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City of Cambridge  
Community Development Department

# Climate Resilience Zoning Task Force Meeting

November 19, 2020





# What is your favorite Thanksgiving food?

cranberries

all of it under gravy

stuffing

all of it under gravy

cheesy cauliflower

turkey

pumpkin pie

sweet potato

pumpkin pie  
apple pie



# Agenda

- **Timeline & Process**
- **Discussion of Potential Recommendations**
- **Public Comment**
- **Next Steps**



# Role of the Task Force

“To bring together stakeholders from across the Cambridge community and **reach consensus** around an effective approach to regulating urban development in a way that will mitigate the identified impacts and risks of on-going climate change.”

# What is Consensus?

“Consensus in this context is defined as concurrence of all or almost all of the participating members that they can **at least “accept” or “live with” the group’s recommendation**, even if it is not their preferred outcome.”



# Final Product

“Report to the City Manager **detailing a set of recommendations** for climate-resilient zoning that can be translated into a formal zoning petition by City staff and presented to the City Council for consideration and adoption.”



# Example Recommendation

**Recommendation:** Amend definition of “Gross Floor Area” to exclude unenclosed areas covered by shade canopy.

**Purpose:** Reduce regulatory barriers to providing outdoor shading.





# Workplan

Meeting #15 – October 22<sup>nd</sup>

Present work-to-date, share updates since March 4<sup>th</sup> meeting



**Meeting #16 – November 19<sup>th</sup>**

Surface remaining concerns about potential recommendations

**Meeting #17 – December 9<sup>th</sup>**

Come to consensus on final draft of recommendations

***Early 2020***

*Review and comment on final report*



# Discussion of Potential Recommendations

# Potential Recommendations Survey

**16 out of 20** Task Force members responded to the survey

**Level of support** indicated on a scale of 1 to 5

Revealed **strong support** for a majority of the 17 potential approaches:

- Very few to no reservations = **10 recommendations**
- Some reservations = **7 recommendations**
- Very strong reservations = **0 recommendations!**

# Survey Results: **Very Few to No Reservations**

1A: **Flood Elevation Definitions**

1C: **Heat Resilient Definition**

2A: Exclude **open areas covered by shade canopy** from Gross Floor Area, yard (setback), and height limitations

2B: **Allow stairs/ramps** in front setbacks as-of-right for Flood Resilient buildings

2C: Exclude **Functional Green Roof Area** from Gross Floor Area and height limitations as-of-right in all cases

2D: Exclude **headhouses for accessing usable roof space** from height limitations

2F: Allow a **compensating building height increase** where the ground floor of the building is raised to meet Flood Resilience standards

3A: Require **Resilience Narrative** in Section 19.20 Project Review Special Permit Requirements

4A: Include **Flood Resilience Performance Requirement** (Section 19.50)

4B: Include **Heat Resilience Performance Requirement** (Section 19.50)

# Survey Results: **Some Reservations**

1B: **Flood Resilient Definition**

2E: Allow **basement exclusion** from Gross Floor Area limitations if the building is certified to be Flood Resilient

3B: Include **Resilience Objectives** in Section 19.30 Citywide Urban Design Objectives

4C: Include **Prescriptive Heat Resilience Requirements** (various options)

5A: Add **Flood Resilience Requirement** to Base Zoning (Article 5.000)

5B: Incorporate **Heat Resilience**

**Performance Standards** (Cool Factor) in Base Zoning

5C: Incorporate **Heat Resilience**

**Prescriptive Standards** in Base Zoning

# Temperature Check Response Options

- Unable to support
- Warrants more TF discussion
- Needs minor revisions by staff
- Ready to move forward

# 1B: Flood Resilient Definition

	<b>Elevate/protect (dry floodproof)</b>	<b>Recover (wet floodproof)</b>
<b>1% LTFE</b>	Residential units Vulnerable systems	Other occupiable spaces (e.g., office, retail)
<b>10% LTFE</b>	Other occupiable spaces (e.g., office, retail)	Entries, storage, ancillary spaces

# 1B: Flood Resilient Definition

“Flood Resilient” means that buildings are designed to meet performance-based standards based on projected long-term flood elevations (LTFE):

**1% probability LTFE (“100-year”):** Residential units and building systems vulnerable to flooding (e.g., electrical panels) are above this elevation or protected by floodproof barriers if below this elevation (“dry floodproofing”). Other occupiable spaces below this elevation are designed to “recover” – i.e., to flood without causing permanent damage or hazard (“wet floodproofing”).

