Promoting energy resilience including the use of alternative energy;
(4) Conserving water resources and protecting water quality;
(5) Supporting multiple modes of mobility, specifically including walkability and bikeability;
(6) Developing in a manner that promotes healthy and safe environments and lifestyles; and
(7) Providing inclusionary dwelling units within mixed-income residential or mixed-use developments.

B. DOCUMENTATION REQUIRED

Applicants shall provide documentation of techniques that will be utilized to satisfy the requirements of this section at the time of submittal of a development application. Documentation for items that may not be visually verified as part of an inspection may be provided in the form of invoices, receipts, or delivery confirmation for the items in question.

C. INSTALLATION AND MAINTENANCE OF RESILIENCE QUOTIENT DEVELOPMENT ACTIVITIES REQUIRED

All Resilient Development Activities approved as a part of a development shall be installed, maintained and perpetuated. Failure to do so shall be a violation of this Ordinance and subject to the remedies and penalties prescribed in Article 7, Enforcement.

D. DETERMINATION OF COMPLIANCE

The ZA shall determine whether the Resilient Development Activities proposed meet the requirements of this Ordinance. In carrying out this responsibility, the ZA may seek advice and counsel from other City staff and outside subject matter experts prior to issuing a determination. To the extent practicable, all determinations shall be rendered in writing stating the reasons therefor.

5.12.5. RESILIENCE QUOTIENT COMPLIANCE FOR SINGLE FAMILY DEVELOPMENT

A. APPLICABILITY

Any proposed development that includes only single family detached dwellings may elect to comply with the resilience quotient standards for single family development in this subsection in lieu of the site plan review process established in Section 5.12.4, Compliance with Resilience Quotient Standards, above.

(1) Risk Reduction
The lowest habitable floor and all significant electrical and mechanical equipment shall be elevated at least 16 inches above the highest adjacent grade unless a greater elevation is required by the provisions of the FPCH-O district.

(2) Stormwater Management
Roof drainage shall be intercepted and detained on site within a system providing no less than 200 gallons of total storage capacity; these requirements shall be memorialized in an agreement in lieu of a plan for stormwater.

(3) Energy Resilience
The electrical systems of the dwelling shall be designed with pre-installed wiring and connections to allow use of a generator during electricity outages and/or connection of solar, wind, or other locally-generated electricity source.

The ZA, for good cause shown, may authorize in writing minor deviations from the above requirements that achieve the same resilience goals to an equal or greater extent.

5.12.6. RESILIENCE QUOTIENT COMPLIANCE FOR MULTIPLE DWELLING UNIT RESIDENTIAL DEVELOPMENT

A. APPLICABILITY

The following types of development shall comply with the resilience quotient standards of this subsection:

(1) Any proposed multi-family residential development other than one or two single family dwellings not part of a common plan of development; or

(2) Any proposed development that includes one or more dwelling units as part of a mixed-use development. In this case, the standards of this subsection shall apply only to the residential portion of the development.

B. GENERALLY

Any multi-family residential development shall fully address all of the factors in Section 5.12.4, Compliance with Resilience Quotient Standards, during site plan review and shall comply with the following standards in so doing:

(1) The lowest habitable floor and all significant electrical and mechanical equipment shall be elevated at least 16 inches above the highest adjacent grade unless a greater elevation is required by the provisions of the FPCH-O district.

(2) 100% of the drainage from impervious surfaces on the site shall be captured and retained on site with sufficient storage to keep the first 1.25 inches of rainwater from an individual rain event on site without discharging onto neighboring properties or rights-of-way unless a regional stormwater management system is available to the development and the specific discharges into it have been approved by the Director of Public Works.

C. ALTERNATIVE MINIMUM REQUIREMENTS

Any multiple dwelling unit residential development may elect to comply with the resilience quotient standards for residential development in this subsection in lieu of the portion of the site plan review process established in Section 5.12.4, Compliance with Resilience Quotient Standards, above. The point system provides options within each of three components and each development shall achieve a minimum number of points from the menu of options shown in Table 5.12.6, Resilient Point System for Residential Development, based on the number of dwelling units within the development as shown below.

(1) 1 to 5 units: 4 points total, no less than 1 point per component.
(2) 6 to 29 units: 5 points total, no less than 1.5 points per component.
(3) 30 to 89 units: 6 points total, no less than 1.5 points per component.
(4) 90 to 199 units: 8 points total, no less than 2 points per component.
(5) 200 or more units: 10 points total, no less than 2 points per component.

Any actions taken to meet the general requirements of Section 5.12.6.B for which points are available shall be included when tabulating the number of points achieved within each component.

TABLE 5.12.6: RESILIENT POINT SYSTEM FOR RESIDENTIAL DEVELOPMENT	
Resilient Development Activity	**Points Earned**
Component 1: Risk Reduction	
Construct building to meet 110-mile wind load design requirements of the VUSBC	2.00
Elevate the ground story finished floor and all significant electrical and mechanical equipment no less than 3 feet above highest adjacent grade	1.00, plus 0.50 per ft. above 3 ft.
Construct an impact-resistant (hail, tree damage) roof	0.50
Install impact (hurricane or wind) resistant windows	0.50
Install operable storm shutters	0.50
Establish operating procedures for how the project will handle loss of off-site or grid power, transition to a backup source of power, and transition back to normal operation	0.50
Component 2: Stormwater Management	
Install a green roof on at least 50 percent of the total roof area (25 percent for renovated buildings) and only plant materials permitted in Section 5.2, Landscaping Standards	2.00
Install a green roof on at least 25 percent of the total roof area and only plant materials permitted in Section 5.2, Landscaping Standards	1.00
Provide rain gardens, street-side swales, soil and turf management or other appropriate storm water infiltration system(s) to capture and infiltrate a minimum of 25 percent of site-generated stormwater	1.00
Use pervious or grass paving systems on at least 50% of parking lot and driveway area in the development	1.00
Provide a fenced, centrally-located community garden space (which may be located as a rooftop garden) for residents and for urban gardening purposes at a ratio of 50 square feet per residential dwelling unit	1.00
Retain at least 20 percent of existing pre-development natural, non-exotic vegetation	0.75
Provide a percentage of open space greater than that required in Table 5.5.4(A), Required Open Space Set-Asides	0.50 per additional 5% preserved
For new tree plantings, enhance tree pits with specially engineered soils and native plants to absorb and filter runoff	0.25
Preserve large, non-exotic trees on site (large tree defined as 20 feet or greater in height and 24 inches or greater DBH)	0.10 per tree preserved
Component 3: Energy Resilience	
Generate no less than 75% of the electricity expected to be used by the development from on-site solar and/or wind energy sources	3.00

TABLE 5.12.6: RESILIENT POINT SYSTEM FOR RESIDENTIAL DEVELOPMENT	
Generate no less than 50% of the electricity expected to be used by the development from on-site solar and/or wind energy sources	2.00
Install a cool roof on at least 50 percent of the total roof area of the development	1.50
Generat no less than 25% of the electricity expected to be used by the development from on-site solar and/or wind energy sources	1.00
Generate no less than 25% of the electricity needed expected to be used by the development from on-site solar and/or wind energy sources	1.00
Install a geothermal energy heating & cooling system serving all residential units and common areas	1.00
Install a conditioned crawlspace under each primary structure	1.00
Install green walls on a minimum of 50 percent of the primary building's walls	1.00
Adopt an energy efficient site lighting budget (based on the International Dark Sky Association's designations for allowable lumens per square foot of specified use or type of hardscape)	1.00
Equip the project with at least one alternative, independent source of electricity supply so that the project is capable of fully operating if a primary source of power experiences interruption	1.00
Pre-wire all dwelling units to accept power provided by on-site solar panels and/or wind turbines	1.00
Install a 20+ SEER HVAC system in each dwelling unit	1.00
Re-use or repurpose an historic building that is listed on a national, state, or local register, or at least 75% (based on surface area) of existing historic structures	1.00
Install a cool roof on at least 25 percent of the total roof area of the development	0.75
Install a 16-19 SEER HVAC system in each dwelling unit	0.50
Install multi-room mini-split heating and cooling systems in each dwelling unit	0.50
Install a solar or tank-less water heating system in each dwelling unit	0.50
Install no fewer than 2 operable windows on no fewer than two exterior walls in each dwelling unit	0.50
Install a generator for power generation to keep critical functions (refrigerator, freezer, basic lighting, healthcare appliances, etc.) working in the event of power failure	0.50
Provide shade, open-grid pervious pavement, or solar-reflective paving on 50% of total area of roads, sidewalks, and parking areas in the development	0.50
Provide electric vehicle (EV) level 3 charging stations, located in a parking structure or off-street parking lot, that are made available for use by residents	0.50 for every two stations
Plant vegetation so that 50% of the eastern and western building facades are shaded at noontime on the summer solstice within 10 years of planting	0.50
Use vegetation or vegetated structures to shade each dwelling's HVAC unit	0.25

TABLE 5.12.6: RESILIENT POINT SYSTEM FOR RESIDENTIAL DEVELOPMENT	
Automatically turn off all outdoor signage and lighting between the hours of 10:00 p.m. and 7:00 a.m. except for security lighting	0.25
Provide a minimum of five percent of required automobile parking spaces that are signed and reserved for hybrid/electric/low energy vehicles in preferred locations near primary building entrances	0.25
Provide electric vehicle (EV) level 2 charging stations, located in a parking structure or off-street parking lot, that are made available for use by residents	0.25 for every two stations
Re-use or repurpose an existing non-historic building, or at least 75% (based on surface area) of existing structures	0.25
Install highly-reflective blinds/shades to reduce solar gain	0.25

5.12.7. RESILIENCE QUOTIENT COMPLIANCE FOR NON-RESIDENTIAL DEVELOPMENT

A. APPLICABILITY

Any proposed development that includes non-residential development. In the case of mixed-use development, the standards of this subsection shall only apply to the non-residential portion of the development.

B. GENERALLY

Any non-residential development to which the resilience quotient is applicable shall fully address all of the factors in Section 5.12.4, Compliance with Resilience Quotient Standards, during site plan review and shall comply with the following standards in so doing:

(1) The lowest habitable floor and all significant electrical and mechanical equipment shall be elevated at least 8 inches above the highest adjacent grade unless a greater elevation is required by the provisions of the FPCH-O district.

(2) 100% of the drainage from impervious surfaces on the site shall be captured and retained on site with sufficient storage to keep the first 1.25 inches of rainwater from an individual rain event on site without discharging onto neighboring properties or rights-of-way unless a regional stormwater management system is available to the development and the specific discharges into it have been approved by the Director of Public Works.

C. ALTERNATIVE MINIMUM REQUIREMENTS

Any non-residential development may elect to comply with the resilience quotient standards for non-residential development in this subsection in lieu of the portion of the site plan review process established in Section 5.12.4, Compliance with Resilience Quotient Standards, above. The point system provides options within each of three components and each development shall achieve a minimum number of points from the menu of options shown in Table 5.12.7.

(1) Less than 10,000 sq. ft.: 3 points total, no less than 1 point per component.
(2) 10,000 to 25,000 sq. ft.: 4 points total, no less than 1.5 points per component.
(3) 25,000 to 50,000 sq. ft.: 6 points total, no less than 1.5 points per component.
(4) Above 50,000 sq. ft.: 10 points total, no less than 2 points per component.

Any actions taken to meet the general requirements of Section 5.12.7.B, Generally, for which points are available shall be included when tabulating the number of points achieved within each component.

TABLE 5.12.7.: RESILIENT POINT SYSTEM FOR NON-RESIDENTIAL DEVELOPMENT	
Resilient Development Activity	**Points Earned**
Component 1: Risk Reduction	
Construct building to meet 110-mile wind load design requirements of the VUSBC	2.00
Equip the project with at least one alternative, independent source of electricity supply so that the project is fully capable of operating if a primary source of power experiences an interruption	1.50
If the project involves a critical facility that is intended to remain operational in the event of a flood, or whose function is critical for post-flood recovery, design the facility to be protected and operable at the water levels represented by a 0.2% annual chance (500-year) flood	1.00
Elevate the ground story finished floor and all significant electrical and mechanical equipment no less than 3 feet above highest adjacent grade or to an elevation of 11 (NAVD '88)	1.00, plus 0.50 per ft. above 3 ft.
Install a generator for power generation in the event of power failure sufficient to keep critical operations functional	0.50
Establish operating procedures for how the project will handle loss of off-site or grid power, transition to a backup source of power, and transition back to normal operation	0.50
Component 2: Stormwater Management	
Install a green roof on at least 50 percent of the total roof area (25 percent for renovated buildings) and only plant materials permitted in Section 5.2, Landscaping Standards	2.00
Install a green roof on at least 25 percent of the total roof area and only plant materials permitted in Section 5.2, Landscaping Standards	1.00
Provide rain gardens, street-side swales, turf and soil management or other appropriate storm water infiltration system(s) to capture and infiltrate a minimum of 25 percent of site generated stormwater	1.00
Use pervious pavement on at least 50% of parking lot and driveway area in development	1.00

TABLE 5.12.7.: RESILIENT POINT SYSTEM FOR NON-RESIDENTIAL DEVELOPMENT	
Retain at least 20 percent of existing pre-development natural, non-exotic vegetation	0.75
Provide a percentage of open space greater than that required in Table 5.5.4.A, Required Open Space Set-Asides	0.50 per additional 5% preserved
For new tree plantings, enhance tree pits with specially engineered soils and native plants to absorb and filter runoff	0.25
Preserve large, non-exotic trees on site (large tree defined as 20 feet or greater in height and 24 inches or greater DBH)	0.10 per tree preserved
Component 3: Energy Resilience	
Generate no less than 75% of the electricity expected to be used by the development from solar and/or wind energy sources	3.00
Generate no less than 50% of the electricity expected to be used by the development from solar and/or wind energy sources	2.00
Install a cool roof on at least 50 percent of the total roof area of the development	1.50
Generate no less than 25% of the electricity expected to be used by the development from solar and/or wind energy sources	1.00
Install a geothermal heating and cooling system serving all parts of the project	1.00
Install a conditioned crawlspace under each primary structure	1.00
Install green walls on a minimum of 50 percent of the primary building's walls	1.00
Install 20+ SEER HVAC systems throughout the project	1.00
Re-use or repurpose an historic building that is listed on a national, state, or local register, or at least 75% (based on surface area) of existing historic structures	1.00
Preserve or provide trees on the site which will within 10 years growing time will provide tree canopy over no less than 50% of the total site	1.00
Install a cool roof on at least 25 percent of the total roof area of the development	0.75
Install 16-19 SEER HVAC systems throughout the project	0.50
Install mini-split heating and cooling systems throughout the project	0.50
Install solar or tank-less water heating systems throughout	0.50
Provide shade, open-grid pervious pavement, or solar-reflective paving on 50% of total area of roads, sidewalks, and parking areas in the development	0.50
Provide electric vehicle (EV) level 3 charging stations, located in a parking structure or off-street parking lot, that are made available for use by users of the project	0.50 for every two stations
Plant vegetation so that 50% of the eastern and western building facades are shaded at noontime on the summer solstice within 10 years of planting	0.50
Orient buildings within 20 percent of east-west axis for maximum solar exposure	0.50

TABLE 5.12.7.: RESILIENT POINT SYSTEM FOR NON-RESIDENTIAL DEVELOPMENT	
Provide operable windows on at least 2 façades on each floor which provide flow-through ventilation	0.25
Use vegetation or vegetated structures to shade HVAC units	0.25
Automatically turn off all outdoor signage and lighting between the hours of 10:00 p.m. and 7:00 a.m. except for security lighting	0.25
Provide a minimum of five percent of required automobile parking spaces that are signed and reserved for carpools, hybrid, electric, and low energy vehicles in preferred locations near primary building entrances	0.25
Provide electric vehicle (EV) level 2 charging stations, located in a parking structure or off-street parking lot, that are made available for use by users of the project	0.25 for every two stations
Re-use or repurpose an existing non-historic building, or at least 75% (based on surface area) of existing structures	0.25
Install highly-reflective blinds/shades to reduce solar gain	0.25
Provide skylights in an amount necessary to ensure natural lighting is provided to at least 25 percent of the habitable rooms in the structure	0.25, plus

5.12.8. MINOR DEVIATION FROM RESILIENCE QUOTIENT COMPLIANCE

A. APPLICABILITY

Any proposed development subject to the resilience quotient provisions and electing to utilize the point system in lieu of having the resilience quotient be fully reviewed and implemented as a part of the site plan review process may propose minor deviations or alternative Resilient Development Activities for consideration.

B. ZONING ADMINISTRATOR AUTHORITY

(1) The ZA, for good cause shown, may authorize in writing minor deviations from the resilient quotient requirements specified in the sections above provided that those resilience goals are still achieved to an equal or greater extent.

(2) Any proposed deviation determined by the ZA to be more than a minor deviation shall not be approved by the ZA and the development shall, instead, utilize the site plan review process for a complete review of the resilience quotient factors contained in Section 5.12.4, Compliance with Resilience Quotient Standards.

(3) The ZA shall review any alternative Resilient Development Activities that may be proposed and, if determined in writing that the alternative Resilient Development Activities will achieve the same resilience goals to an equal or greater extent, the ZA will assign point value(s) to the alternative Activities. The ZA shall maintain an online log of all approved alternative Resilient Development Activities and the point value assigned.

ATTACHMENT B: PROPOSED COMP PLAN AND LDR TEXT AMENDMENTS

City of St. Petersburg
DRAFT Comprehensive Plan Text Amendment

Policy LU7.1 in Chapter 3, Future Land Use Element, is hereby amended to read as follows:

The City shall consider flood potential, sea level rise and hurricane hazards when processing map amendment requests in the Coastal High Hazard ("CHHA"). The City shall deny any request to amend the Future Land Use Map for property within the CHHA that results in an increase of residential density, except that the City may, at its sole and absolute discretion, consider approving such amendment based upon a balancing of the following criteria, as are determined applicable and significant to the subject amendment.

A. Nothing in this policy shall be construed as superseding or otherwise modifying the local plan amendment requirement of Section 163.3178(8), Florida Statutes, as follows:

   1. The adopted level of service for out-of-county hurricane evacuation is maintained for a category 5 storm event as measured on the Saffir-Simpson scale: or

   2. A 12-hour evacuation time to shelter is maintained for a category 5 storm event as measured on the Saffir-Simpson scale and shelter space reasonably expected to accommodate the residents of the development contemplated by a proposed comprehensive plan amendment is available; or

   3. Appropriate mitigation is provided, no later than the time of development approval, that will satisfy subparagraph A or subparagraph B. Appropriate mitigation shall include, without limitation, payment of money, contribution of land, and construction of hurricane shelters and transportation facilities. Required mitigation may not exceed the amount required for a developer to accommodate impacts reasonably attributable to development. The City and a developer shall enter into a binding agreement to memorialize the mitigation plan.

B. Access to Emergency Shelter Space and Evacuation Routes – The uses associated with the requested amendment will have access to adequate emergency shelter space as well as evacuation routes with adequate capacities and evacuation clearance times.

C. Utilization of Existing and Planned infrastructure – The requested amendment will result in the utilization of existing infrastructure, as opposed to requiring the expenditure of public funds for the construction of new, unplanned infrastructure with the potential to be damaged by coastal storms.

D. Utilization of Existing Disturbed Areas – The requested amendment will result in the utilization of existing disturbed areas as opposed to natural areas that buffer existing development for coastal storms.

E. Maintenance of Scenic Qualities and Improvement of Public Access to Water – The requested amendment will result in the maintenance of scenic qualities, and the improvement of public access, to the Gulf of Mexico, inland waterways (such as Boca Ciega Bay), and Tampa Bay.