**10% probability LTFE (“10-year”):** Occupiable spaces are above this elevation or protected by floodproof barriers if below this elevation (“dry floodproofing”). Ancillary spaces such as entries or storage areas below this elevation are designed to “recover” – i.e., to flood without causing permanent damage or hazard (“wet floodproofing”).



# What do you think about this recommendation?



# Discussion

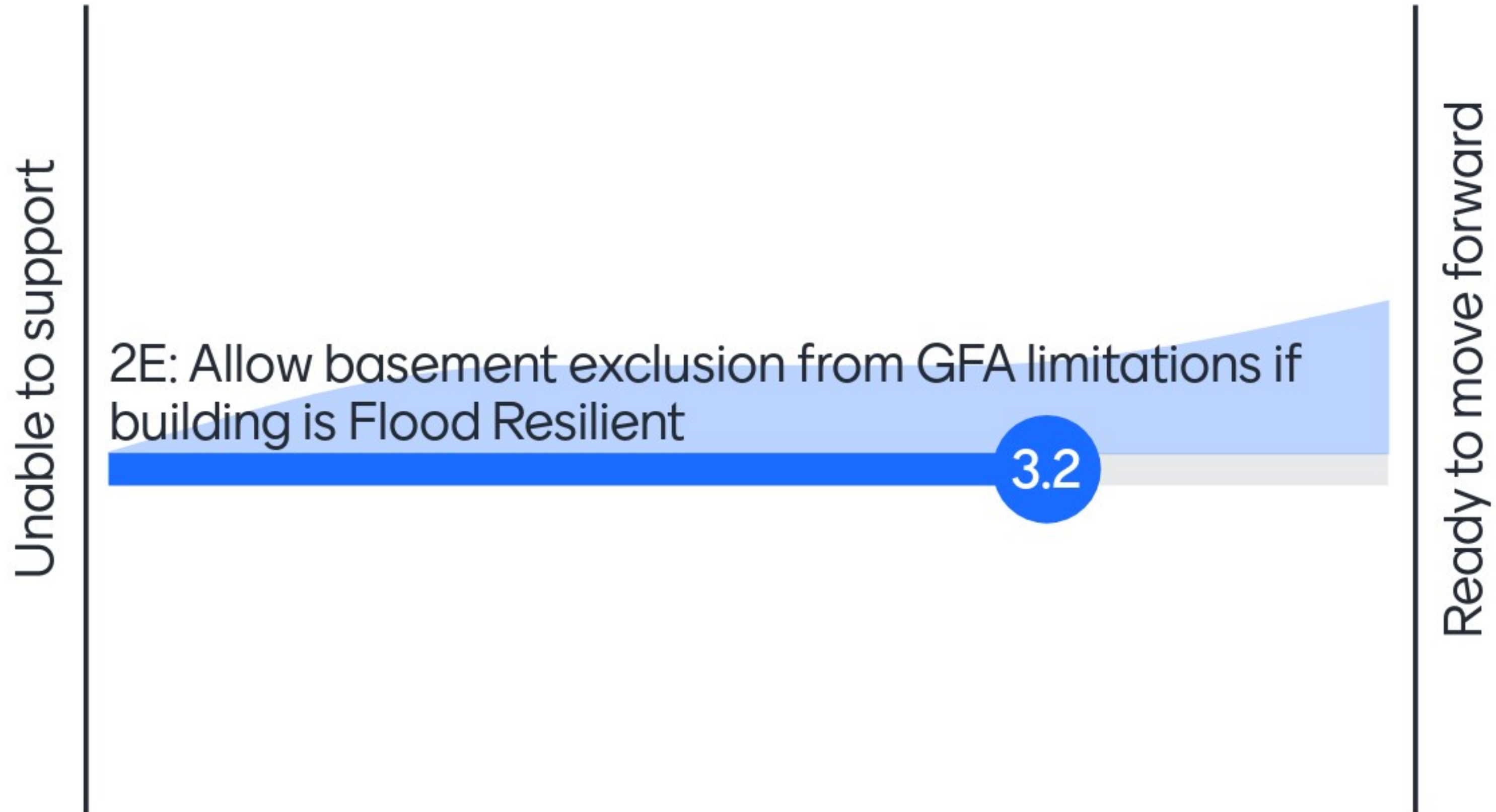
Please raise your hand using Zoom.

## 2E: Allow basement exclusion from GFA limitations if building is Flood Resilient

Allow exclusion from Gross Floor Area limitations if the building is certified to be Flood Resilient.

(Currently, this exclusion requires a special permit in multifamily and non-residential buildings; no flood resilience standards apply.)

# What do you think about this recommendation?



# Discussion

Please raise your hand using Zoom.

## 3B: Include Resilience Objective in Citywide Urban Design Objectives (Section 19.30)

Recommendation: “Buildings and sites are designed to be resilient to increased risks from flooding and heat.”

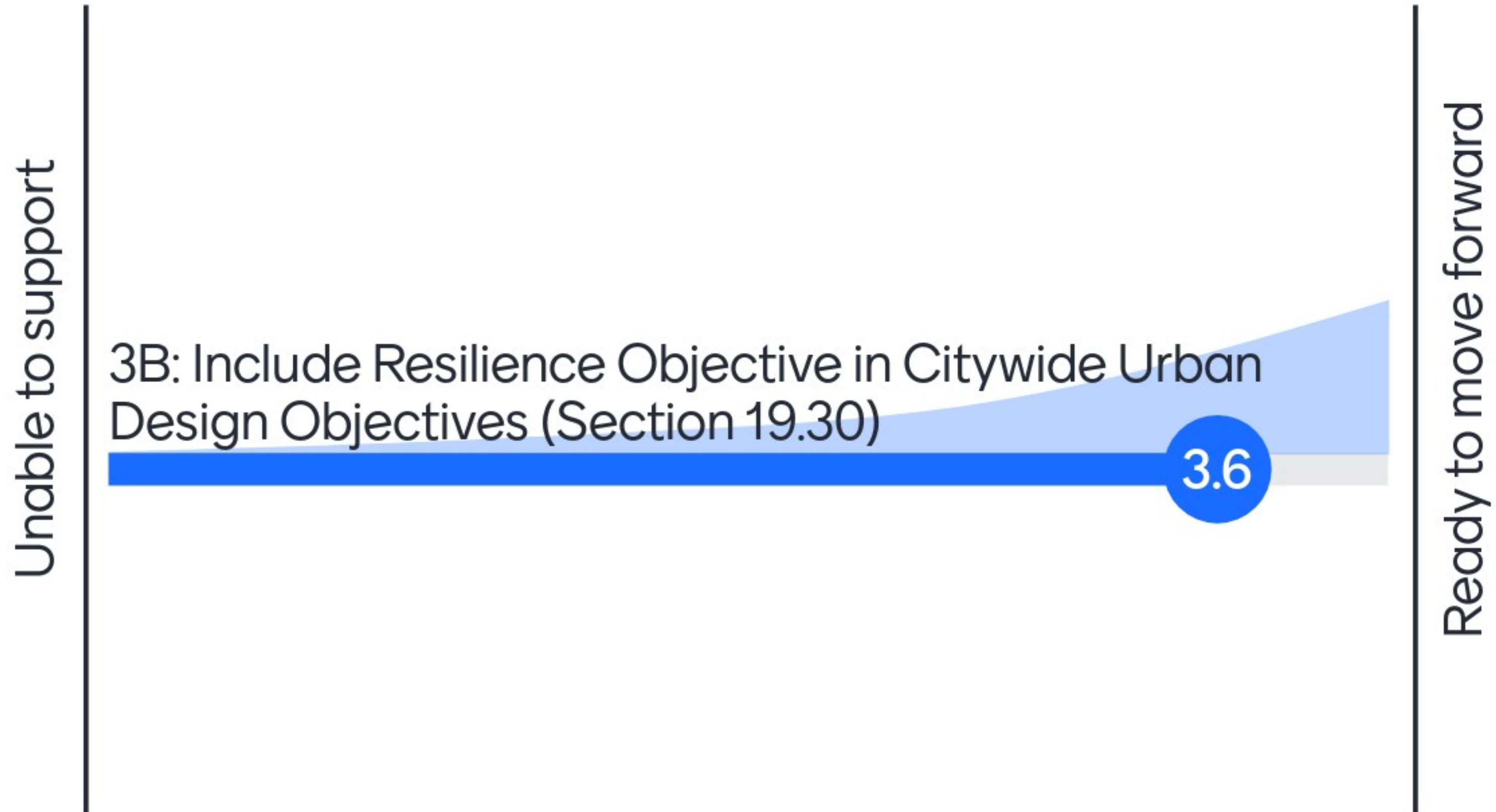
Indicators could include:

- Meeting Flood Resilient standard;
- Meeting Heat Resilient standard;
- Passive survivability;
- Recovery plans;
- Emergency management plans.

### Additional Option:

- Differentiate among different land uses (e.g., residential, commercial).

# What do you think about this recommendation?



# Discussion

Please raise your hand using Zoom.