F. Water Dependent Use – The requested amendment is for uses which are water dependent.

G. Part of Community Redevelopment Plan - The requested amendment is included in a Community Redevelopment Plan, as defined by Florida Statutes for a downtown or other designated redevelopment areas.

H. Overall Reduction of Density or Intensity – The requested amendment would result in an increase in density or intensity on a single parcel, in concert with corollary amendments which result in the overall reduction of development density or intensity in the surrounding CHHA.

I. Clustering of Uses – The requested amendment within the CHHA provides for the clustering of uses on a portion of the site outside the CHHA.

J. Integral Part of Comprehensive Planning Process – The requested amendment has been initiated by the local government as an integral part of its comprehensive planning process, consistent with the local government comprehensive plan.

K. Location within an Activity Center or Target Employment Center – The requested amendment is within an existing or proposed Activity Center or Target Employment Center

L. Implements the Goals and Policies of the Integrated Sustainability Action Plan (ISAP), Complete Streets and Health in All Policies (HIAP) – The requested amendment incorporates design elements and programs which further the sustainability and resiliency goals and policies of the ISAP, Complete Streets and HIAP such as LEED or Florida Green Building certification, energy efficiency and reduction, solar infrastructure, Electric Vehicle charging stations, recreational amendments, on-site community garden, pet amenities, recycling program and enhancement of natural systems,

M. Reduction of Storm Vulnerable Structures – The requested amendment will result in removal of storm vulnerable structures including but not limited to mobile homes, trailers and residences constructed prior to establishment of FEMA elevation requirements.

Policy LU7.5 in Chapter 3, Future Land Use Element, is hereby deleted as follows:

~~When establishing Future Land Use Plan designations through a Comprehensive Plan amendment for annexed properties located within the Coastal High Hazard Area there shall be no net increase in residential density as compared to the Future Land Use Plan of Pinellas County designation(s) existing at the time of annexation of a property without prior written approval of the state Land planning Agency and Pinellas County.~~

Note: Criteria A-J reflect criteria currently found in the Countywide Rules and Plan; Criteria K-M are specific to St. Petersburg's proposed amendment

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City of St. Petersburg
DRAFT CHHA LDR Code Amendment

SECTION 16.30.040. - DEVELOPMENT IN THE COASTAL HIGH HAZARD AREA (CHHA) ~~AND THE HURRICANE VULNERABILITY ZONE OVERLAY[9]~~

16.30.040.1. - Development regulations.

A. The Coastal High Hazard Area (CHHA) is the area at or below the elevation of the Category 1 storm surge line as established by the sea, lake and overland surges from hurricanes (SLOSH) computerized storm surge model. The CHHA ~~and the hurricane vulnerability zone are~~ is generally shown on the map in the coastal management element of the Comprehensive Plan. Development within these areas shall be consistent with the goals, objectives and policies of the Comprehensive Plan.

B. New construction of hospitals, nursing homes and assisted living facilities is prohibited in ~~Hurricane Evacuation Level A Zones~~ the CHHA. ~~The construction or expansion of these uses in Hurricane Evacuation Level B Zones is discouraged.~~

C. New mobile home parks are prohibited in ~~Evacuation Level A Zone~~ the CHHA.

D. Solid waste and commercial hazardous waste management facilities including regional storage, treatment or transfer sites are prohibited in the ~~hurricane vulnerability zone~~ CHHA.

E. New construction of residential multifamily dwelling units resulting from a density/intensity increase from a plan amendment after *adoption date* shall provide for hurricane shelter mitigation. Such mitigation for the impacts attributable to the development shall include one or a combination of the following: payment of a hurricane mitigation shelter fee, contribution of land, or construction of hurricane shelters. A hurricane shelter mitigation fee shall be provided prior to issuance of the certificate of occupancy for the dwelling unit(s), and calculated in accordance with the following formula: TBD. If the property owner elects to contribute land or construct hurricane shelter space, a binding agreement shall be executed regarding such mitigation prior to issuance of a building permit for construction of the residential units.

F. Construction, expansion or substantial renovations of hotel uses shall provide a Hurricane Evacuation and Closure Plan that complies with all Pinellas County and City of St. Petersburg hurricane evacuation plans and procedures to ensure orderly evacuation of guests and visitors pursuant to the Pinellas County Code, Chapter 34, Article III.

G. New construction of multi-family residential dwelling units shall provide a Hurricane Evacuation and Re-entry Plan requiring mandatory evacuation in accordance with Emergency Management Directives. The plan shall include operating procedures for how the project will handle loss of off-site or grid power, transition to a backup source of power, and transition back to normal operation. Such requirements shall be incorporated into a legally binding document such as lease documents, condominium rules, homeowner rules, or other such method approved by the POD.

16.30.040.2. – CHHA Design Standards.

A. Purpose: The City of St. Petersburg is committed to improving the capacity to endure and quickly recover from coastal hazards. This section is intended to ensure that developments are more resilient to storm surge and sea level rise, mitigate for service and infrastructure needs during and immediately following major storm events, and enable safe re-occupation following an evacuation or weather event.

B. New construction of multi-family residential dwelling units in the CHHA shall achieve LEED Gold certification or higher, or shall comply with the following CHHA Design Standards. The point system provides options within two components and each development shall achieve a minimum number of points from the menu of options shown in the following table, based on the number of dwelling units within the development as shown below.

(1) 3 to 5 units: X points total, no less than X point per component.
(2) 6 to 29 units: X points total, no less than X points per component.

(3) 30 to 89 units: X points total, no less than X points per component.
(4) 90 to 199 units: X points total, no less than X points per component.
(5) 200 or more units: X points total, no less than X points per component.

TABLE XX: POINT SYSTEM FOR MULTI-FAMILY RESIDENTIAL DEVELOPMENT	
Development Activity	**Points Earned**
Component 1: Risk Reduction	
Construct building to meet design requirements of next higher classification of Risk Category, per ASCE 7.	X
Construct building to meet Miami-Dade High Velocity Hurricane Zone (HVHZ) standards.	
Elevate finished floor above minimum 2 feet required (per ASCE 24 & Floodplain regulations)	X per each additional foot of elevation up to 6 feet
Elevate mechanical systems above minimum 2 feet required (per ASCE 24 & Floodplain regulations)	X per each additional foot of elevation up to 6 feet
Construct an impact-resistant or fully adhered roof with parapets located every 3-feet	X
Protect coastal property with a living shoreline (LSL) per the US Army Corps of Engineers (USACE) Living Shoreline Permit Standard. *(LSLs use natural materials to stabilize the shoreline and maintain valuable fish and wildlife habitat; LSLs utilize a variety of materials such as wetland plants, oyster shell, coir fiber logs, sand, wood, and native rock.)*	X
Design building located in the Coastal A Flood Zone to Flood Zone V	X
Component 2: Recovery	
Generate a percentage of the electricity expected to be used by the development from on-site solar and/or wind energy sources	X for at least 25% X for 26-49% X for 50-74% X for 75-100%
On-site battery storage of solar generated power to keep critical functions working in the event of power failure	X for Life Safety Features; X for 100% of Normal Load of Common Areas; X for Lighting & Refrigeration of Units; X HVAC in Units; X for 80-100% Normal Load of all buildings
Install a cool/high-reflectance roof (coating that is white or has special reflective pigments that reflect sunlight) on at least 75% of the total roof area of the development, with a minimum SRI (solar reflectance index value) of 39 and in accordance with the standards set by the HVWZ	X
Install a geothermal energy heating & cooling system that serves as least 75% of the project's residential units	X
Pre-wire all units to accept power provided by on-site solar panels and/or wind turbines	X
Install a 20+ SEER HVAC system in each dwelling unit	X
Install a 16-19 SEER HVAC system in each dwelling unit	X
Install efficient, zone-controlled heating and cooling systems in each residential unit (mini-splits, or smart thermostats, etc.)	X
Install a solar or tank-less water heating system in each residential unit	X
Install no fewer than 2 operable windows on no fewer than two exterior walls in each unit	X
Install a generator for power generation to keep critical functions working in the event of power failure	X for Life Safety Features; X for 100% of Normal Load of Common

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	Areas; X for Lighting & Refrigeration of Units; X HVAC in Units; X for 80-100% Normal Load of all buildings
Install highly-reflective blinds/shades, low-E window film/tint, external/structural shade to reduce solar gain	X
Provide for a Resilient Common Area with back-up power source to provide air-conditioning and power, food, water and emergency supplies to support residents after a storm event	X
Provide for a Neighborhood Resilience Hub to provide on-site and neighborhood residents point of distribution of services before and after storm events	X
Contribute to the Emergency Shelter Fund	X points per $1,000 up to X max.

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Updated July 10, 2019

ATTACHMENT C: ULI TECHNICAL ASSISTANCE PANEL REPORT

Urban Land Institute
Tampa Bay

ULI TECHNICAL ASSISTANCE PANEL
CITY OF ST. PETERSBURG

ZONING STANDARDS FOR MULTI-FAMILY DEVELOPMENT IN THE COASTAL HIGH HAZARD AREA

June 18 + June 19, 2019

INTRODUCTION

About ULI

The Urban Land Institute (ULI) is a not-for-profit education and research institute supported by its members. Its mission is to provide leadership in the responsible use of land and in creating and sustaining thriving communities worldwide. Established in 1936, ULI has more than 45,000 members internationally representing all aspects of land use and development disciplines. The Tampa Bay District Council has more than 600 members in 7 counties including Pinellas, Hillsborough, Pasco, Manatee, Sarasota, Hernandez and Citrus.

About ULI Technical Assistance Panels (TAPs)

In keeping with the Urban Land Institute mission, Technical Assistance Panels (TAPs) are convened to provide planning and development assistance to public officials and local stakeholders of communities, nonprofit organizations and private sector representatives who have requested assistance in addressing their land use challenges. A group of diverse professionals representing the full spectrum of land use and real estate disciplines typically spend two days visiting and analyzing the built environments, identifying specific planning and development issues, and formulating realistic and actionable recommendations to move initiatives forward. Panel members are not compensated for their time, but they are reimbursed for out-of-pocket expenses, such as overnight lodging and transportation to attend the TAP.

Urban Land Institute
Tampa Bay

ULI TEAM

ULI Tampa Bay assembled a diverse mix of regional and national ULI member leaders:

- Jim Cloar, Downtown Development Strategies (TAP Chair)
- Chris Ahern, Applied Technology & Management
- Michael Antinelli, Brizaga, Inc
- Leigh Fletcher, Fletcher & Fischer
- Nick Herring, Framework Group
- Manuela Powidayko, City of New York
- Whit Remer, Insurance Institute for Business & Home Safety
- Kristine Retetagos, KAST Construction
- Taryn Sabia, Florida Center for Community Design and Research, USF
- Jeremy Sharp, City of Norfolk
- Siobhan O'Kane, ULI Tampa Bay
- Jenna Wylie, ULI Tampa Bay
- Maggie Winter, Florida Center for Community Design and Research, USF

PARTNER

- City of St. Petersburg

SPONSOR

- Kresge Foundation
- Urban Land Institute (ULI) Urban Resilience Program

BACKGROUND

ULI Tampa Bay provided technical assistance to the City of St. Petersburg on zoning standards for the City of St. Petersburg's Comprehensive Plan and Land Development Regulations in the Coastal High Hazard Area (CHHA).

The 2016 CHHA area within the city has more than doubled in size due to an update to the computer model that determines vulnerable area. Developed by the National Weather Service, the SLOSH model estimates storm surge heights resulting from historical, hypothetical, or predicted hurricanes by taking into account the atmospheric pressure, size, forward speed, and track data. These parameters are used to create a model of the wind field which drives the storm surge. The CHHA now covers a total of 16,328 acres or 41% of the City of St. Petersburg, an increase from 7,705 acres identified in the 2010 map. See page 45.

Locations now within the CHHA include some high-profile areas identified as important for economic development, including the Innovation District, the USF St. Petersburg Campus, Metropointe Commerce Park, Carillon Office Park, Jabil Headquarters Campus, and the Skyway Marina District.

Areas included in the CHHA are governed both by state law and the policies adopted to administer those provisions in local government comprehensive plans. To reduce loss of life and property caused by natural disasters, the State of Florida requires local governments to identify the CHHA and plan accordingly with the emphasis on reducing vulnerability to hurricane impacts.

The city wants to increase resiliency and reduce flood risk within the CHHA by establishing elevated design standards in the land development code for multifamily residential development in the CHHA in order to create projects that are more resilient to storm surge, mitigate for service and infrastructure needs during and immediately following a major storm event, enable safe re-occupation as quickly as possible following an evacuation, and increase the likelihood that there is something to come back to.

The city is considering elevating design standards for multi-family development through the introduction of a point system within the City's Land Development Code (LDR) that would enable developers the opportunity to choose from a menu of 'resilience measures' that promote flood risk reduction, stormwater management, and energy resilience, among other practices.

This point system would apply to any new multi-family development in the CHHA. The city is interested in the City of Norfolk, Virginia's recent adoption of a similar code.

Given that the CHHA is now 41% of the city, the city is being thoughtful about balancing goals and objectives for addressing resiliency, emergency management, economic development, workforce housing, community and growth management. As such, the city is also reviewing code and comprehensive plan amendments pertaining to requests for an increase in density in the CHAA. Under current policy, requests for increased density are <u>not allowed</u> in the CHHA, per Land Use Policy LU7.1. In other words, any requests to amend current zoning to allow for a greater number of units is currently not permitted.

Under the City's current proposed LDR and Comprehensive Plan amendments, meeting the thresholds of the proposed 'resilient point system' would allow a developer to apply for additional density. In addition to satisfying the points requirement, these applications would also have to be evaluated against balancing criteria that would be added to the City's Comprehensive Plan.

These balancing criteria, outlined below in brief, are already found in the Countywide Plan Rules, administered by Forward Pinellas, but would be adopted at the local level. The City of St. Petersburg proposes to add an additional three, shown in items 10 through 12.

1. *Access to Emergency Shelter Space and Evacuation Routes.*
2. *Utilization of Existing and Planned infrastructure.*
3. *Utilization of Existing Disturbed Areas.*
4. *Maintenance of Scenic Qualities and Improvement of Public Access to Water.*
5. *Water Dependent Use.*
6. *Part of Community Redevelopment Plan.*
7. *Overall Reduction of Density or Intensity.*
8. *Clustering of Uses.*
9. *Integral Part of Comprehensive Planning Process.*
10. ***Location within an Activity Center or Target Employment Center.***
11. ***Furthers the Goals and Policies of the Integrated Sustainability Action Plan (ISAP).***
12. ***Reduction of Storm Vulnerable Structures.***

Furthermore, for project proposals that would increase density in the CHHA, the city proposes to require multifamily developers to fiscally mitigate the increased demand for emergency shelter capacity that the project would trigger by increasing the population density of the CHHA. Developers would be required to pay a "to be determined" Shelter Mitigation Fee proportional to the county's cost burden for providing additional shelter space.

It should be noted that any requests for increases in density via an amendment to the City's Future Land Use Map and/or Official Zoning Map, whether they are City-initiated or private applications, would still be subject to the City's normal application process, including public notice, CPPC and City Council public hearings, and state, regional and county review. All applications are reviewed and considered on a case-by-case basis.

TAP SCOPE

1. **Evaluate the draft zoning standard and comprehensive plan amendment and:**

   a. Identify additional "requirements" that multifamily residential projects must include when constructing within the CHHA, regardless of an increase in density. *(For example, the City of Norfolk components/categories are Risk Reduction, Stormwater Management, Energy Resilience. Create some categories that are more St. Petersburg-centric.)*
   b. Estimate the costs of the additional requirements.
   c. Assign a "weight" to each requirement and devise a "minimum number of points needed" scorecard (for each component/category).

2. **Provide other recommendations pertaining to the draft CHHA standard and introducing increased density in the CHHA.**

TAP PROCESS

ULI Tampa Bay assembled a team of ULI members who have expertise in resilient construction standards, multi-family development, pre-construction & estimating, planning, engineering, economic development, and land-use law for an intensive two-day workshop. Prior to convening, the ULI team received background information specific to the CHHA and relevant economic development and planning documents. ULI had preliminary meetings with the city team to prepare for the panel and better define the scope of work for the two-day TAP.

Day one of the TAP included a tour of the key locations within the recently expanded CHHA as well as a series of stakeholder interviews. Stakeholders included city staff, business and community leaders, developers, insurance experts and more.

Day two focused on potential strategies and solutions to the issues. Panelists formalized their observations and developed recommendations. At the day's end, the ULI team made an initial public presentation to the team at the city and members of the business and residential community.

Perceptions & Potential

Every ULI Technical Assistance Panel begins with and relies on outreach to get a substantive insider perspective on the subject at hand.

A series of stakeholder meetings were held in order for the ULI team to assess concerns, questions, and ideas regarding proposed changes to the City's land development code and comprehensive plan. Stakeholder groups included members of the development community: practitioners from planning, engineering and architecture, developers, utility companies, insurance, and the Tampa Bay Regional Resiliency Coalition. ULI held additional meetings with city staff, including from emergency management. The following opportunities and constraints emerged from the stakeholder discussions.

What We Heard

Opportunities

- Buildings constructed to a higher standard within the CHHA makes the CHHA more resilient and sets an important example for the wider City.
- Attention to this topic represents an opportunity to focus on preparedness education and outreach.
  - When requiring developers to create "Hurricane Evacuation and Re-Entry Plans" (per Development Regulation G in the draft proposal) be mindful that this is outside of their wheelhouse. The city should work with emergency management to provide examples of best practice and a simple template to provide clarity, make the process easier on developers, and ensure that the plan is appropriate, effective and aligned with the emergency management procedures and goals.
- Opportunity to increase the likelihood that residents have something to return to in the case of a storm.
- Establishing a fund to make capital improvements or providing financial resources to emergency management is a smart solution to achieve the envisioned emergency response plans for the City.
- From an emergency management perspective, there may be value in increasing the number of resilient dwellings that would be under mandatory evacuation. New developments that are designed to both be livable after a hurricane event and be self-sustaining after residents are allowed to return to their homes may reduce the overall dependence on emergency management services.
- New development in the CHHA can mitigate risk by replacing older, more vulnerable structures with a much more resilient building stock. The high standards of current Florida building code ensure that any new building would be inherently more resilient than those built before 2010.
- In general, many of the large institutions in the CHHA, like the hospitals, have a strong need for more workforce housing close to their campuses.
- During emergency situations and storm events, critical facilities such as hospitals provide their own shelter for workers and their families in order to have critical staff

teams nearby and ready to respond. This is made easier if the staff already live nearby, because the ability to make a longer commute to the hospital during a storm event can become very difficult.

- There is the potential to apply this new code to commercial buildings and other uses in the CHHA for a more complete picture of a resilient St. Petersburg.
- Future opportunity to apply this standard city-wide with potential higher standard for the CHHA.
- There is an opportunity to encourage and incentivize the upgrade of existing buildings/redevelopment to be more resilient.
- Living shorelines can be community assets. Refer to Army Corps Nationwide Permit 54 for erosion-prevention projects.
- Consideration for other potential development off-sets, other than increased density. For example, a TDR/density swap within the CHHA with a preservation component that would lead to no net change in the overall density of the CHHA.
- Potential for encouraging new linkages or communal investment in shared systems which relate to multi-family development and future infrastructure.
- The proposed code can unlock opportunities for economic development in the burgeoning Innovation District, etc. because it will provide a pathway to thoughtfully increase density, which is currently not allowed under existing code.
- The ROI for mitigation is strong. A recent analysis of 23 years of federally funded natural hazard mitigation investment suggests that society will ultimately save $6 for every $1 spent on up-front mitigation cost.

Constraints

- There is the possibility of disinvestment in the CHHA because of an increase of cost of development.
- Less development in the high-profile areas of the CHHA could slow city economic development efforts. It could also depress real estate driven tax revenue, a critical funding source for the City's future resilient infrastructure investments.
- The proposed new balancing criteria is limiting and doesn't allow for consideration of applications outside targeted areas.
- The proposed draft code doesn't provide for a great enough range of options or flexibility and can therefore be limiting or render development infeasible.
- There is discontent on behalf of some developers of current projects within the new CHHA boundaries that have already been entitled and planned, but not yet issued permits. They feel they didn't have a chance to accommodate for the proposed point system during due diligence, and that it could unfairly affect the feasibility of projects that are already well into the planning process.
- Mitigation and adaptation techniques and threat measurement technologies are ever evolving. There is concern that the new code and point system may be too rigid to appropriately respond to and give recognition for ongoing innovations in technology and resilience problem solving.
- The proposed point system is building-specific but doesn't necessarily apply easily to a master planned, mixed-use or community scale proposals. Many of these large-

scale developments have resilient systems built in at the community level, not necessarily within individual buildings. At present, the proposed point system doesn't have a way to recognize and allocate points for these types of investments of merit.

- There seems to be a lack of a detailed understanding of the vulnerable populations within the CHHA, which would help to inform a more holistic strategy for this area.
- There is a lack of understanding of how this draft code relates to other city initiatives (Complete Streets, ISAP, Vision 2050).
- Concern that increased density will place more people in harm's way and that there will be an impact of adding additional density on existing shelter deficits.
- A missed opportunity to instead focus/encourage development in less vulnerable areas and utilize coastal land for preservation/mitigation.
- Concern that this elevated standard will exacerbate housing affordability issues.
- Suggestion that the city should provide more "carrots" than sticks to incent resilient building practices. For example, the city could consider a reduction in impact fees as a reward for following the points system.
- Concern that designing the points thresholds based on ranges of the number of dwelling units in a project (per section B *16.30.040.4. -- CHHA Design Standards* in the draft proposal) could lead to unintended consequences. Some stakeholders suggested devising a points threshold calculated on a "per unit basis".

Panel Recommendations

The City of St. Petersburg is working to reconcile risk reduction with future development. Integral to the city's policy decision making is the consideration of and reference to the city's goals, such as community development and safety, the Integrated Sustainability Action Plan (ISAP), workforce housing goals and its 'Health in all Policies' strategy. It is important that city leaders consider how this regulation can be applicable to a balanced, community-wide investment strategy. The city asked the ULI team to weigh in on a specific component of this.

The ULI team evaluated the draft zoning code for an elevated standard for multi-family development in the CHHA, prepared by staff at the City of St. Petersburg. This would introduce a resilience point system for all new multi-family development in the CHHA.

The City of Norfolk has served as a model for the City of St. Petersburg as it explores this resilience point system. The ULI team's recommendations were in part informed by the City of Norfolk's experiences and lessons-learned. These may also be instructive for the City of St. Petersburg as it moves forward.

- Include a range of options and alternatives for development, aligned with resilience goals.
- Be open and adaptive to change as the zoning code is implemented. Continually evaluate and amend, as required.
- Clearly connect the zoning code to a comprehensive strategy and goals for city-wide resiliency.
- Begin and maintain a dialogue with the local development community. Their feedback will be vital in fine-tuning the requirements.
- Track how the code is being implemented on a site-by-site basis. The innovative implementations that developers come up with can provide valuable case studies for future users.
- Be prepared to go "off book". Each site is unique, and the code can't possibly consider every possibility. In these unique circumstances, be prepared to adjust requirements.

More information on the City of Norfolk and the City of New York's experiences can be found beginning on page 36.

Expanded Point System Components

The city's proposed point system would require new development of multi-family structures to incorporate resilience measures from two components/categories– 'Risk Reduction' and 'Recovery'. The intent is to ensure that developments are more resilient to storm surge and enable safe re-occupation following an evacuation or weather event.

The ULI team determined that a system with additional components would better suit the multi-faceted approaches of addressing resiliency and represent a more holistic approach to building resilience and recovering quickly after storm events. These are:

- **Structural Mitigation:** Measures address physical construction, engineering techniques or technology that work to achieve hazard resistance and resilience in structures or systems to reduce or avoid possible impacts of hazards.
- **Energy:** Measures address the ability for buildings to be resource efficient, reduce waste and sustain electricity independently from the grid. They also facilitate the ability for buildings to stay online during weather events. Measures in this category align well with the city's climate and energy goals and further the objectives of the recently adopted Integrated Sustainability Action Plan.
- **Nature-Based Mitigation:** Nature-based measures use natural systems to provide critical services, such as wetlands for flood mitigation or mangroves to reduce the impact of waves, storm surge, and coastal erosion. These can be a cost-effective and flexible approach for disaster risk and water resource management.
- **Recovery:** This component focuses on measures implemented for post-disaster recovery, ensuring that places within the CHHA are intact and habitable after required evacuation events and that buildings are occupiable after residents are allowed to return. This component facilitates the resumption of services within a city.

Additional Pathways to Development

The proposed code amendment currently provides one pathway to development of new multi-family dwelling units in the CHHA. Through the proposed 'point system', developments must achieve a certain threshold of points, determined through the integration of measures outlined in the table.

The ULI team recommends providing additional pathways to development. Importantly, these pathways would still result in resilient building in the CHHA, but would allow more choice and flexibility, as well as help to address other city goals. This recommendation is, in part, informed by the experience of the City of Norfolk, which introduced the point system or 'Resilient Quotient' into their code in early 2018. See more on Page 36.

There are certain standards that would be a prerequisite to all development, unless identified as infeasible. These include:

- **Elevation Requirements:** All new or substantially improved multi-family units would need to comply with current city elevation requirements that the lowest habitable floor and all mechanical, electrical and plumbing (MEP) systems shall be at a minimum of base flood elevation (BFE) + 2 feet of freeboard. The ULI team recommends incorporating this requirement into this code to reinforce this standard.

- **Measures to Address Recovery:** Regardless of the chosen pathway to development, new development would need to incorporate measures that address recovery, as detailed

in the recovery points component. Measures in this category specifically address impacts of weather events on residents and buildings.

The ULI team's recommended pathways for the development of new multi-family dwelling units in the CHHA include:

1. **Point System**

   This development pathway enables new developments to utilize the point system, which provides a menu of options for building resilience. A minimum number of points would be required based on the number of dwelling units. Applications for development would need to include points from all four components – structural mitigation, energy, nature-based solutions mitigation and recovery.

2. **Leadership in Energy and Environmental Design (LEED) GOLD standard (or higher) or similar certification, plus a minimal number of points from the Recovery component.**

   Under this pathway, development of new multi-family standards that achieves a LEED Gold certification or higher would be permitted. LEED, which is a globally recognized symbol of sustainability achievement, provides a framework to create healthy, highly efficient and cost-saving green buildings.

   Other similar certifications could also be considered, at the discretion of the zoning administrator.

   A proposed development that meets LEED Gold standard or higher would also need to include a certain number of points under the recovery category on the point system to ensure buildings specifically mitigate for coastal storm events.

3. **Workforce housing, plus a minimal number of points from the Recovery component.**

   During stakeholder interviews, the ULI team heard about the need for more affordable housing options throughout the city. With its doubling of size, the CHHA now includes more locations within employment and activity centers that could benefit from more affordable residential options.

   Under this pathway, a proposal for the development of workforce housing that meets elevation requirements could be considered within the CHHA. Any new development

would still need to include a certain number of points under the recovery category on the point system to ensure buildings specifically mitigate for coastal storm events.

Workforce housing, or sometimes referred to as "missing middle housing" is defined by the City's Comprehensive Plan.

Buildings that meet the City's elevation requirements, comply with the required building code and introduce more 'recovery' components would be more resilient. This alternative pathway seeks to balance the financial feasibility of constructing affordable units, which can be more difficult than units considered market rate or luxury, with ensuring more resilient building.

4. **Historic Preservation, plus a minimal number of points from the Recovery component.**

   This pathway would provide an exemption for designated historic structures. This would apply for any multi-family, deemed historic based on local, state and/or historic designation that is subject to substantial renovation. This is due to the cost that can often be associated with retrofitting an existing building, including complying with an elevation requirement. Any proposal for exemption on these grounds would need to also achieve a certain number of points under the recovery category.

Determining Points for the Point System

The ULI team conducted an exercise to evaluate costs and benefits of resiliency standards on a scale of low, middle, and high. The ULI team ranked each development activity by "cost of construction" and "value to resilience". Both factors are important to consider and should inform the specific points allotted for each development activity/criterion. The rating system created by the ULI team has laid the foundation for creating the points system.

Items to consider when scoring points:

- The value of the resilience measure should reinforce the city's goals and objectives for resiliency, as identified in the ISAP. To the extent possible, it should also be scored according to the specific vulnerabilities in the CHHA, such as flooding.
- Including a range of options from low to the high cost is preferable to provide flexibility and scalability to the development without compromising on its resiliency. The ULI team has additional suggested measures, identified in Table 2 on Page 26.
- The ULI team recommends that if a development uses the 'point system' that it should be required to earn at least one point from each of the four components, but earned points do not need to be distributed equally amongst the 4 components to reach the overall points threshold.

- As the point system is implemented, it is important to continually evaluate and amend. This is a new and unique system in the code and will require some 'real time' testing to make work.

These rankings shown in Table 3 on Page 29.

Urban Land Institute
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Recommended edits to the body copy of the *DRAFT CHHA LDR Code Amendment* by the ULI Team are illustrated in red below.

City of St. Petersburg
DRAFT CHHA LDR Code Amendment

SECTION 16.30.040. - DEVELOPMENT IN THE COASTAL HIGH HAZARD AREA (CHHA) ~~AND THE HURRICANE VULNERABILITY ZONE OVERLAY[9]~~

16.30.040.1. - Development regulations.

A. The Coastal High Hazard Area (CHHA) is the area at or below the elevation of the Category 1 storm surge line as established by the sea, lake and overland surges from hurricanes (SLOSH) computerized storm surge model. The CHHA ~~and the hurricane vulnerability zone are~~ is generally shown on the map in the coastal management element of the Comprehensive Plan. Development within these areas shall be consistent with the goals, objectives and policies of the Comprehensive Plan.

B. New construction of hospitals, nursing homes and assisted living facilities is prohibited in ~~Hurricane Evacuation Level A Zones~~ the CHHA. ~~The construction or expansion of these uses in Hurricane Evacuation Level B Zones is discouraged.~~

C. New mobile home parks are prohibited in ~~Evacuation Level A Zone~~ the CHHA.

D. Solid waste and commercial hazardous waste management facilities including regional storage, treatment or transfer sites are prohibited in the ~~hurricane vulnerability zone~~ CHHA.

E. New construction of residential multifamily dwelling units resulting from a density/intensity increase from a plan amendment after *adoption date* shall provide for hurricane shelter mitigation. Such mitigation for the impacts attributable to the development shall include one or a combination of the following: payment of a hurricane mitigation shelter fee, contribution of land, or construction of hurricane shelters. A hurricane shelter mitigation fee shall be provided prior to issuance of the certificate of occupancy for the dwelling unit(s), and calculated in accordance with the following formula: TBD. If the property owner elects to contribute land or construct hurricane shelter space, a binding agreement shall be executed regarding such mitigation prior to issuance of a building permit for construction of the residential units.

F. Construction, expansion or substantial renovations of hotel uses shall provide a Hurricane Evacuation and Closure Plan that complies with all Pinellas County and City of St. Petersburg hurricane evacuation plans and procedures to ensure orderly evacuation of guests and visitors pursuant to the Pinellas County Code, Chapter 34, Article III.

G. New construction of multi-family residential dwelling units shall provide a Hurricane Evacuation and Re-entry Plan requiring mandatory evacuation in accordance with Emergency Management Directives. Such requirements shall be incorporated into a legally binding document such as lease documents, condominium rules, homeowner rules, or other such method approved by the POD.

16.30.040.2. – CHHA Design Standards.

A. Purpose: The City of St. Petersburg is committed to improving the capacity to endure and quickly recover from coastal hazards. This section is intended to ensure that developments are more resilient to storm surge, mitigate for service and infrastructure needs during and immediately following major storm events, and enable safe re-occupation following an evacuation or weather event.

B. **All new or substantially improved multi-family structures shall comply with one of the following:**

1. The lowest habitable floor and all MEP systems shall be at a minimum of base flood elevation (BFE) + 2 feet of freeboard and shall utilize Table X to identify additional required activities. The point system provides options within four ~~two~~ components and each development shall achieve a minimum number of points, with at least X points from each component selected from the menu of options shown in the following table, based on the number of dwelling units within the development as shown below.

    - 3 to 5 units: X points total, no less than X point per component.
    - 6 to 29 units: X points total, no less than X points per component.
    - 30 to 89 units: X points total, no less than X points per component.
    - 90 to 199 units: X points total, no less than X points per component.
    - 200 or more units: X points total, no less than X points per component.

    Or

2. The lowest habitable floor and all MEP systems shall be at a minimum of base flood elevation (BFE) + 2 feet of freeboard and the structure shall achieve LEED Gold certification or higher and shall achieves a minimum of X points from the Recovery component.

    Or

3. The lowest habitable floor and all MEP systems shall be at a minimum of base flood elevation (BFE) + 2 feet of freeboard and the structure contains a minimum of 20% *(the ULI team has suggested a minimum of 20%, but defers to the City's workforce housing goals to better inform the appropriate percentage of units)* of dwelling units dedicated to workforce housing and achieves a minimum of X points from the Recovery component.

    Or

4. For structures designated as historically significant, as defined by XXX, the construction, expansion, or substantial renovation shall achieve a minimum of X points from the Recovery component and develop an evacuation plan in accordance with local mitigation strategies.

Table 1 below details the ULI Technical Assistance Panel's response to the *Draft Point System For Multi-Family Residential Development* provided by the City of St. Petersburg.

The panel spent a significant portion of the 2 days examining each of the development criteria provided in the original draft of the points system provided by the city. Each criterion for points was evaluated for practicality, resilience value & intent, clarity and unintended consequences.

The table below goes line by line through the original draft point system and provides the ULI TAP Team's recommended changes and clarifying comments on why changes were made.

- For easy reference, each of the original development activities/criteria has been given a number
- "Development Activities" (actions that earn points) are referred to as "criterion/criteria" in the commentary below.

[ORIGINAL DRAFT]

TABLE 1: POINT SYSTEM FOR MULTI-FAMILY RESIDENTIAL DEVELOPMENT

COMPONENT 1: RISK REDUCTION		
		DEVELOPMENT ACTIVITIES / CRITERIA FOR POINTS
#1	**ORIGINAL DRAFT:**	Construct building to meet design requirements of next higher classification of Risk Category, per ASCE 7.
	RECOMMENDED CHANGE:	Construct building to meet design requirements of next higher classification of Risk Category, per ASCE 7 OR Increase design wind speed from ASCE-7 recommendations and apply Miami-Dade High Velocity Hurricane Zone (HVHZ) standards for current classification of Risk Category OR Increase design wind speed from ASCE-7 recommendations and apply Miami-Dade High Velocity Hurricane Zone (HVHZ) standards of the next higher classification of Risk Category, per ASCE 7

	COMMENTS:	*Considering the damage inflicted by Hurricane Michael and the increasing frequency of major hurricanes, the City of St. Petersburg may wish to consider strengthening its building code as it relates to wind resistance. ASCE-7 includes minimum wind speeds required for the design of buildings and other structures for various risk categories, and it is reasonable to offer additional points for applying wind criteria for the next risk category. Additionally, the city may wish to consider the implementation of High Velocity Hurricane Zone criteria. Utilized in Miami-Dade and Broward Counties, HVHZ criteria calls for specific resilient building materials and other products that meet the rigorous testing requirements of the HVHZ, going above and beyond the requirements of the Florida product approval.* ***Please note that the scale of options above should award progressively more points.* ****If HVHZ is already required in the City, we recommend not awarding points.*
#2	**ORIGINAL DRAFT:**	**Elevate finished floor above minimum 2 feet required (per ASCE 24 & Floodplain regulations)**
	RECOMMENDED CHANGE:	Elevate the first habitable/residential floor beyond the required Base Flood Elevation (BFE) + 2 feet of Freeboard: • XX points for each additional foot of elevation above 2ft+ BFE
	COMMENTS:	*The ULI team recommends the city maintain the existing requirement for minimum elevation of first habitable/residential floor, at minimum, and reiterate this requirement in the body copy of the CHHA LDR Code Amendment under the 16.30.040.2. – CHHA Design Standards section. As noted in the recommendation, the city should consider implementing a calculated minimum elevation by applying "conservative" SLR projections adopted by the Regional Planning Council in 2019 to current BFE. Developments would then be the greater of existing strategy of BFE +2 feet or BFE projected in minimum of 20 years design life. Please note that ULI has named the conservative projections but the city may want to review for design impact from projected design life before implementing in code.* *Points should be considered for <u>each</u> additional foot of elevation of the habitable floor beyond the 2+BFE already required. This builds in flexibility and scalability. For example, a town home can earn some points for accommodating 3ft+BFE, and a larger multifamily project that invests in elevating residential units and stacking them above a ground floor garage would (and should) be rewarded many more points. The garage example is a much higher investment for the developer, provides a much higher resilience value, and removes the risk of residential flooding.*

#3	**ORIGINAL DRAFT:**	**Elevate mechanical systems above minimum 2 feet required (per ASCE 24 & Floodplain regulations)**
	RECOMMENDED CHANGE:	Elevate the mechanical system beyond the required Base Flood Elevation (BFE) + 2 feet: • XX points for each additional foot of elevation above 2ft+ BFE, up to XX feet OR • XX points for installing mechanical, electrical and plumbing (MEP) equipment or back-up systems such as generators on the roof OR an ancillary structure that elevated to the most conservative (highest) flood elevation produced by the recent SLOSH model.
	COMMENTS:	*Similar to the comments for development activity #2, the ULI team recommends the city maintain the existing requirement for minimum elevation of mechanical systems and reiterate this requirement in the body copy of the CHHA LDR Code Amendment under the **16.30.040.2. – CHHA Design Standards section.*** *Scalable points should be considered for each additional foot of elevation beyond the 2+BFE already required up to XX additional feet. The highest amount of points should be given to projects that relocate MEP to the roof OR an ancillary structure that elevated to the most conservative flood elevation produced by the recent SLOSH model, because this ensures they are free from any risk of flooding.*
#4	**ORIGINAL DRAFT:**	**Construct an impact-resistant roof (Are some materials better than others, metal?)**
	RECOMMENDED CHANGE:	Construct an impact-resistant roof OR fully-adhered roof with parapets located every 3 feet
	COMMENTS:	*Fully adhered roof attachments can also provide better wind uplift ratings with fewer seams; more symmetrical wind loadings; eliminates roof fasteners that penetrate the roof membrane;*
#5	**ORIGINAL DRAFT:**	**Install impact resistant glazing (or operable hurricane shutters, one or other is required, but is one preferable and should be incentivized?)**