# 4C: Include Prescriptive Heat Resilience Requirements

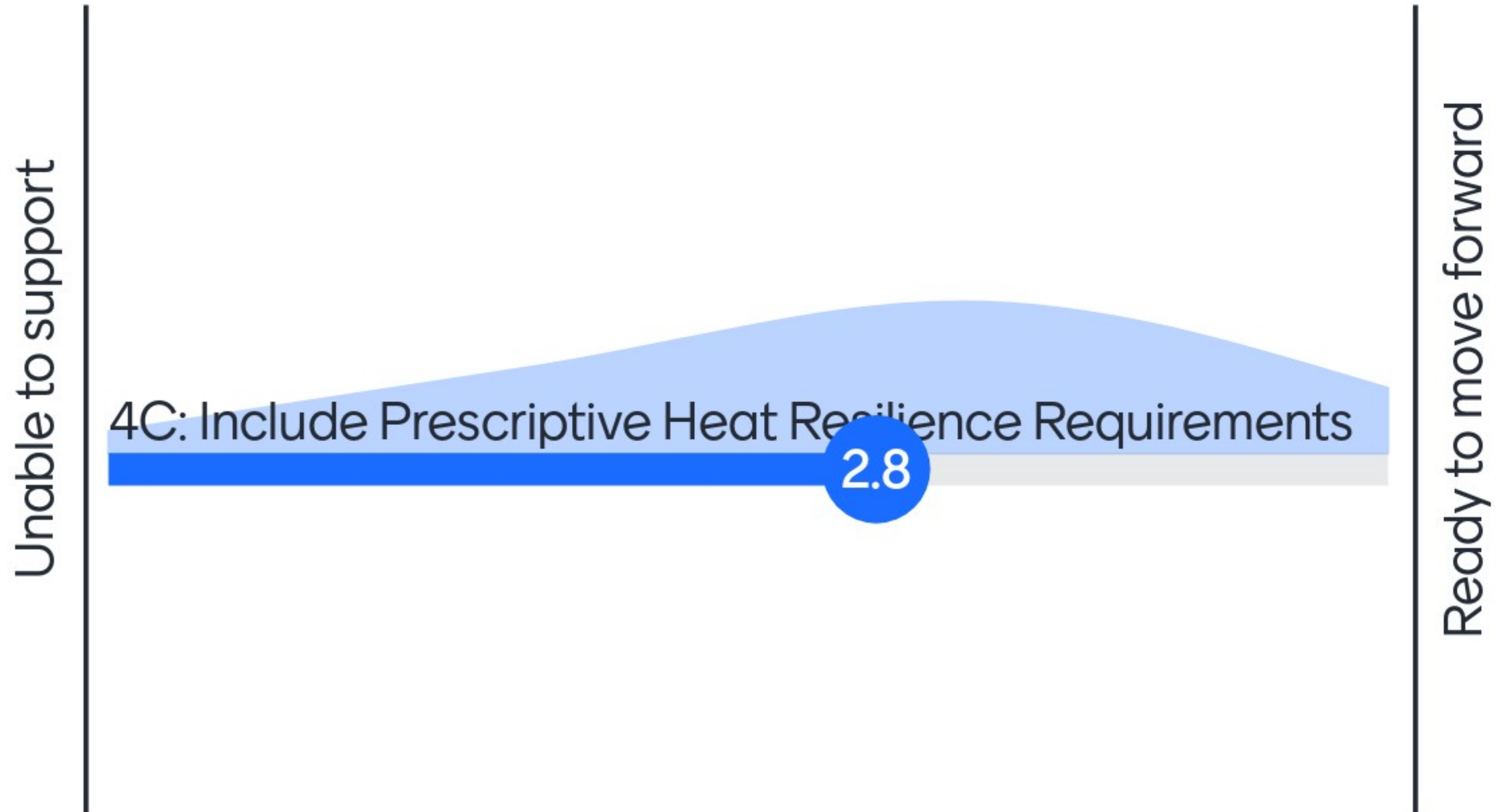
Possibilities include:

- Adding minimum tree planting to front yard landscaping requirements (Section 19.55);
- Increasing vegetation standards in open space requirements (Section 19.59);
- Requiring shading of paved areas and/or high-SRI materials.

## **Additional Options:**

- Differentiate among different land uses (e.g., residential, commercial).
- Modifications could be allowed by special permit, otherwise would require a variance.

# What do you think about this recommendation?



# Discussion

Please raise your hand using Zoom.

# 5A: Add Flood Resilience Requirement to Base Zoning (Article 5.000)

All new construction required to be Flood Resilient with administrative certification (i.e. staff review and approval).