	RECOMMENDED CHANGE:	~~Install impact resistant glazing (or operable hurricane shutters, one or other is required, but is one preferable and should be incentivized?)~~ [DELETE]
	COMMENTS:	*Removed for redundancy. This is already well-covered by code and shouldn't merit points when compared to other criteria in this table. That being said, hurricane shutters are less preferential than impact glazing.*
#6	**ORIGINAL DRAFT:**	**Protect coastal property with a living shoreline (LSL).** (LSLs use natural materials to stabilize the shoreline and maintain valuable fish and wildlife habitat; LSLs utilize a variety of materials such as wetland plants, oyster shell, coir fiber logs, sand, wood, and native rock.)
	RECOMMENDED CHANGE:	Protect coastal property with a living shoreline (LSL) per the US Army Corps of Engineers (USACE) Living Shoreline Permit Standard. *(LSLs use natural materials to stabilize the shoreline and maintain valuable fish and wildlife habitat; LSLs utilize a variety of materials such as wetland plants, oyster shell, coir fiber logs, sand, wood, and native rock.)*
	COMMENTS:	*Added in a reference to the US Army Corps of Engineers (USACE) Living Shoreline Permit Standard. This will provide a consistent standard for what qualifies as a "LSL" and ensure the investment is worthy of points and meets the level of mitigation desired.*
#7	**ORIGINAL DRAFT:**	**Design building located in the Coastal A Flood Zone to Flood Zone V standards**
	RECOMMENDED CHANGE:	Design building located in the Coastal A Flood Zone to Flood Zone V standards or the most conservative (highest) flood elevation produced by the recent SLOSH model. = XX Points
	COMMENTS:	*The city asked if this criterion was the same as that stated in criterion #1. They have some similarities but are not the same. The Flood Zone V standards are more focused on flooding, with*

		a particular focus on protecting coastal areas that would likely be subjected to High Velocity Wave Action (HVWA) during a storm. *Flood Zone V standards may require resilient upgrades that may not make sense for areas that have no chance of High Velocity Wave Action (HVWA).* *The city might consider offering more points for sites right at the waterfront if they pursue this more stringent rule, since they may be subject to waves. With sea level rise, wave patterns will tend to shift more towards inland. Buildings in V or Coastal A Zones should either build open foundations so the water can flow below the structure (can be used for parking), with a small enclosure (up to 300sqf) for access. You can enclose it, but only with breakaway walls that are designed to purposely fail in the event of a flood.*
Component 2: Recovery		
#8	**ORIGINAL DRAFT:**	**Establish operating procedures for how the project will handle loss of off-site or grid power, transition to a backup source of power, and transition back to normal operation.**
	RECOMMENDED CHANGE:	~~Establish operating procedures for how the project will handle loss of off-site or grid power, transition to a backup source of power, and transition back to normal operation.~~ [DELETE]
	COMMENTS:	*Redundant -- This should be an inherent component of the 'Hurricane Evacuation and Re-entry Plan' required of all new construction of multi-family dwelling units as stated in **16.30.040.1. - Development Regulation G** in the draft CHHA LDR Code Amendment. It also may be redundant with many of the development activities below (see #9 thru #16). Projects with generators and back-up power sources, etc. should already have procedures in place for using them.* *For clarification purposes, it may be worth adding this criterion under **16.30.040.1. - Development Regulation G** in the draft CHHA LDR Code Amendment. Because of the crossover with other criteria in this table, the ULI team does not believe this should merit points.*
#9	**ORIGINAL DRAFT:**	**Generate no less than 75% of the electricity expected to be used by the development from on-site solar and/or wind energy sources**
	RECOMMENDED CHANGE:	<u>Renewable Energy Sources:</u> Generate a percentage (see options below) of the electricity expected to be used by the development from on-site solar and/or wind energy sources:

		a) 75–100% = XX points b) 50-74% = XX points c) 26-49% = XX points d) At least 25% = XX points
	COMMENTS:	*For clarity, combine criteria #9, #10, #13 & #14 Under one "Renewable" heading. Create a sliding points scale based on percentage of electricity generated by on-site renewable systems. These criteria are important for getting people back online quickly after a storm and align well with the goals of the ISAP and Bloomberg's Climate Challenge Grant. Adding flexibility and a percentage scale will encourage more developers to consider investing in renewables.*
#10	**ORIGINAL DRAFT:**	**Generate no less than 50% of the electricity expected to be used by the development from on-site solar and/or wind energy sources**
	RECOMMENDED CHANGE:	~~Generate no less than 50% of the electricity expected to be used by the development from on-site solar and/or wind energy sources~~ [DELETE]
	COMMENTS:	*See comments for #9.*
#11	**ORIGINAL DRAFT:**	**On-site battery storage of solar generated power with X amount of capacity**
	RECOMMENDED CHANGE:	On-site battery storage of solar generated power to keep critical functions working in the event of power failure:

(A)	Life Safety Features*	XX Points
(B)	(A) + At least 100% of Normal Load of Common Areas	XX Points
(C)	(A) + (B) + Lighting & Refrigeration Residential Units	XX Points
(D)	(A) + (B) + (C) + HVAC in Residential Units	XX Points
(D)	80-100% of Normal Load of Entire Building	XX Points

*Types of circuits that promote "Life Safety" to be powered by onsite battery storage which are in addition to current requirements of Emergency exit lighting requirements (i.e., NFPA):

- Emergency exit lighting that recharges batteries of emergency exit lighting.

		• Overhead lighting, for every other fixture in common areas. (greater than NFPA emergency generator minimum requirements)
	COMMENTS:	*When considering energy savings alone, battery technology isn't efficient and cost effective enough just yet to incent most multifamily projects to invest in solar and storage. Systems typically have a poor economic return without accounting for savings due to avoided outage costs. Incorporating avoided outage costs triples the annual savings delivered by the solar+storage systems for multifamily.* *While the cost-effectiveness of solar storage to support energy resilience remains out of reach for many property owners, it is clear that solar plus storage will become cheaper, more robust, and more powerful over the coming years, in both centralized and distributed applications.* *Even if semi-aspirational, the ULI team encourages the city to keep this criterion in place and consider it to be on the top end of the points allocation due to cost and resilience value being high.* *NOTE: This criteria compliments #9 criteria about renewables well and is deserving of additional points beyond those allocated to #9. Recommendations*
#12	**ORIGINAL DRAFT:**	**Install a cool roof on at least 25% [sliding scale?] of the total roof area of the development** **[Add to definition section]**
	RECOMMENDED CHANGE:	Install a cool/high-reflectance roof (coating that is white or has special reflective pigments that reflect sunlight) on at least 75% of the total roof area of the development, with a minimum SRI (solar reflectance index value) of 39 and in accordance with the standards set by the HVWZ.
	COMMENTS:	*Through additional criteria (#+25, later in this table), the ULI team has made the distinction between a relatively inexpensive white paint "cool roof" and the more expensive alternative, a green roof. Cool roofs may be easier to implement but may not be very efficient over the long term because they lose reflective capacity. Green roofs merit more points.* *The number 39 is the SRI number from LEED v4 credit SS7.2.*
#13	**ORIGINAL DRAFT:**	**Generate no less than 25% of the electricity expected to be used by the development from on-site solar and/or wind energy sources**

	RECOMMENDED CHANGE:	~~Generate no less than 25% of the electricity expected to be used by the development from on-site solar and/or wind energy sources~~ [DELETE]
	COMMENTS:	*See comments for #9.*
#14	**ORIGINAL DRAFT:**	**Generate no less than 25% of the electricity needed expected to be used by the development from on-site solar and/or wind energy sources**
	RECOMMENDED CHANGE:	~~Generate no less than 25% of the electricity needed expected to be used by the development from on-site solar and/or wind energy sources~~ [DELETE]
	COMMENTS:	*See comments for #9. Appears to be the same as #13.*
#15	**ORIGINAL DRAFT:**	**Install a geothermal energy heating & cooling system serving all residential units and common areas**
	RECOMMENDED CHANGE:	Install a geothermal energy heating & cooling system <u>that serves at least 75% of the project's residential units.</u>
	COMMENTS:	*Many geothermal projects can cover the majority of residential units, but need to utilize different means (like mini splits) for storage areas, small commercial units, and some other common areas, etc. The Pearl development in Tampa Heights is a good example of this. The ULI team has added more flexibility to this criterion to avoid disqualifying projects of merit from receiving points and to avoid the unintended consequence of disincentivizing developers from pursuing geothermal energy because the threshold for points feels unattainable.*
#16	**ORIGINAL DRAFT:**	**Equip the project with at least one alternative, independent source of electricity supply so that the project is capable of fully operating if a primary source of power experiences interruption**
	RECOMMENDED CHANGE:	~~Equip the project with at least one alternative, independent source of electricity supply so that the project is capable of fully operating if a primary source of power experiences interruption~~ [DELETE]

	COMMENTS:	*Feels redundant and can be achieved through criteria #9, #11 and #23*
#17	**ORIGINAL DRAFT:**	**Pre-wire all units to accept power provided by on-site solar panels and/or wind turbines**
	RECOMMENDED CHANGE:	None
	COMMENTS:	*This is forward thinking and will allow developments to retrofit and add renewable sources as they become more economically feasible. Norfolk has a similar option.*
#18	**ORIGINAL DRAFT:**	**Install a 20+ SEER HVAC system in each dwelling unit**
	RECOMMENDED CHANGE:	None
	COMMENTS:	*ULI team agreed with promotion of highest SEER values*
#19	**ORIGINAL DRAFT:**	**Install a 16-19 SEER HVAC system in each dwelling unit**
	RECOMMENDED CHANGE:	None
	COMMENTS:	*ULI team agreed with promotion of higher SEER values.*
#20	**ORIGINAL DRAFT:**	**Install multi-room mini-split heating and cooling systems in each unit**

	RECOMMENDED CHANGE:	Install efficient, zone-controlled heating and cooling systems in each residential unit (mini-splits, or smart thermostats, etc.)
	COMMENTS:	*Expanded criterion definition beyond only mini-splits*
#21	**ORIGINAL DRAFT:**	**Install a solar or tank-less water heating system in each unit**
	RECOMMENDED CHANGE:	Install a solar or tank-less water heating system in each residential unit
	COMMENTS:	*None*
#22	**ORIGINAL DRAFT:**	**Install no fewer than 2 operable windows on no fewer than two exterior walls in each unit**
	RECOMMENDED CHANGE:	*Cross ventilation for each residential unit (no less than 2 openings)*
	COMMENTS:	*Avoid unintended consequences and edit this to be broader. Goal is to encourage flow through ventilation in case of power outages.*
#23	**ORIGINAL DRAFT:**	**Install a generator for power generation to keep critical functions (refrigerator, freezer, basic lighting, healthcare appliances, etc.) working in the event of power failure**
	RECOMMENDED CHANGE:	Install a generator for power generation to keep critical functions working in the event of power failure:

(A)	Life Safety Features*	XX Points
(B)	(A) + Refrigerators, Freezers, Healthcare Appliances	XX Points
(C)	(A) + (B) + HVAC in common area	XX Points
(D)	(A) + (B) + (C) + HVAC in each residential unit	XX Points

*Types of circuits that promote "Life Safety" to be powered by emergency generators which are in addition to current requirements of Emergency exit lighting requirements (i.e., NFPA):

- Emergency exit lighting that recharges batteries of emergency exit lighting.

		• Overhead lighting, for every other fixture in common areas. (greater than NFPA emergency generator minimum requirements)
	COMMENTS:	*To encourage the installation of on-site generators in multi-family developments large and small, we have created a sliding point scale to reward different levels of generator coverage. Restoration of at least minimum life safety features in a multifamily development will be critical component to getting residents back into their residences and ultimately restoring services after an evacuation event.*
#24	**ORIGINAL DRAFT:**	**Install highly-reflective blinds/shades or window film/tint to reduce solar gain**
	RECOMMENDED CHANGE:	Install highly-reflective blinds/shades, low-E window film/tint, external/structural shade to reduce solar gain.
	COMMENTS:	*None*
TABLE 2: ADDITIONAL/NEW CRITERIA PROPOSED BY ULI TEAM (Not in the original draft of point system)		
+25	**NEW CRITERIA**	**Incorporation of a Green Roof to reduce stormwater-runoff and solar gain.** (A green roof is a layer of vegetation planted over a waterproofing system that is installed on top of a flat or slightly–sloped roof). o 10% of Total Roof Area = XX Points o 30% of Total Roof Area = XX Points o 50% of Total Roof Area = XX Points o 75%+ of Total Roof Area = XX Points
	COMMENTS:	*The ULI team thought it was important to make a distinction between a cool roof (#12) and a green roof – and offer both in the point system. A green roof is more expensive to build and maintain and has the added benefit of reducing stormwater runoff. A green roof should earn more points than a cool roof. Building in a points scale to this criterion recognizes that a completely green roof may not be attainable, but a partial green roof still warrants points. Some projects may combine both a partial green roof and partial cool roof – earning points from both criteria.*

+26	**NEW CRITERIA**	**Natural Buffers: Setbacks are determined by zoning. Extra points can be earned for nature-based features in addition to setback.** a. **Stormwater Retention** (bioswales, rain gardens, rainwater harvesting/cisterns, stormwater harvesting, etc.) b. **Appropriate and beneficial plantings** (native, drought tolerant, salt adapted)
	COMMENTS:	*Worth noting -- To encourage the practice of using stormwater as an asset, Pinellas County has included incentives within its Land Development Code that allow open space requirements to be satisfied through green infrastructure stormwater management techniques. Refer to Chapter 138, Zoning, of the County Land Development Code.*
+27	**NEW CRITERIA**	**Contribution to conservation fund in lieu of ability to achieve points in the 'Nature Based Solutions' component**
	COMMENTS:	*Zoning administrator should devise a system for what constitutes as an appropriate contribution amount based on project size/number of units and relative to the cost of the other 'Nature Based Solutions' criteria for earning points. The conservation funds could go towards purchasing lands for preservation and retreat in the most vulnerable areas of the CHHA and/or repetitive loss areas.*
+28	**NEW CRITERIA**	**Devote space onsite to the creation of a community serving Resilience Hub.** [Defined as community-serving facilities meant to both support residents of the surrounding area and coordinate resource distribution and services before, during or after a natural hazard event. The hub should be resourced by community organizations to meet the needs of the community during an extreme event, meaning it must maintain food, water, and emergency supplies. Hubs should be able to remain operational during an extended power outage, ideally relying on multiple types of energy generation such as solar and storage.]
	COMMENTS:	https://www.usdn.org/uploads/cms/documents/usdn_resiliencehubs_2018.pdf

+29	**NEW CRITERIA**	**Incorporate and plan for a Resilient Common Area that serves residents of the project.** This space should meet the needs of residents during and (most importantly) immediately following an extreme event, meaning it must maintain food, water, and emergency supplies. The Common Area's HVAC, basic lighting and outlet power should be able to remain operational during an extended power outage, ideally relying on multiple types of energy generation such as solar and storage.
	COMMENTS:	*As we learned from Hurricane Irma, having a space onsite with air-conditioning, power for phone charging, water, etc. for residents during post-storm recovery and prolonged power outages is critically important and can reduce the burden on city resources.*
+30	**NEW CRITERIA**	**Contribution to Emergency Shelter Fund to help pay for upgrades to existing shelters and the construction of new shelters**
	COMMENTS:	*Planning staff & Emergency Management should devise a system for what constitutes an appropriate contribution amount based on project size/number of units and relative to the cost of the other 'Recovery' criteria for earning points.*
+31	**NEW CRITERIA**	**Innovation Points** (Resilient solutions beyond those found in this table will be considered for points at the discretion of the zoning administrator)
	COMMENTS:	*In recognition of the fact that (a) the proposed CHHA LDR Code Amendment covers a wide range of multifamily project types and scale, and (b) the technologies and innovation driving resilient solutions for coastal communities are constantly evolving – the ULI team strongly recommends including the opportunity to earn "Innovation Points" in each of the four Resilience Components that make up the points system.* *This gives developers the flexibility to pursue innovative resilient solutions best suited for their projects and makes the code adaptable to advancements in resilient technologies. Innovation points should be considered and allotted at the discretion of the zoning administrator.*

Table 3 below:

1. **Categorizes the Development Activities/ Points Criteria into 4 components:**
   a. Structural Mitigation
   b. Energy Efficiency
   c. Nature Based Solutions
   d. Recovery

2. **Rates the criteria by**
   a. Resilience Value
   b. Cost to Developer

This table reflects the recommended changes of the ULI team as outlined in tables 1 and 2 above.

TABLE 3: POINT SYSTEM FOR MULTI-FAMILY RESIDENTIAL DEVELOPMENT

COMPONENT 1: STRUCTURAL MITIGATION			
	DEVELOPMENT ACTIVITY	RESILIENCE VALUE	EXPECTED COST
S1	**Construct building to meet design requirements of next higher classification of Risk Category, per ASCE 7** OR **Increase design wind speed from ASCE-7 recommendations and apply Miami-Dade High Velocity Hurricane Zone (HVHZ) standards for current classification of Risk Category** OR **Increase design wind speed from ASCE-7 recommendations and apply Miami-Dade High Velocity Hurricane Zone (HVHZ) standards of the next higher classification of Risk Category, per ASCE 7**	HIGH	HIGH
S2	**Elevate the first habitable/residential floor beyond the required Base Flood Elevation (BFE) + 2 feet of Freeboard:** - XX points for each additional foot of elevation above 2ft+ BFE	HIGH	HIGH

S3	**Elevate the mechanical system beyond the required Base Flood Elevation (BFE) + 2 feet:** • XX points for each additional foot of elevation above 2ft+ BFE, up to XX feet OR • XX points for installing mechanical, electrical and plumbing (MEP) equipment or back-up systems such as generators on the roof OR an ancillary structure that elevated to the most conservative flood elevation produced by the recent SLOSH model.	HIGH	LOW
S4	**Construct an impact-resistant roof OR fully-adhered roof with parapets located every 3 feet**	HIGH	LOW
S5	**Design building located in the Coastal A Flood Zone to Flood Zone V standards or the most conservative (highest) flood elevation produced by the recent SLOSH model.**	HIGH	HIGH
S6	**Innovation Points**	-	-
	COMPONENT 2: ENERGY EFFICIENCY		
	DEVELOPMENT ACTIVITY	RESILIENCE VALUE	EXPECTED COST
E1	**Renewable Energy Sources:** Generate a percentage (see options below) of the electricity expected to be used by the development from on-site solar and/or wind energy sources: e) 75–100% = XX points f) 50-74% = XX points g) 26-49% = XX points h) At least 25% = XX points	HIGH	HIGH

<table>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>E2</td><td>On-site battery storage of solar generated power to keep critical functions working in the event of power failure:
<table>
<tr><td>(A)</td><td>Life Safety Features*</td><td>XX Points</td></tr>
<tr><td>(B)</td><td>(A) + At least 100% of Normal Load of Common Areas</td><td>XX Points</td></tr>
<tr><td>(C)</td><td>(A) + (B) + Lighting & Refrigeration Residential Units</td><td>XX Points</td></tr>
<tr><td>(D)</td><td>(A) + (B) + (C) + HVAC in Residential Units</td><td>XX Points</td></tr>
<tr><td>(D)</td><td>80-100% of Normal Load of Entire Building</td><td>XX Points</td></tr>
</table>
*Types of circuits that promote "Life Safety" to be powered by onsite battery storage which are in addition to current requirements of Emergency exit lighting requirements (i.e., NFPA):

Emergency exit lighting that recharges batteries of emergency exit lighting.
Overhead lighting, for every other fixture in common areas. (greater than NFPA emergency generator minimum requirements)
</td><td>HIGH</td><td>HIGH</td></tr>
<tr><td>E3</td><td>Install a geothermal energy heating & cooling system that serves at least 75% of the project's residential units.</td><td>MED</td><td>HIGH</td></tr>
<tr><td>E4</td><td>Install a cool/high-reflectance roof (coating that is white or has special reflective pigments that reflect sunlight) on at least 75% of the total roof area of the development, with a minimum SRI (solar reflectance index value) of 39 and in accordance with the standards set by the HVWZ.</td><td>LOW</td><td>LOW</td></tr>
<tr><td>E5</td><td>Pre-wire all units to accept power provided by on-site solar panels and/or wind turbines</td><td>LOW</td><td>LOW</td></tr>
<tr><td>E6</td><td>Install a 20+ SEER HVAC system in each dwelling unit</td><td>MED</td><td>MED</td></tr>
<tr><td>E7</td><td>Install a 16-19 SEER HVAC system in each dwelling unit</td><td>MED</td><td>MED</td></tr>
</table>

E8	**Install efficient, zone-controlled heating and cooling systems in each residential unit** (mini-splits, or smart thermostats, etc.)	MED	MED
E9	**Install a solar or tank-less water heating system in each residential unit**	LOW	LOW
E10	**Cross ventilation for each residential unit (no less than 2 openings)**	LOW	LOW
E11	**Install highly-reflective blinds/shades, low-E window film/tint, external/structural shade to reduce solar gain.**	LOW	LOW
E12	**Innovation**	-	-
	Component 3: Nature Based Solutions		
N1	**Protect coastal property with a living shoreline (LSL) per the US Army Corps of Engineers (USACE) Living Shoreline Permit Standard.** *(LSLs use natural materials to stabilize the shoreline and maintain valuable fish and wildlife habitat; LSLs utilize a variety of materials such as wetland plants, oyster shell, coir fiber logs, sand, wood, and native rock.)*	MED	MED
N2	**Incorporation of a Green Roof to reduce stormwater-runoff and solar gain.** (A green roof is a layer of vegetation planted over a waterproofing system that is installed on top of a flat or slightly–sloped roof). o 10% of Total Roof Area = XX Points o 30% of Total Roof Area = XX Points o 50% of Total Roof Area = XX Points o 75%+ of Total Roof Area = XX Points	MED	MED
N3	**Natural Buffers: Setbacks are determined by zoning. Extra points can be earned for nature-based features in addition to setback.** **a. Stormwater Retention** (bioswales, rain gardens, rainwater harvesting/cisterns, stormwater harvesting, etc.) **b. Appropriate and beneficial plantings** (native, drought tolerant, salt adapted)	MED	LOW

N4	**Contribution to conservation fund in lieu of ability to achieve points in the 'Nature Based Solutions' component**	HIGH	MED
N5	**Innovation**	-	-
	Component 4: Recovery		
R1	**Illumination and natural daylighting**	HIGH	LOW
R2	**Install a generator for power generation to keep critical functions working in the event of power failure:** (A) Life Safety Features* — XX Points (B) (A) + Refrigerators, Freezers, Healthcare Appliances — XX Points (C) (A) + (B) + HVAC in common area — XX Points (D) (A) + (B) + (C) + HVAC in each residential unit — XX Points *Types of circuits that promote "Life Safety" to be powered by emergency generators which are in addition to current requirements of Emergency exit lighting requirements (i.e., NFPA): • Emergency exit lighting that recharges batteries of emergency exit lighting. • Overhead lighting, for every other fixture in common areas. (greater than NFPA emergency generator minimum requirements)	HIGH	HIGH
R3	**Devote space onsite to the creation of a community serving Resilience Hub.**	LOW	LOW
R4	**Incorporate and plan for a Resilient Common Area that serves residents of the project.**	LOW	LOW
R5	**Contribution to Emergency Shelter Fund to help pay for upgrades to existing shelters and the construction of new shelters**	HIGH	MED
R6	**Innovation Points**	-	-

Additional Recommendations

The ULI team commends the City of St. Petersburg for being proactive about hardening the CHHA to ensure that future multi-family development is resilient. Planning for the future of the CHHA

and other vulnerable areas of the city requires a balancing of sometimes competing city goals such as economic development, emergency management, resiliency, community development, workforce housing and growth management. Implementing a new approach to new multi-family development in the CHHA is a good opportunity to pilot a resilient code.

As it evaluates the implementation of this new code in the CHHA, the city should consider further increasing resiliency and reducing flood risk within the CHHA by applying elevated design standards to all development typologies. This follows the City of Norfolk example.

As the city prepares for a more resilient future and embarks on it's work for Vision 2050, other items to consider include:

- Incorporate specific resiliency goals for development and coastal defense as a guiding principle of the 2050 plan.
- Develop a more-fine grain approach to land use in the CHHA by:
    - Consider limited future density in areas that may be subject to daily tidal flooding due to sea level rise in the next couple of decades. Comprehensive infrastructure improvements should continue to be targeted in areas to prevent sunny day flooding.
    - Target specific areas for buyout, in the event of future disaster within repetitive loss geographies. These areas can serve as coastal defense.
    - In other areas that are only subject to coastal flooding by severe but infrequent storms, create a density boost that could assist in getting better resilient building stock and amenities.
    - Elsewhere, the city should consider tools to help encourage building owners to retrofit the existing building stock, at least by elevating MEP, installing water pumps, or footings for the deployment of flood panels in advance of a storm.
    - Consider a Transfer of Development Rights (TDR) / land swap solution from areas in the most vulnerable areas of the original CHHA to less vulnerable areas of the CHHA. This could boost preservation areas and result in a zero net gain of overall entitled density in the CHHA.
- Review height requirements in the CHHA to ensure there is no conflict between the elevated standard and existing requirements.
- Allow for portions of a parcel included in the CHHA to be placed into restricted development status in exchange for permitting redevelopment of remaining portion of a parcel, not within CHHA.
- Establish a fund that developers can pay into as a condition of permit for development in CHHA that either improves emergency response (i.e., hires drivers to evacuate residents), pays for improvements to existing shelters (i.e., adding food storage or generator back up to existing shelters), or contributes to the overall resiliency of the CHHA (i.e. funds grants to help vulnerable populations within the CHHA retrofit their properties with more resilient features, etc.).

CASE STUDY: THE CITY OF NORFOLK

The City of Norfolk, Virginia adopted a new zoning ordinance in January 2018 that included the goal of enhancing flood resilience and directing new more intense development to higher ground. The ordinance includes a Resilience Quotient system, which applies to all new development citywide, and establishes a Coastal Resilience Overlay (CRO) zone, where new development and redevelopment will have to comply with new flood resilience requirements, in the most flood prone areas and an Upland Resilience Overlay (URO), designed to encourage new development, in areas of the city with lower risk of flooding.

Resilient Quotient System Overview
The Resilience Quotient requires resilient development techniques to be incorporated into all new development projects, or substantial redevelopment projects. Projects where the cost of work is less than 50% of the assessed value of the building are exempt from meeting the Resilience Quotient.

Also exempted are LEED-certified buildings receiving a certification of gold or above and work on designated historic properties that maintains or enhances the historic character. (Single-family homes have a simpler method of achieving resilience available to them and thus are not a part of this discussion.) Developments not eligible for one of those exemptions must do one of the following – either meet a standard set of resilience conditions (including elevating mechanical equipment, installing systems to detain a certain amount stormwater on site, and installing systems that allow connection of generators, solar, wind or other locally generated power sources during power outages) or earn a required number of points from a point system.

For developers opting to use the point system, the number of points that must be earned in each category depend on the size and number of units included in the development proposal. For example, smaller developments of five or less dwelling units must earn 4 points, 1 each per component; larger developments of 200 or more dwelling units must earn 10 points, 2 per component. Similar scales are also included for non-residential development – per square foot of floor area. The system awards points for the following resilience measures for residential development (similar standards are tailored for non-residential development):

- Risk reduction - elevate mechanical equipment; construct impact resistant roof; construct structure to withstand 110-mile winds; and/or install hurricane resistant shutters.
- Stormwater management - install a green roof, rain-gardens, or other stormwater infiltration systems; use pervious paving systems; provide a community-garden space; preserve pre-development natural, native vegetation; provide for new tree-planting; and/or preserve large non-exotic trees on site.
- Energy resilience - generate electricity with on-site solar or wind power; install geothermal heating and cooling systems; install green walls; adopt energy efficient lighting; include wiring that allows connection to solar, wind or back-up generator; install cool roof; install solar or tankless water heating system; install back-up generator; provide EV charging stations; use vegetation to shade structure; and/or install reflective shades.

The ordinance also includes incentives for extinguishing development rights in the Coastal Resilience Overlay district. Points can be earned in the Upland Resilience zone by extinguishing development rights through acquisition of open space conservation easements or voluntary removal – via deed restriction or other method – of development rights in the CRO.

The new zoning ordinance was informed by prior planning documents: PlaNorfolk2030 (adopted in 2013), which is the city's comprehensive plan, and Norfolk Vision 2100, which was adopted in 2016 and defined the city's approach to flooding, sea-level rise, and long-term resilience.

The Resilience Quotient at a Glance

Overall

- Applies citywide to all new development and all substantial reconstructions.
- LEED Gold or equivalent properties are exempt
- Historic rehabs are exempt

Single Family

- Elevate 16 inches
- Store 200 gallons of rainwater
- Install generator switch

Multifamily

- Elevate 16 inches and capture first 1.25 inches of rainwater - *or* -
- Comply with point system requirements (3 components – risk reduction, stormwater management, energy resilience)

Non-Residential

- Elevate 8 inches and capture first 1.25 inches of rainwater - *or* -
- Comply with point system requirements (3 components – risk reduction, stormwater management, energy resilience)

Resilience Overlays

Coastal Resilience Overlay (CRO)

- Applies to all properties within a high-risk flood zone (V, A, or X-shaded)
- Requires additional 0.5 points from point system requirement for risk reduction component and stormwater management component or 25% more flood risk reduction and stormwater management capacity
- Requires native, salt tolerant plants
- Requires all parking areas and open space to be pervious
- Limits parking to 110% of the minimum required

Upland Resilience Overlay (URO)

- Applies to entire city outside high risk flood zones

- Allows up to four points to be counted towards the point system requirements for extinguishing a development right (through a conservation easement, deed restriction, or other such method) in the CRO

LESSONS LEARNED

- Include a range of options and alternatives for development, aligned with resilience goals.
- Be open and adaptive to change as the zoning code is implemented. Continually evaluate and amend, as required.
- Clearly connect the zoning code to a comprehensive strategy and goals for city-wide resiliency.
- Begin and maintain a dialogue with the local development community. Their feedback will be vital in fine-tuning the requirements.
- Track how the code is being implemented on a site-by-site basis. The innovative implementations that developers come up with can provide valuable case studies for future users.
- Be prepared to go "off book". Each site is unique, and the code can't possibly consider every possibility. In these unique circumstances, be prepared to adjust requirements.

Case Study: New York City

Zoning for Coastal Flood Resiliency

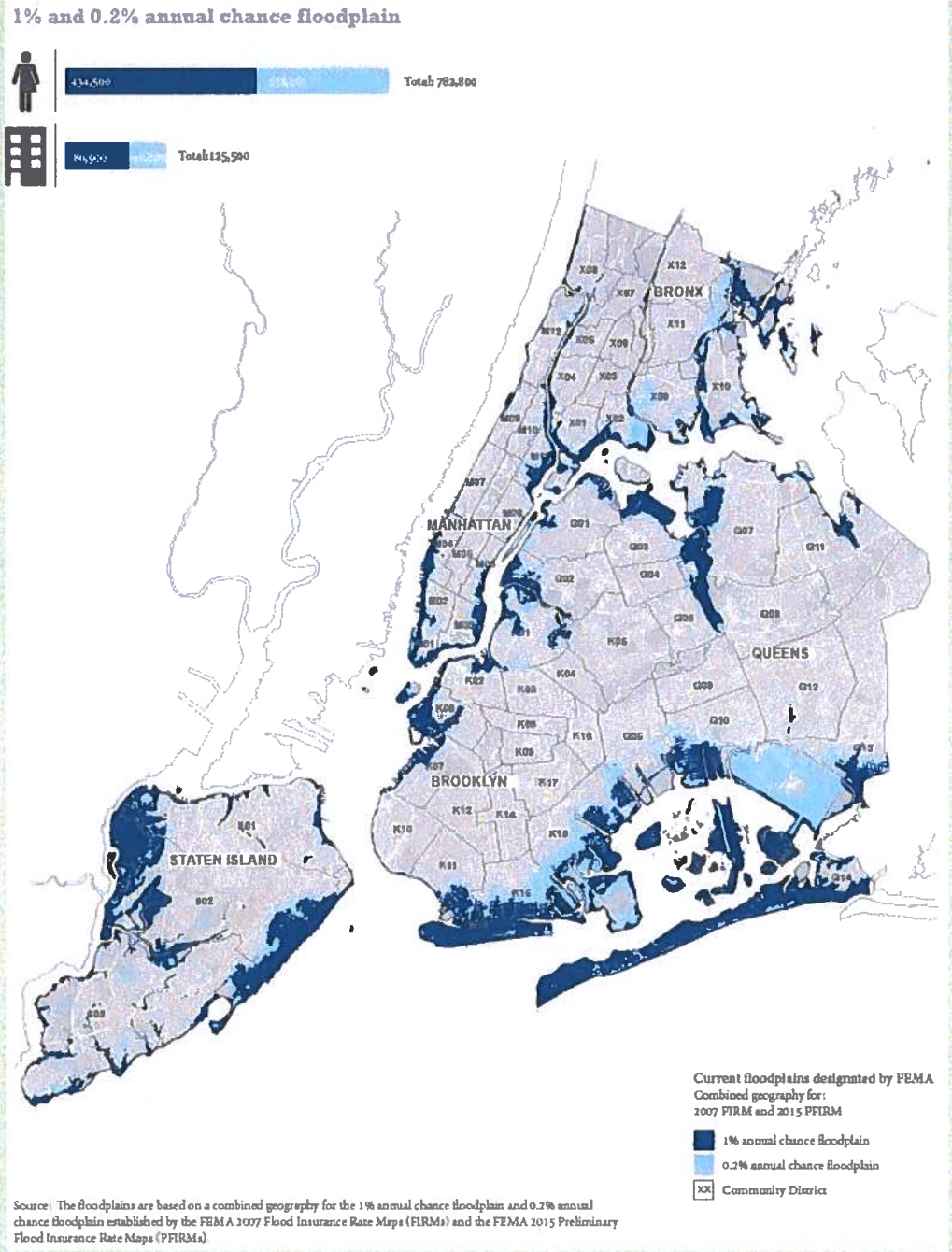
Since Hurricane Sandy in 2012, the NYC Department of City Planning (DCP) has been working with stakeholders across New York City (NYC)'s floodplain to develop zoning strategies that help promote resilient buildings and neighborhoods, and therefore reduce flood risk in the city's most vulnerable areas. This set of recommendations would improve upon and make permanent existing temporary zoning rules that were adopted on an emergency-basis after Sandy.

Zoning for Coastal Flood Resiliency would provide homeowners, business owners and practitioners living and working in the city's floodplain, the option to design or otherwise retrofit buildings to (a) reduce damage from future flood events, (b) be resilient in the long-term, and (c) potentially save on long-term flood insurance costs. Overall, implementation of Zoning for Coastal Flood Resiliency would improve the ability of the city's many flood-prone neighborhoods to withstand and recover quickly from future storms.

These recommendations have been drawn from lessons learned and initiatives implemented through the city's recovery efforts after Hurricane Sandy. They were developed based on analysis of resilient construction in the floodplain, through coordination with partner city agencies, and community feedback received during an extensive public engagement process.

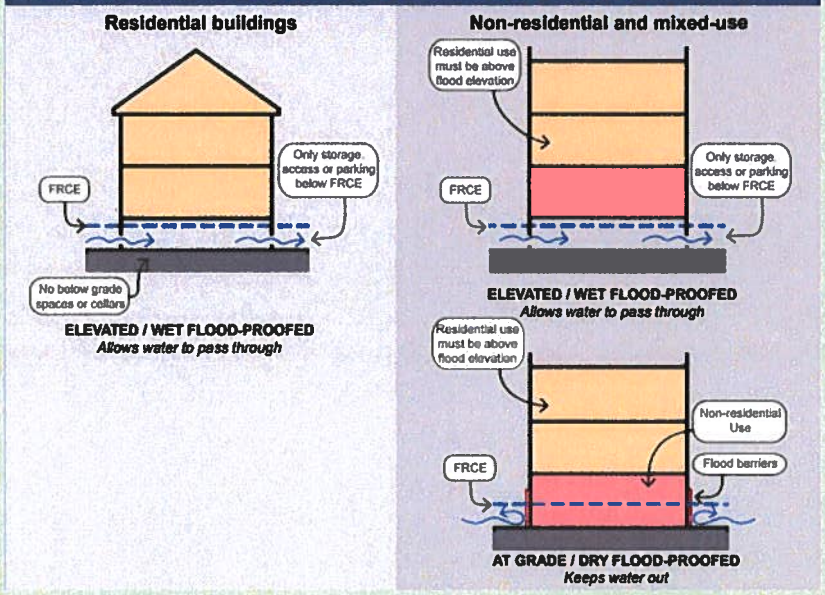
Features of the preliminary recommendations include:

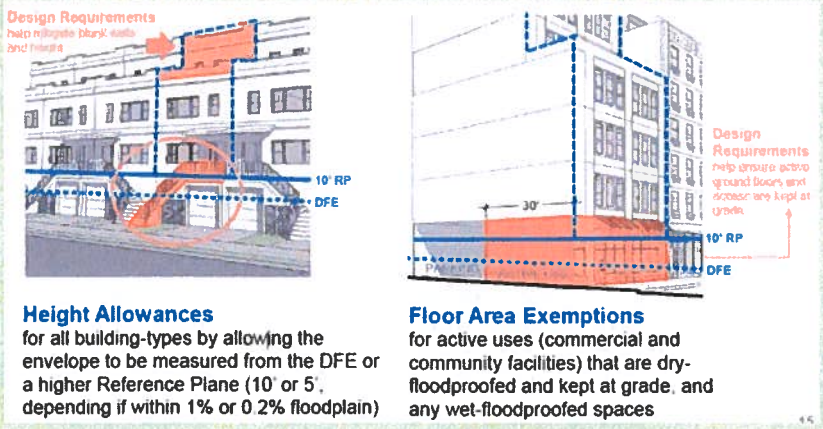
1. **An expanded geography:**
   Buildings in both the city's 1% annual chance floodplain and 0.2% annual chance floodplain would have access to rules that allow building owners to invest in resiliency improvements to fully meet or exceed flood-resistant construction standards, even when these standards are not required by the Federal Emergency Management Agency (FEMA) and Appendix G of the NYC Building Code.



2. **An enhanced building envelope:**
   Zoning allowances coupled with enhanced design requirements would allow building owners to better accommodate sea level rise projections when designing new buildings or retrofitting existing ones, without creating negative impacts on the streetscape. This would increase the building's and its content's safety and allow flood insurance costs to be reduced, while ensuring an accessible design that makes the streetscape more inviting.

FEMA: FLOOD ZONE CONSTRUCTION STANDARDS



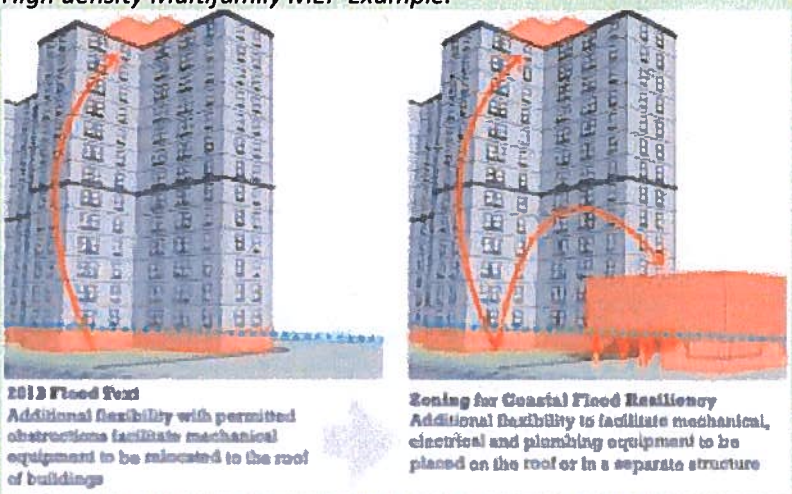


Height Allowances
for all building-types by allowing the envelope to be measured from the DFE or a higher Reference Plane (10' or 5', depending if within 1% or 0.2% floodplain)

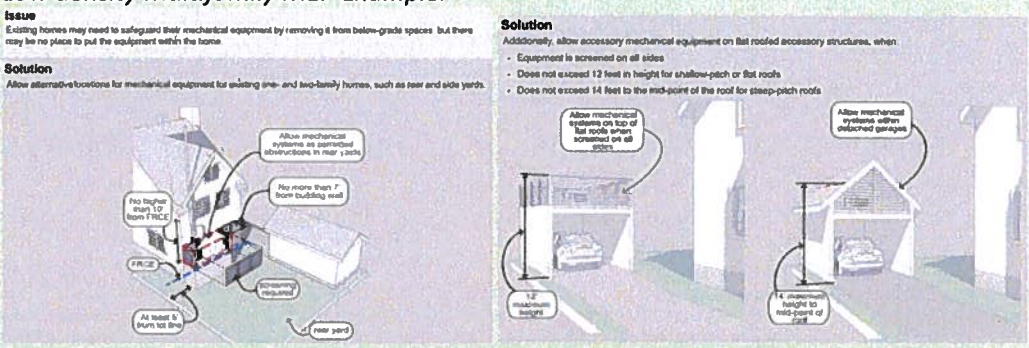
Floor Area Exemptions
for active uses (commercial and community facilities) that are dry-floodproofed and kept at grade, and any wet-floodproofed spaces

3. **Alternatives for the relocation of important equipment:**
   Building owners would have additional zoning flexibility to relocate mechanical, electrical and plumbing (MEP) equipment or install back-up systems such as generators above areas at risk of being flooded, including on roofs or in new separate structures.

High density Multifamily MEP Example:

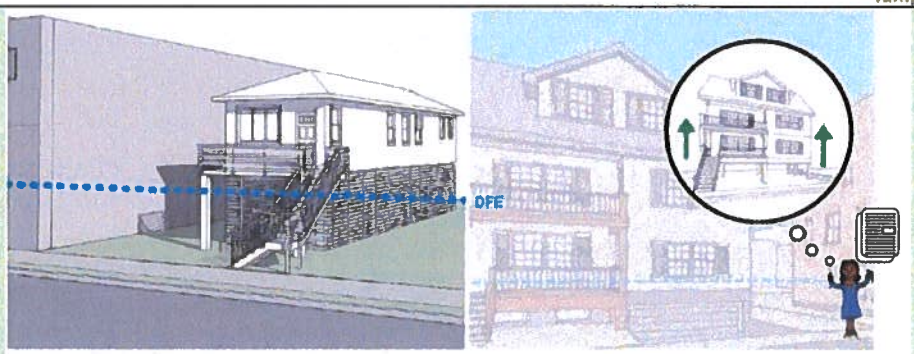


Low density Multifamily MEP Example:



https://www1.nyc.gov/assets/planning/download/pdf/zoning/districts-tools/flood-test/flood-text-overview-presentation.pdf

4. **A zoning framework that facilitates recovery from future disasters:**
   Rules that make it easier for damaged buildings to be reconstructed would be enabled in the event of a future disaster. This would allow residents and neighborhoods to recover faster and allow the city to more quickly offer disaster assistance to those who are impacted.



Reconstruction allowances
Substantially-damaged non-conforming or non-complying buildings can rebuild to at least minimum resiliency standards

Documentation process
Aerial photographs/tax bills can be used to establish the existence of a building. A survey may be used to document non-compliances

In the long-term, Zoning for Coastal Flood Resiliency, in conjunction with coastal protection strategies and infrastructure improvements that are being pursued by the city and other state and federal agencies, will help to fully realize the vision of a more resilient NYC. To learn more, please visit: https://www1.nyc.gov/assets/planning/download/pdf/plans-studies/flood-resiliency-update/zoning-for-flood-resiliency.pdf

Other resiliency initiatives

Aside from Zoning for Coastal Flood Resiliency, DCP also works in shaping NYC's waterfront and waterways to promote growth, equity, resiliency and sustainability. This work is mainly conducted through the NYC Waterfront Revitalization Program (WRP), which establishes the City's policies for waterfront planning, preservation and development projects to ensure consistency over the long term. The goal of the program is to maximize the benefits derived from economic development, environmental conservation and public use of the waterfront. Projects that require certain federal, state and local discretionary actions that are located within and/or affect the Coastal Zone are reviewed by a relevant government agency to assess the consistency of a proposed activity or project with the WRP's ten policies.

One of these policies–Policy 6.2–sets guidelines for climate change adaptation, which requires applicants identify the site's vulnerabilities to coastal hazards, such as flooding, wave action, and erosion, and to demonstrate how the proposed design will address these vulnerabilities. It also guides applicants to refer to the Climate Resiliency Design Guidelines developed by the Mayor's Office of Resiliency, which recommend buildings to be designed to the 50th percentile sea level rise projections over the project's anticipated useful life, in addition to freeboard required by the Building Code.

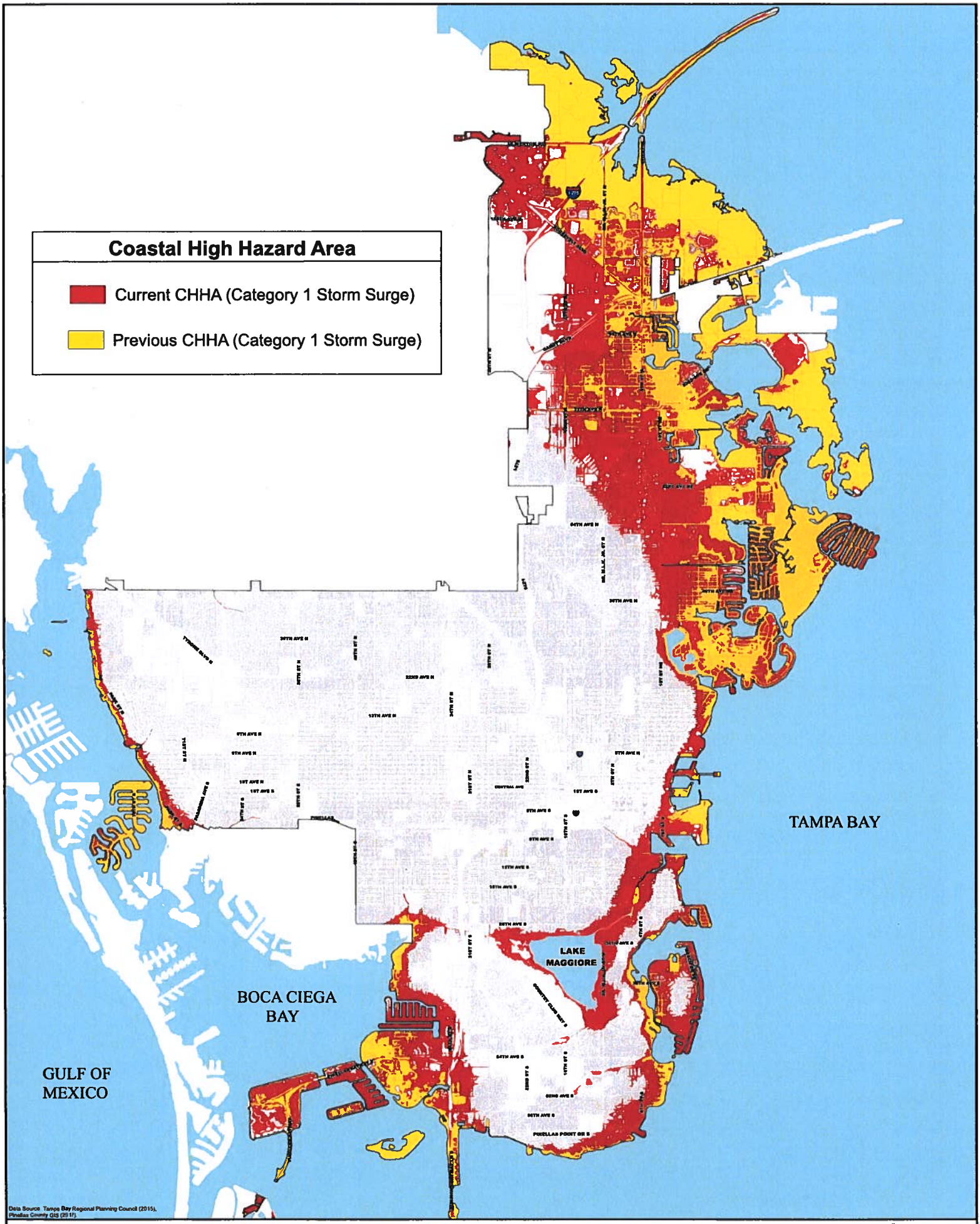
The following link takes you to a document that NYC uses for waterfront development which dictates design strategies for shorelines under Policy 6.2:
https://www1.nyc.gov/assets/planning/download/pdf/applicants/wrp/revisions-2017/policy-62-guidance-document-nov2018.pdf

In addition to the WRP review, waterfront development is also shaped by Article VI, Chapter 2 of the NYC's Zoning Resolution, which addresses the form, size and location of new development, and the amount and quality of required waterfront public access areas. One of its main regulations, require

developments to maintain an open area along the shoreline, which is referred to as the waterfront yard. All residential and commercial developments are required to provide a waterfront yard that is 30 to 40 feet wide, depending on the district, along the entire shoreline. While this rule mainly serves the objective of allowing for the public access to the waterfront, it also helps protect natural resources in environmentally sensitive areas along the shore.

In the context of flood resiliency, required setbacks can also be useful as an interim measure to help prepare cities to be able to implement coastal protection measures and have the space to accommodate future resilient infrastructure investments.

For more information, please consult the following link:
https://www1.nyc.gov/site/planning/zoning/districts-tools/waterfront-zoning.page



City of St. Petersburg

March 2017

Planning and Economic Development Department

ATTACHMENT D: TAMPA BAY CLIMATE SCIENCE ADVISORY PANEL REPORT

RECOMMENDED PROJECTIONS OF SEA LEVEL RISE IN THE TAMPA BAY REGION

Tampa Bay Climate Science Advisory Panel

Updated April 2019

RECOMMENDED PROJECTIONS OF SEA LEVEL RISE IN THE TAMPA BAY REGION

Executive Summary

In this document, the Tampa Bay Climate Science Advisory Panel (CSAP) recommends a common set of sea level rise (SLR) projections for use throughout the Tampa Bay region. The recommendation establishes the foundation for a coordinated approach to address the effects of a changing climate, which advances the objectives of the newly-established Tampa Bay Regional Resiliency Coalition. Local governments and other agencies planning for SLR in the Tampa Bay region should incorporate the following key findings of this CSAP recommendation.

- Data measured at the St. Petersburg tide gauge shows that water levels in Tampa Bay have already increased approximately 7.8 inches since 1946.
- Based upon a thorough assessment of scientific data and literature, the Tampa Bay region can expect to see an additional 2 to 8.5 feet of SLR by 2100.
- Projections of SLR should be consistent with present and future National Climate Assessment estimates and methods. The NOAA Low scenario should not be used for planning purposes.
- Projections of SLR should be regionally corrected using St. Petersburg tide gauge data.
- Adaptation planning should employ a scenario-based approach that, at minimum, considers location, time horizon, and risk tolerance.

Introduction

Formed in spring 2014, the CSAP is an ad hoc network of scientists and resource managers working in the Tampa Bay region (Figure 1). The group's goal is to collaboratively develop science-based recommendations for local governments and regional agencies as they respond to climate change, including associated sea level change. The CSAP first released a recommended projection of SLR in the Tampa Bay region in 2015. The original recommendation (CSAP 2015) included a set of projections that were regionally-corrected to the St. Petersburg tide gauge and consistent with the Third National Climate Assessment (NCA3). The original guidance called for the recommendation to be revisited at a minimum of every five years, or sooner if significant new scientific information on future SLR became available.

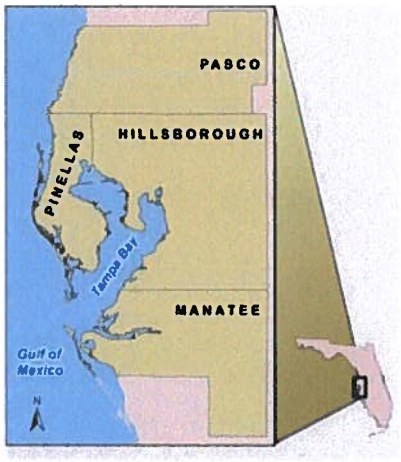


Figure 1. Map of the four county region served by the CSAP.

This document, which is an update of the 2015 report, assesses the Fourth National Climate Assessment (NCA4) that was released in November 2018 and recently published literature synthesizing observed changes in sea level using satellite altimetry (Nerem et al. 2018). The update explains the technical methods used to produce

SLR projections and offers the rationale for the selection of SLR projections recommended for the Tampa Bay region through 2100. With these shared projections, local governments can coordinate, develop, and implement appropriate coastal adaptation and risk reduction strategies.

The Tampa Bay region, with nearly 700 miles of shoreline and 3 million residents- most of whom live near Tampa Bay or the Gulf of Mexico - is highly vulnerable to the potential effects of SLR (BEBR 2019). Citizens, emergency managers, and regional leaders have been accustomed to thinking of hazards in terms of the episodic effects of hurricanes or coastal storms; however, it is also important for local governments and regional agencies to consider the long-term, sustained effects of SLR on real property, quality of life, and perhaps most importantly, our ability to sustain growth in the regional economy.

The Tampa Bay regional economy is closely tied to both the Gulf of Mexico and Tampa Bay. It is valued at $170 billion, with $51 billion directly influenced by the bay itself (TBEP and TBRPC 2014). A number of recent reports have identified the Tampa Bay region as one of the most vulnerable coastal metropolitan areas throughout the world due to SLR and flooding (World Bank 2013, Climate Central 2017). Regional measurements show the Tampa Bay region is already experiencing SLR (Figure 2) and there is broad scientific consensus that this trend will continue on into the next century. If adaptation strategies are not implemented, cities throughout the Tampa Bay region will likely experience the following conditions, all of which may incur substantial economic costs:

- Flooding of public infrastructure and private property;
- Shoreline and beach erosion;
- Impacts to the operation of coastal drainage systems;
- Threats to drinking water and wastewater treatment facilities and distribution infrastructure; and
- Shifts in wetlands and other tidal habitats, resulting in the loss of ecosystem services.

The economic costs of inaction given the known threats of SLR must be carefully weighed against the costs of implementing adaptation strategies, technological solutions, and infrastructure investments necessary to protect the health, safety, and quality of life for the community. The Tampa Bay Regional Planning Council estimates that without a coordinated response, the regional economy may lose more than $15 billion in real estate value, $5 billion in property tax revenue, and approximately 17,000 jobs as a direct result of SLR (TBRPC 2017). However, local governments in the Tampa Bay region should feel confident that there are viable opportunities to implement adaptation strategies that increase resilience to SLR and other coastal hazards and protect the region from substantial economic losses. These opportunities benefit from a common set of regional SLR projections that promote coordinated planning and policy efforts; providing such a projection is the fundamental purpose of this recommendation.

Technical Methods and Recommendations

Estimates of future SLR are typically expressed by plotting or tabulating a quadratic function. This function is chosen because it is the simplest mathematical function that can effectively capture a

wide range of possible SLR scenarios, from a constant rate of increase to various accelerated rates of increase. Defining a specific SLR scenario requires three numbers: a datum, the point in time the sea level is defined to be zero; a rate of change, how rapidly sea level is changing (increasing or decreasing) at time zero; and a projection, the amount global sea level is expected to change between time zero and some point in the future[1].

Both the datum and the rate of change are defined using present day observations from a tide gauge proximate to the region of interest. Local sea level change rates reflect a variety of local factors, including vertical land motion (subsidence or uplift) and changes in estuarine and shelf hydrodynamics, regional oceanographic circulation patterns, and hydrologic cycles (river flow). So, while global measurements and projections are important for estimating SLR, local measurements and projections are needed for realistic regional planning efforts. For the Tampa Bay region, the CSAP recommends using data collected from the tide gauge located near downtown St. Petersburg to adjust the first two parameters necessary to predict regional SLR. The St. Petersburg tide gauge (NOAA 2019a) has the longest reliable period of record in the region and is consistent with other nearby tide gauges, including one located in the Gulf of Mexico at Clearwater (NOAA 2019b). Data measured at the St. Petersburg tide gauge shows that water levels in Tampa Bay have increased 7.8 inches (~1 inch/decade) since 1946 when water levels were first recorded at this tide gauge (Figure 2).

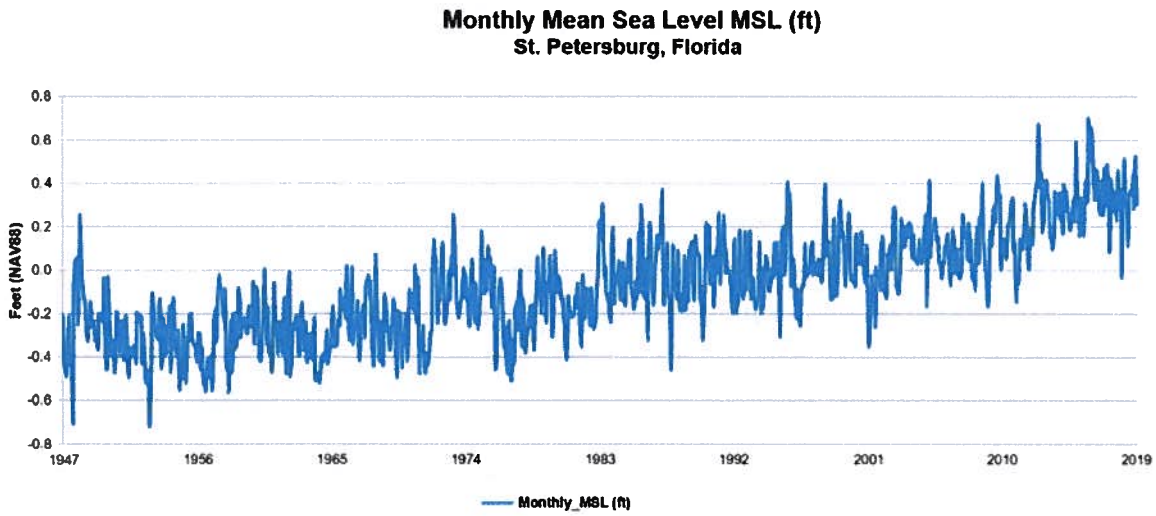


Figure 2. 1946-2018 Monthly Mean Sea Level Trend in St. Petersburg, FL, NOAA Tide Gauge #8726520

The final parameter, projections of how much sea level will change globally over the next 100 years, is derived from expert climate scientists. Currently, there are two primary sources of information regarding SLR projections: the Intergovernmental Panel on Climate Change (IPCC), and the US National Climate Assessment (NCA). Although these assessments employ different methods (IPCC relies upon numerical process models; the NCA employs a semi-empirical,

[1] Most often, this point in the future is the year 2100. However, this does not mean that SLR will stop in 2100, nor does it mean that we only know what the predicted sea level will be in 2100. The quadratic function can show possible sea levels at any point along the curve, between now, 2100, and beyond.

probabilistic approach to estimate contributions from ocean, cryosphere, geologic, and anthropogenic processes), both approaches result in similar estimates of SLR. This implies that the results obtained through either approach are robust and should provide practitioners with a higher degree of confidence in using the recommended projections for planning purposes.

The National Oceanic and Atmospheric Administration (NOAA) Technical Report, *Global and Regional Sea Level Rise Scenarios for the United States* (Sweet et al. 2017b), was produced as a coordinated, interagency task force to identify nationally agreed upon estimates for global and regional SLR to inform the 4th National Climate Assessment (hereinafter the NOAA projections). Notably, the report incorporates regional factors contributing to sea level change for the entire U.S. coastline and assigns conditional probabilities to six SLR projections based on future greenhouse gas emissions and associated ocean-atmosphere warming in order to help decisionmakers assess and manage risk (Sweet et al. 2017a). These scenarios, known as representative concentration pathways (RCPs), describe four different 21st century pathways of greenhouse gas emissions and atmospheric concentrations, air pollutant emissions, and land use (IPCC AR5) which are necessary for understanding future sea level change.

The CSAP advises that local governments and regional agencies continue to use the SLR scenarios included in the NCA, adjusted to local conditions, to inform adaptation and infrastructure planning efforts in the Tampa Bay region. Although the CSAP generally recommends following the NCA, only three of the six SLR scenarios included in the NCA4 are part of this recommendation: NOAA Intermediate-Low, Intermediate, and High. Further, until the private and public sectors make meaningful efforts to reduce greenhouse gas emissions, the CSAP advises that local governments and regional agencies assess the likelihood of the three SLR scenarios using RCP 8.5, which models climate change without additional efforts to constrain emissions (Van Vuuren et al. 2011, IPCC AR5).

Additional evidence published in 2018 was evaluated and incorporated into the updated recommendation. This recently published work, which was not available at the time the NCA4 was developed, uses satellite altimetry data to assess the rate of global sea level change (Nerem et al. 2018). Satellite radar altimeters have been measuring the open ocean surface height (sea level) since 1993 by quantifying the time it takes a radar pulse to make a round-trip from the satellite to the sea surface and back. Observed (not modeled) changes over 25 years demonstrate that the rate of SLR is increasing and that the increase is consistent with the mathematical models used to inform the IPCC and National Climate Assessment. Based on these validating observations, the NOAA Low scenario (which depicts a linear rate of rise with no projected acceleration) is very unlikely and should be excluded. Therefore, the CSAP recommends that entities planning for SLR use the NOAA Intermediate-Low scenario as the lowest plausible bound for future sea level change.

Similarly, the NOAA Extreme scenario represents the maximum ice sheet melt that is physically possible. However, the probability of this occurrence is exceptionally low and not yet supported by established science. There is, however, emerging science that suggests there may be a new instability mechanism in the ice sheets that would lead to significantly higher melt rates (Alley et

al. 2019). While this is not yet scientifically vetted, it does suggest that long-term sea level changes may be higher than the current best available science supports. Therefore, the CSAP recommends that entities planning for SLR use the NOAA High as the upper bound for future sea level change, until additional information related to ice sheet processes is settled. The CSAP will continue to monitor this rapidly-evolving field of research.

Finally, the NOAA Intermediate scenario is recommended to fully capture the plausible range of likely SLR given the probabilistic framework laid out in the NCA4.

Future SLR estimates consistent with this recommendation, that integrate data from the local St. Petersburg tide gauge, can be calculated for the Tampa Bay region using a flexible, well-supported tool developed by the US Army Corps of Engineers (USACE)[2]. The tool takes the three parameters discussed above (datum, rate of change, projection) and produces the plots or tables that describe how sea level will change in the future, such as those included as Figure 3 and Table 1.

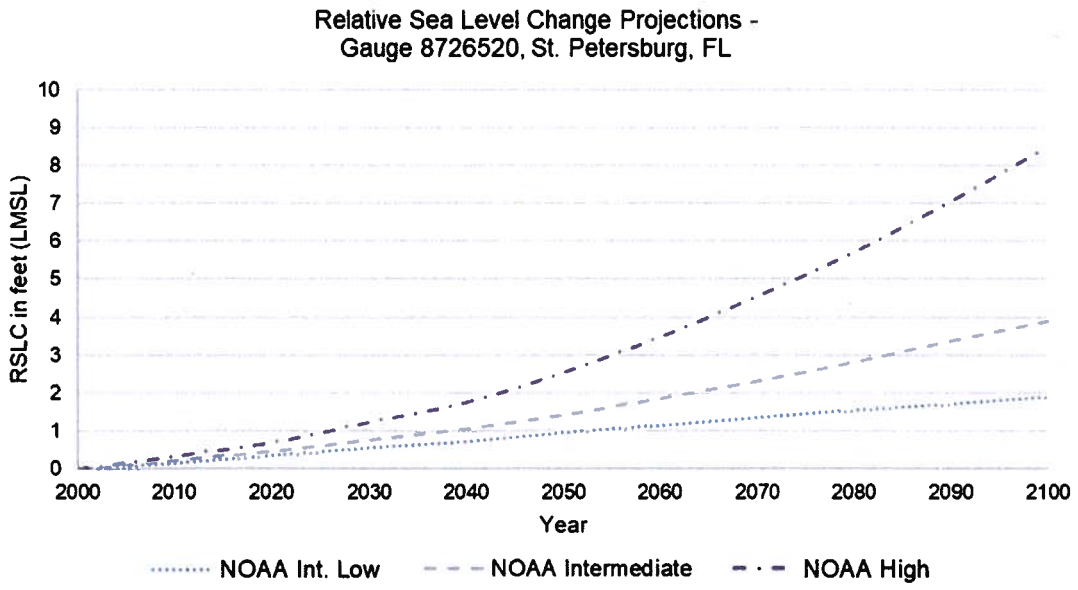


Figure 3. Graphic Relative Sea Level Change (RSLC) Scenarios for St. Petersburg, Florida, as calculated using the regionally corrected NOAA 2017 curves. (USACE 2019)

[2] When using the USACE Sea Level Change Curve Calculator Tool, first select the "St. Petersburg, FL" gauge, then choose "NOAA 2017" as the output agency. Although the CSAP recommends using the USACE Sea Level Change Curve Calculator Tool, this should not be confused with a recommendation of the USACE SLR projections. Although the USACE SLR projections produce results that are similar to that of the IPCC and NCA, they are based on equations developed in 1987 for the National Research Council (NRC) report, *Responding to Changes in Sea Level; Engineering Implications* and do not represent the best available science.

RECOMMENDED PROJECTIONS OF SEA LEVEL RISE IN THE TAMPA BAY REGION

The regionally adjusted NOAA SLR projections (Table 1 and Figure 3) can be summarized as follows:

- *NOAA Intermediate Low (1.9 feet by 2100)*: This scenario represents a slight increase in the rate of SLR. Low end of *very likely* range if greenhouse gas emissions continue current trends (RCP8.5).
- *NOAA Intermediate (3.9 feet by 2100)*: This scenario represents a moderate increase in the rate of SLR. High end of *likely* range if greenhouse gas emissions continue current trends (RCP8.5).
- *NOAA High (8.5 feet by 2100)*: This scenario represents a significant increase in the rate of SLR. High end of *very likely* range if greenhouse gas emissions continue current trends (RCP8.5) and when accounting for possible ice sheet instabilities.

Year	NOAA Int-Low (feet)	NOAA Intermediate (feet)	NOAA High (feet)
2000[3]	0	0	0
2030	0.56	0.79	1.25
2040	0.72	1.08	1.77
2050	0.95	1.44	2.56
2060	1.15	1.87	3.48
2070	1.35	2.33	4.56
2080	1.54	2.82	5.71
2090	1.71	3.38	7.05
2100	1.90	3.90	8.50

Table 1. Sea Level Change Relative to the Year 2000 for St. Petersburg, Florida in Feet above Local Mean Sea Level (LMSL)

Future sea level estimates are provided in tabular form to help planners and policy makers apply the CSAP recommendations in everyday practice; however, additional clarification is necessary to ensure that the projections are used appropriately. SLR projections should only be used to determine the change in sea level between any two given time periods. For example, Table 1 shows sea level change in 2100 under the NOAA High scenario as 8.50 feet. This means that the sea level height at any location is projected to be 8.50 feet higher on average than it was at that site in the year 2000.

Similarly, consider a hypothetical situation where a local government constructs an infrastructure project in 2030. The costs and risk tolerance associated with the project are moderate. Elected officials have requested that the project withstand at least 30 years of likely SLR. Staff need to

[3] For the purposes of projecting sea level change, the year 2000 is the starting point for the recommended SLR scenarios. Although this represents a point in time the sea level is defined to be zero, it does not mean that sea level change has not occurred prior to that time.

calculate how much additional elevation to incorporate into a modified project design. The appropriate calculation to determine the necessary modifications would be as follows:

1. Select an appropriate SLR projection scenario. (NOAA Intermediate)
2. Determine the sea level at time zero. (0.79 feet)
3. Determine the projected sea level at a known point in the future. (1.87 feet)
4. Calculate the difference between projected SLR at a known point in the future and SLR at time zero. (1.08 feet)

In this example, an additional 1.08 feet above the observed sea level in 2030 would be needed to make the infrastructure project more resilient to future conditions in 2060.

Summary

Based upon a thorough assessment of scientific data and literature on SLR, the Tampa Bay region can expect to see approximately 1 to 2.5 feet SLR by 2050 and between 2 to 8.5 feet by 2100.

Given this range of uncertainty in future SLR, the CSAP recommends that local governments and other agencies consider a variety of factors, including the expected lifespan of the project, project cost, and criticality of function when developing adaptation strategies. Scenario planning offers opportunities to initiate actions now by balancing the costs of inaction against reasonable returns on investments made to reduce future impacts on the built environment (Figure 4).

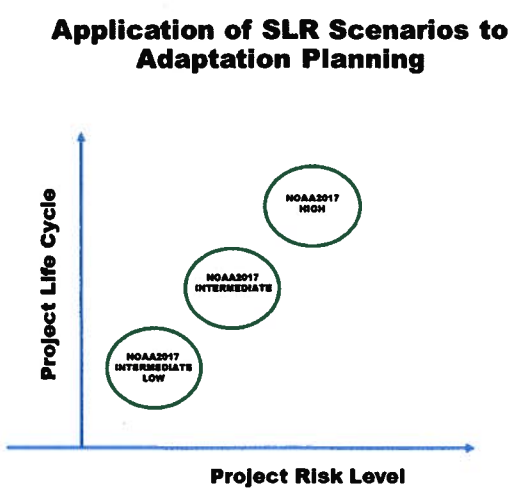


Figure 4. Conceptual diagram demonstrating how to apply SLR scenarios to risk-based decision making.

For example, decisionmakers may decide to plan for less SLR (using the NOAA Intermediate Low) when implementing projects with greater risk tolerance (such as infrastructure projects with a relatively short life cycle or those with high adaptive capacity (e.g. a waterfront park or parking lot), while they may choose to plan for more extreme SLR (using NOAA High scenario) in situations where there is little tolerance for risk (e.g. new infrastructure with a long anticipated life cycle such as a power plant) (NOAA 2012). The level of adaptation planning necessary will be up to the planning entity and based on the acceptable level of risk and vulnerability. The CSAP anticipates working with the Tampa Bay Regional Resiliency Coalition to develop detailed guidance on the appropriate application of each scenario in various risk contexts.

Selecting a common set of SLR projections throughout the Tampa Bay region will advance the objectives of the newly-established Tampa Bay Regional Resiliency Coalition, supporting the efficient development and intergovernmental sharing of vulnerability assessment information and

related policies. Furthermore, use of a regional set of projections of SLR will enable other entities to develop decision support tools, best practices, and planning documents to inform adaptation strategies for those charged with managing public infrastructure and natural resources. The CSAP recommendation is intended to further these goals, but it is important to acknowledge that scientific research advances as a continuous process. New data and technologies require refinements and reevaluation over time. In order to keep up with the best available science, the CSAP commits to revisit this recommendation in five (5) years, at a minimum, or sooner if significant new scientific information on future SLR becomes available.

Local governments and other agencies planning for SLR in the Tampa Bay region should incorporate three key findings of the CSAP recommendation:

- Projections of SLR should be consistent with present and future National Climate Assessment estimates and methods. The NOAA Low scenario should not be used for planning purposes.
- Projections of SLR should be regionally corrected using the St. Petersburg tide gauge data[4].
- Adaptation planning should employ a scenario-based approach that, at minimum, considers location, time horizon, and risk tolerance.

A resilient Tampa Bay region – one that acknowledges and responds to coastal vulnerabilities – is one that can support continued economic, environmental, and cultural prosperity for many years to come.

[4] The Cedar Key tide gauge should be used for Citrus and Hernando counties, which are part of the Tampa Bay Regional Resiliency Coalition.

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List of Acronyms

CSAP	Tampa Bay Climate Science Advisory Panel
IPCC	United Nations Intergovernmental Panel on Climate Change
LMSL	Lower Mean Sea Level (average tidal measurement)
NCA	U.S. National Climate Assessment
NCA3	3rd National Climate Assessment
NCA4	4th National Climate Assessment
NOAA	National Oceanic and Atmospheric Administration
NRC	National Research Council
NTDE	National Tidal Datum Epoch
RCP	Representative Concentration Pathway
RSLC	Relative Sea Level Change
SLR	Sea Level Rise
USACE	United States Army Corps of Engineers

Definition of Terms

Datum:	The base elevation used as a reference from which to reckon heights or depths; The point in time the sea level is defined to be zero.
National Tidal Datum Epoch:	The specific 19-year period adopted by the National Ocean Service as the official time segment over which tide observations are taken and reduced to obtain mean values for tidal datums. It is necessary for standardization because of periodic and apparent secular trends in sea level. The present NTDE is 1983 through 2001 (1992) and is actively considered for revision every 20-25 years.
Projection:	The numerical value of sea level change between time zero and some point in the future.
Rate of Change:	How rapidly sea level is changing (increasing or decreasing) at time zero.
Scenario:	The quadratic function that shows possible sea levels at any point along the curve, between time zero and some point in the future.
Tool:	Processes the datum, rate of change and projection to produce the plots or tables that describe how sea level will change in the future (e.g. USACE Sea Level Change Curve Calculator)

Group Composition

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ATTACHMENT E: CITY OF CLEARWATER FREEBOARD COST ANALYSIS

Floodplain Management Ordinance Discussion of Freeboard and Cumulative Substantial Improvement/Substantial Damage

BACKGROUND

Beginning with the 2010 edition, the Florida Building Code (FBC) includes the flood regulations from the model International Code Series that forms the basis of the FBC. Changes to local floodplain management regulations are necessary to properly coordinate with the FBC. The Florida Department of Emergency Management (FDEM) developed a FEMA-approved model ordinance that is coordinated with the FBC and satisfies the requirements of the National Flood Insurance Program (NFIP). It is designed to repeal and replace existing floodplain management regulations.

The Planning & Development and Engineering Departments are preparing amendments to the City's Floodplain Management Ordinance to bring the City into compliance with FDEM. It could save residents on insurance premiums from not only an improved Community Rating System (CRS) score, but also reduced rates based on the lower risk to a residence. Staff has completed research regarding two specific standards for which City Council direction is desired regarding whether to incorporate either or both of these higher standards into the proposed Ordinance. A summary of these standards and research is provided below.

FREEBOARD

Freeboard is defined as "requiring the lowest floor of residences to be higher than the base flood elevation." It provides a margin of safety against extraordinary or unknown flood risk. Base flood elevation (BFE) reflects an estimated flood risk, but other factors can cause flood heights to rise above the BFE, including wave action, tides, and development. A structure with freeboard may incur less damage which would equate to an easier and faster clean up after a storm. Dry flood proofing for commercial buildings is required up to the adopted freeboard line.

Suggested Language for Floodplain Management Ordinance (New)
Elevation Requirements. The minimum elevation requirements shall be as specified in ASCE 24 or the base flood elevation plus 2 feet (610 mm), whichever is higher.

Benefits to Insurance Premiums
Elevating buildings higher than the minimum required BFE reduces the frequency and severity of flood damage. Reflecting that reduction, NFIP flood insurance premiums are lower for individual buildings that are elevated above the minimum BFE. Freeboard provides a reduction in flood insurance premiums directly to the homeowner. An independent study conducted for FEMA determined that the incremental added cost of additional elevation can be offset within 3 years of paying flood insurance premiums. The table below is a representation of insurance savings of a residence built over the BFE based on the flood zone.

Residential Insurance Premium Savings with Freeboard

Feet of Freeboard	V Zone	A Zone
1	17%	47%
2	37%	64%
3	54%	70%

City-Sponsored Freeboard Study

The City requested Engineer of Record J. Kokolakis Contracting, Inc. to perform an assessment of what the increased cost of 2 feet of freeboard would be if provided based on two recently constructed properties (one residential, one commercial). See tables below that are excerpts from the report. Based on this assessment, the 2 feet of freeboard would increase construction cost of the residential property by 1.6% and the commercial property by 0.3%.

Increased Cost of Construction of 2 Feet of Freeboard at Residential Property

Residential Property Example XXX Eldorado Avenue	Project Value	Property Area (SSF)	Building Footprint Area (fpSF)	Building Area (BSF)
Original Values	$1,250,000.00	6,600.00	2,018.00	4,592.00
Original Cost/Area (BFE 14)		$189.39	$619.43	$272.21
2' BFE Cost Increase				
Piling - (40) pile increased 2'	$3,768.00	$0.57	$1.87	$0.82
Masonry Walls at Grade Level	$4,760.00	$0.72	$2.36	$1.04
Exterior Finish on Masonry	$3,808.00	$0.58	$1.89	$0.83
Interior Finishes on Masonry	$1,428.00	$0.22	$0.71	$0.31
Painting Interior & Exterior	$1,428.00	$0.22	$0.71	$0.31
MEP Extension Allowance	$1,000.00	$0.15	$0.50	$0.22
Subtotal Direct Cost Increases	$16,192.00	$2.45	$8.02	$3.53
Soft Cost/Indirect Costs	$4,048.00	$0.61	$2.01	$0.88
Total Cost Increase	**$20,240.00**	**$3.07**	**$10.03**	**$4.41**
Updated Project Cost (BFE 16)	$1,270,240.00	$192.46	$629.45	$276.62
Percentage Cost Increase		1.62%	1.62%	1.62%

Increased Cost of Construction of 2 Feet of Freeboard at Commercial Property

Commercial Property Example XXX S Gulfview Blvd	Project Value	Property Area (SSF)	Building Footprint Area (fpSF)	Building Area (BSF)
Original Values	$60,000,000.00	80,070.00	52,283.00	386,054.00
Original Cost/Area (BFE 14-16)		$749.34	$1,147.60	$155.42
2' BFE Cost Increase				
Piling - (400) pile increased 2'	$32,000.00	$0.40	$0.61	$0.08
Increased Grade at Footprint	$23,236.89	$0.29	$0.44	$0.06
Concrete Ramp Extensions	$1,500.00	$0.02	$0.03	$0.00
Walls at Grade Level	$34,780.00	$0.43	$0.67	$0.09
Exterior Finish on Masonry	$31,302.00	$0.39	$0.60	$0.08
Interior Finishes on Masonry	$17,390.00	$0.22	$0.33	$0.05
Railing Extensions to New Grade	$2,500.00	$0.03	$0.05	$0.01
MEP Extension Allowance	$25,000.00	$0.31	$0.48	$0.06
Subtotal Direct Cost Increases	$167,708.89	$2.09	$3.21	$0.43
Soft Cost/Indirect Costs	$33,541.78	$0.42	$0.64	$0.09
Total Cost Increase	**$201,250.67**	**$2.51**	**$3.85**	**$0.52**
Updated Project Cost (BFE 16-18)	$60,201,250.67	$751.86	$1,151.45	$155.94
Percentage Cost Increase		0.34%	0.34%	0.34%

Benefits in CRS
CRS recognizes a community's effort of going beyond minimum building standards that reduce the likelihood of flood damage. The table below demonstrates the potential of points awarded based on the freeboard requirements.

Feet of Freeboard	CRS Points
1	100
2	225
3	375

For the City to continue to improve its CRS score (i.e., to move from a 6 to a 5), in addition to more points being required, prerequisites must also be met. One of the perquisites is to have a freeboard requirement, which the City would establish in the Floodplain Management Ordinance.

It is anticipated by DEM and Florida Floodplain Managers Association that the 2020 revision of the CRS program will require at least 1 foot of freeboard to qualify for the CRS program. If this happens, points would probably only be given for freeboard requirements of 2 feet and above.

Freeboard Adopted by Other Communities
Based on information received from DEM, 148 Floodplain Management Ordinances include freeboard. An informal survey of freeboard requirements of Tampa Bay area communities is below.

Community	Freeboard Requirement (feet)
Hillsborough County	1
Belleair Bluffs	2
Dunedin	1
Indian Shores	4
Madeira Beach	2
Oldsmar	1
Pinellas County	1
Redington Shores	2
St. Petersburg	2
Seminole	1
South Pasadena	2
Treasure Island	2

CUMULATIVE SUBSTANTIAL IMPROVEMENT/SUBSTANTIAL DAMAGE

The NFIP allows improvements valued up to 50% of the building's pre-improvement value to be permitted without meeting the flood protection requirements for buildings located in the Special Flood Hazard Area (SFHA). The City's current regulation allows improvement values to be re-set 1 year after permits have been closed out. Over the years,

the City may issue a succession of permits for different repairs or improvements on the same structure. This can greatly increase the overall flood damage potential to that building. Changing the regulation to 5 years (cumulative) eliminates this "loophole." This provision reduces the likelihood that property owners would deliberately phase improvements for the specific purpose of avoiding the basic 50% substantial improvement rule.

Suggested Language for Floodplain Management Ordinance (New)
Substantial Improvement/Substantial Damage. Any combination of repair, reconstruction, rehabilitation, alteration, addition or improvement of a building or structure taking place during a 5-year period, the cumulative cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair started. If the structure has sustained substantial damage, any repairs are considered substantial improvement regardless of the actual repair work performed. The term does not, however, include either:

1. Any project for improvement of a building required to correct existing health, sanitary or safety code violations identified by the building official and that are the minimum necessary to assure safe living conditions.
2. Any alteration of a historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure.

Benefits in CRS
Cumulative Substantial Improvement/Substantial Damage (SI/D) is identified as CSI in the CRS User Manual. The table below demonstrates the potential of points awarded based on the cumulative substantial improvement/damage requirements.

Cumulative Timeframe	CRS Points (SI/D)
10 years	40/40
5 years	20/20

Cumulative Substantial Improvement/Substantial Damage Adopted by Other Communities
Based on information received from DEM, 29 communities use 5 years, 20 communities use 10 years, one community uses 20 years, and seven communities use life of the structure to assess cumulative impacts. The results of an informal survey of Tampa Bay area communities' cumulative substantial improvement/substantial damage timeframes is below.

Community	SI/D Timeframe
Dunedin	5 years
Indian Shores	10 years
Oldsmar	15 years
Redington Shores	5 years
Safety Harbor	Life of Structure
Treasure Island	5 years

CRS STATUS

The City has earned 2,274 CRS points based on current documentation, initiatives, and projects. These points equate to a Class 6 designation and give residents a 20% savings on flood insurance premiums in the Special Flood Hazard Area. That 20% savings equals $1,759,723 across the City.

In order to improve to a Class 5, new initiatives and projects would need to be implemented. CRS points listed in each section are the maximum number of points that could be earned; the exact score would be determined during the verification visit in 2019. Implementing freeboard and cumulative substantial improvement/substantial damage would be significant steps in getting closer to achieving a Class 5.

COASTAL HIGH HAZARD AREA (CHHA)

Committee of the Whole

July 25, 2019

st.petersburg
www.stpete.org

Definitions: CHHA, Evac Zone, SFHA

COASTAL HIGH HAZARD AREA (CHHA) F.S. 163.3178

Area below the elevation of the Category 1 storm surge line as established by a Sea, Lake and Overland Surges from Hurricanes ("SLOSH") computerized storm surge model. (Required in Comp Plan)

HURRICANE EVACUATION ZONES

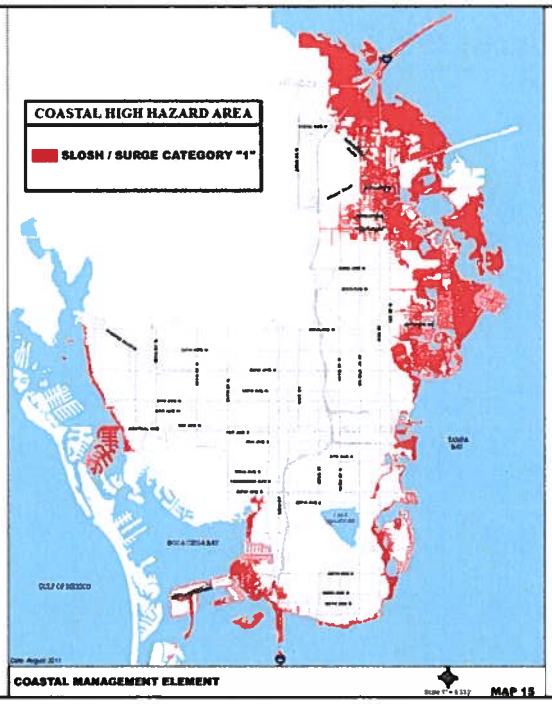
Hurricane evacuation zones (A to E) reflect storm surge vulnerability and the appropriate evacuation level for Category 1 to 5 storm (hurricane) events.

SPECIAL FLOOD HAZARD AREAS (SFHA)

Previously known as the 100-year flood plain. Areas are identified on FEMA's Flood Insurance Rate Map. Designations include the V-Zone and A- or AE Zone

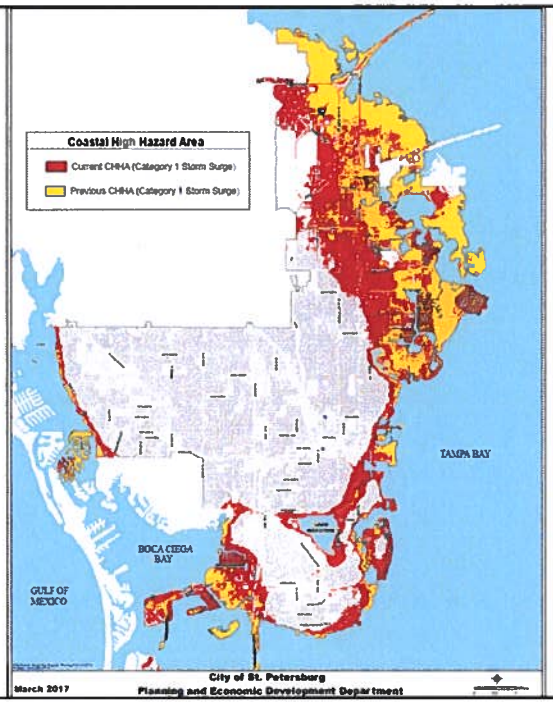
Coastal High Hazard Area

1. How long has the CHHA been around: 1985
2. CHHA boundaries determined by FDEM: SLOSH Model
3. 2010 - 2016 boundary expansion doubled: 41% of the City
4. Why did the CHHA double in size: Updated Technology accounted for Kelvin Wave Dynamics
5. What areas of the City are located in the expanded CHHA…



2010 CHHA Acreage

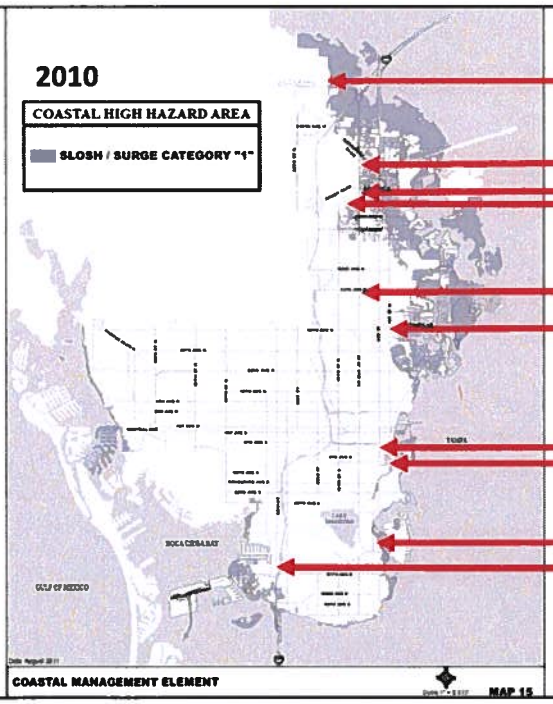
7,705 Acres



2016 CHHA Acreage

2010: 7,702
2016: 8,623

16,328 Acres



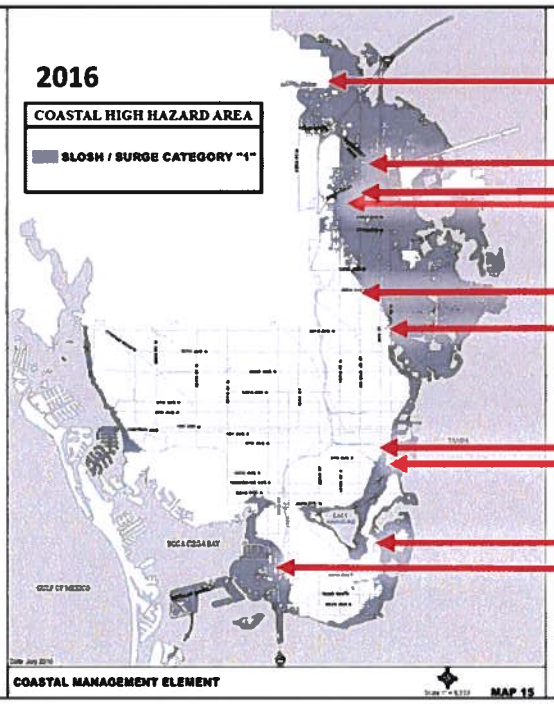
1 Gateway and Carillon Town Center

Jabil Headquarters Campus
Baypoint Commerce Center
ASI / Progressive Insurance HQ
Dr. ML King Jr. St. No. (62nd Ave. No.)
4th Street No. (54th Ave. No.)

Innovation District
USFSP Campus

Coquina Key Shopping Center
Skyway Marina District

10 Mobile Home Parks



Gateway and Carillon Town Center

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Innovation District
USFSP Campus

Coquina Key Shopping Center
Skyway Marina District

10 Mobile Home Parks

St. Petersburg Land Use Policy 7.1

Requests for residential density increases within the Coastal High Hazard Zone shall not be approved.

Prior CHHA Amendment History:

September 2015	Innovation District Visioning Plan
June 2016	2016 CHHA Map update issued by FDEM
March 2017	Innovation District Streetscape & Connectivity Plan
August 2017	Comp Plan public hearing: amend CHHA policy deferred
September 2017	Comp Plan public hearing: amend CHHA policy, canceled (Hurricane Irma)
July 2018	Comp Plan public hearing: amend CHHA policy APPROVED by LPA 4 to 3
August 2018	Comp Plan public hearing: amend CHHA policy, deferred by Council (Hurricane Michael)
January 2019	Council Committee of the Whole to discuss CHHA
February 2019	ULI Tampa grant process
March 2019	Innovation District (minus CHHA parcels) approved by Council

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ULX: Technological Ingenuity features: "Saltmeadow" Multifamily Development

Proposal

1. Amend the Comprehensive Plan
   - Evacuation times / shelter capacity are mitigated
   - Construction is more resilient to storm surge; and/or
2. Amend the Land Development Regulations
   - Multi-family resiliency design standards in the CHHA

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State Statute 163.3178(8)

A proposed comprehensive plan amendment shall be found in compliance with state coastal high-hazard provisions if:

a. The adopted level of service (16 hours) for out-of-county hurricane evacuation is maintained for a category 5 storm; or
b. A 12-hour evacuation time to shelter is maintained for a category 5 storm event and shelter space is available; or
c. Appropriate mitigation is provided that will satisfy subparagraph 1 or subparagraph 2. Appropriate mitigation shall include, without limitation, payment of money, contribution of land, and construction of hurricane shelters and transportation facilities.

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Balancing Review Criteria – Countywide Rules

A. Access to Emergency Shelter Space & Evacuation Routes
B. Utilization of Existing and Planned Infrastructure
C. Utilization of Existing Disturbed Area
D. Maintenance of Scenic Qualities / Improve Public Access
E. Water Dependent Uses
F. Part of Community Redevelopment Area
G. Overall Reduction of Density or Intensity
H. Clustering of Uses
I. Integral Part of Comprehensive Planning Process
J. Location within an Activity Center or Target Employment Center
K. Implement Specific ISAP or Priority Sustainability Actions (to be listed specifically and related to innovation, natural system and realizing resilience)
L. Reduction of Storm Vulnerable Population / Structures

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Land Development Regulations

A. Mitigation requirements

Construction of multi-family (resulting from a map amendment to increase density within CHHA) shall provide for mitigation: payment of money, contribution of land, construction of hurricane shelter(s).

B. Hurricane Evacuation Plan

Construction of new hotels and residential units (multi-family) shall require hurricane evacuation plan, incorporated into legal documents, such as lease.

C. Establish CHHA design standards, resiliency quotient

Comprehensive list of stricter building standards based on a model from Norfolk, Virginia.

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Draft Design Standards Menu

TABLE XX: POINT SYSTEM FOR MULTI-FAMILY RESIDENTIAL DEVELOPMENT	
Development Activity	**Points Earned**
Component 1: Risk Reduction	
Construct building to meet design requirements of next higher classification of Risk Category per ASCE 7	X
Elevate finished floor above minimum 2 feet required (per ASCE 24 & Floodplain regulations)	X
Elevate mechanical systems above minimum 2 feet required (per ASCE 24 & Floodplain regulations)	
Construct an impact-resistant roof *(Are some materials better than others, metal?)*	X
Install impact resistant glazing *(or operable hurricane shutters, one or other is required, but is one preferable and should be incentivized?)*	X
Protect coastal property with a living shoreline (LSL) *(LSLs use natural materials to stabilize the shoreline and maintain valuable fish and wildlife habitat. LSLs utilize a variety of materials such as wetland plants, oyster shell, coir fiber logs, sand, wood, and native rock.)*	X
Design building located in the Coastal A Flood Zone to Flood Zone V *standards (is this the same as the first item?)*	X
Component 2: Recovery	
Establish operating procedures for how the project will handle loss of off-site or grid power, transition to a backup source of power, and transition back to normal operation	X
Generate no less than 75% of the electricity expected to be used by the development from on-site solar and/or wind energy sources	X
Generate no less than 50% of the electricity expected to be used by the development from on-site solar and/or wind energy sources	X
On-site battery storage of solar generated power with X amount of capacity	X
Install a cool roof on at least 25% *[sliding scale?]* of the total roof area of the development *[Add to definition section]*	X
Generate no less than 25% of the electricity expected to be used by the development from on-site solar and/or wind energy sources	X
Generate no less than 25% of the electricity needed expected to be used by the development from on-site solar and/or wind energy sources	X
Install a geothermal energy heating & cooling system serving all residential units and common areas	X
Equip the project with at least one alternative, independent source of electricity supply so that the project is capable of fully operating if a primary source of power experiences interruption	X
Pre-wire all units to accept power provided by on-site solar panels and/or wind turbines	X
Install a 20+ SEER HVAC system in each dwelling unit	X
Install a 16-19 SEER HVAC system in each dwelling unit	X
Install multi-room mini-split heating and cooling systems in each unit	X
Install a solar or tank-less water heating system in each unit	X
Install no fewer than 2 operable windows on no fewer than two exterior walls in each unit	X
Install a generator for power generation to keep critical functions (refrigerator, freezer, basic lighting, healthcare appliances, etc.) working in the event of power failure	X
Install highly-reflective blinds/shades or window film/tint to reduce solar gain	X

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CHHA Design Standards Process

1. **County-wide Working Group established**
   County and City Emergency Management agencies, Forward Pinellas, County and other municipal Planning staff met several times working towards a mitigation solution.
2. **Public Stakeholder Meeting – May 21st**
   Well attended
3. **ULI Technical Advisory Panel – June 18-19th**
   Technical Memo issued
4. **City Council, Committee of the Whole Workshop – July 25th**

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ULI Report: Stakeholder Feedback

- **Opportunities**
  - Higher CHHA standards sets example for the rest of the City
  - Opportunity for preparedness education and outreach
  - Risk reduction through replacement of older vulnerable structures with new
  - Existing institutions in CHHA need nearby housing
  - Increases likelihood that residents will have a home to return to post storm
  - Return on investment (ROI) for mitigation is strong
- **Constraints**
  - Draft code is not flexible enough or apply well to large-scale projects
  - Possibility of disinvestment in the CHHA because of increased development cost
  - Less development in the CHHA could slow City's economic development efforts
  - Increased density will place more people in harms way and burden shelters further
  - Missed opportunity to focus development in less vulnerable areas
  - Utilize coastal land for preservation/mitigation

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ULI Report: 4 Pathways to Multi-family

1. **Menu Point System with Four Categories**
2. **LEED Gold Certification + Elevation + Recovery Requirements**
3. **Workforce Housing + Elevation + Recovery Requirements**
4. **Historic Structures + Evacuation Plan + Recovery Requirements**

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ULI Report: Menu Categories

1. **Structural Mitigation**

   Address physical construction, engineering techniques that achieve hazard resistance

2. **Energy**

   Address the ability for buildings to be resource efficient, reduce waste and sustain electricity independently from grid

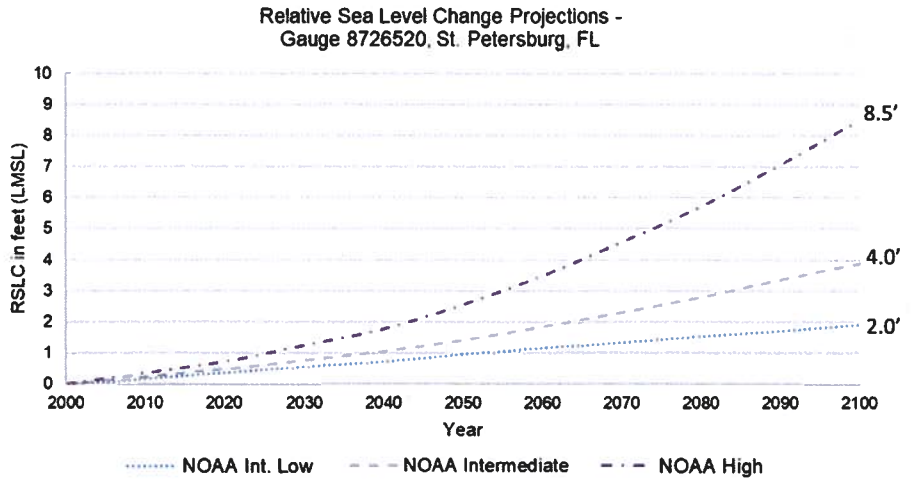
3. **Nature Based Mitigation**

   Use natural systems to provide critical services, such as wetlands for flood mitigation or mangroves to reduce wave impacts and storm surge

4. **Recovery**

   ensuring that structures within the CHHA are intact and habitable after evacuations and quicker resumption of city services

ULI Report: Sea Level Rise



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Next Steps

1. **Draft code development with cost analysis**
2. **Stakeholder meetings**
3. **COW/Public Hearings**

COASTAL HIGH HAZARD AREA (CHHA)

Committee of the Whole

July 25, 2019

st.petersburg
www.stpete.org