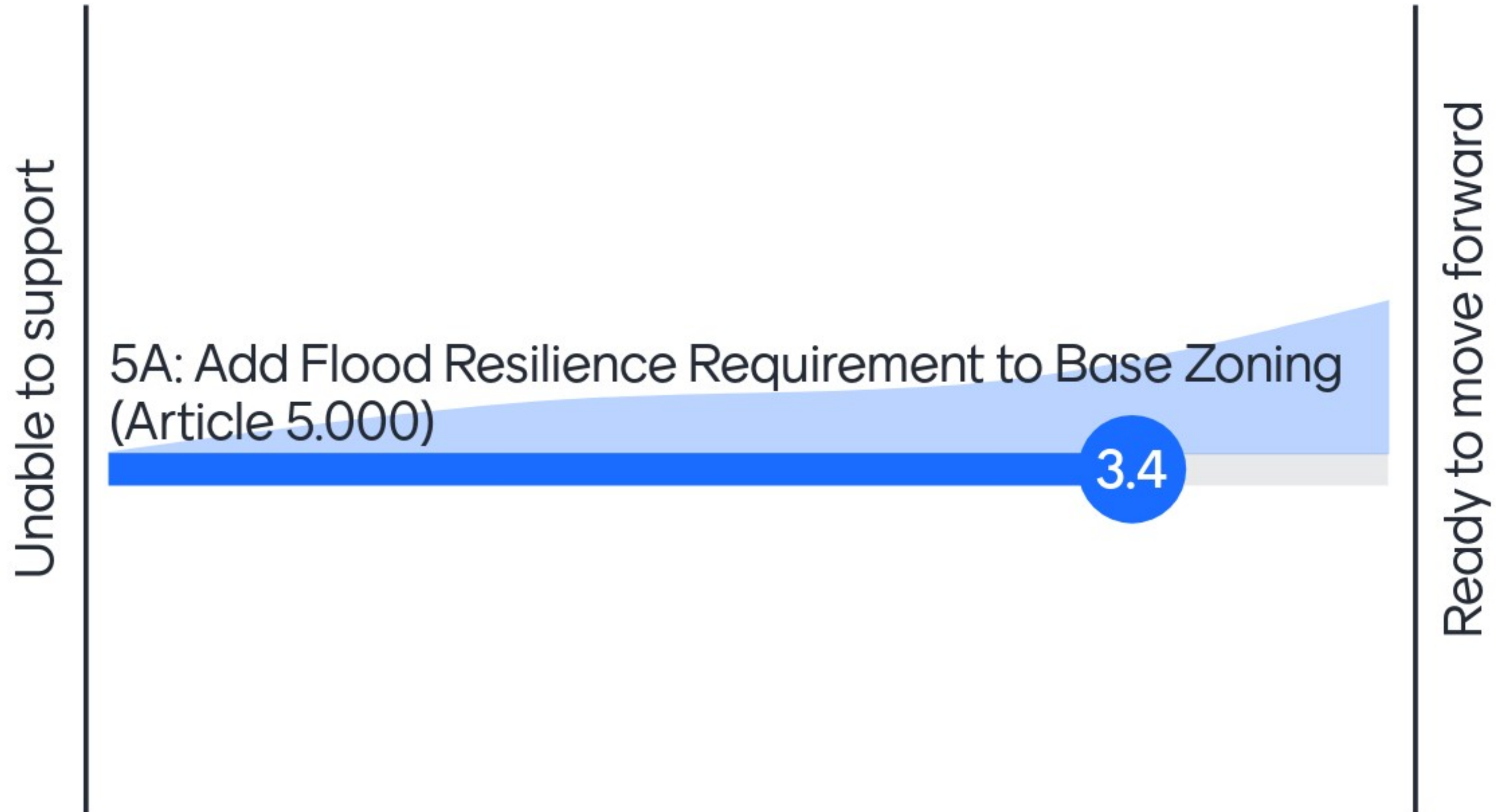
## Alternative:

- Establish an overlay district similar to Flood Plain Overlay District, with specific boundaries subject to periodic change.

## Additional Options:

- Differentiate among different land uses (e.g., residential, commercial).
- Modifications could be allowed by special permit, otherwise would require a variance.

# What do you think about this recommendation?



# Discussion

Please raise your hand using Zoom.

# 5B: Incorporate Heat Resilience Performance Standards (Cool Factor) in Base Zoning

In addition to current open space requirements in Section 5.22, sites would be required to meet Cool Factor performance standard.

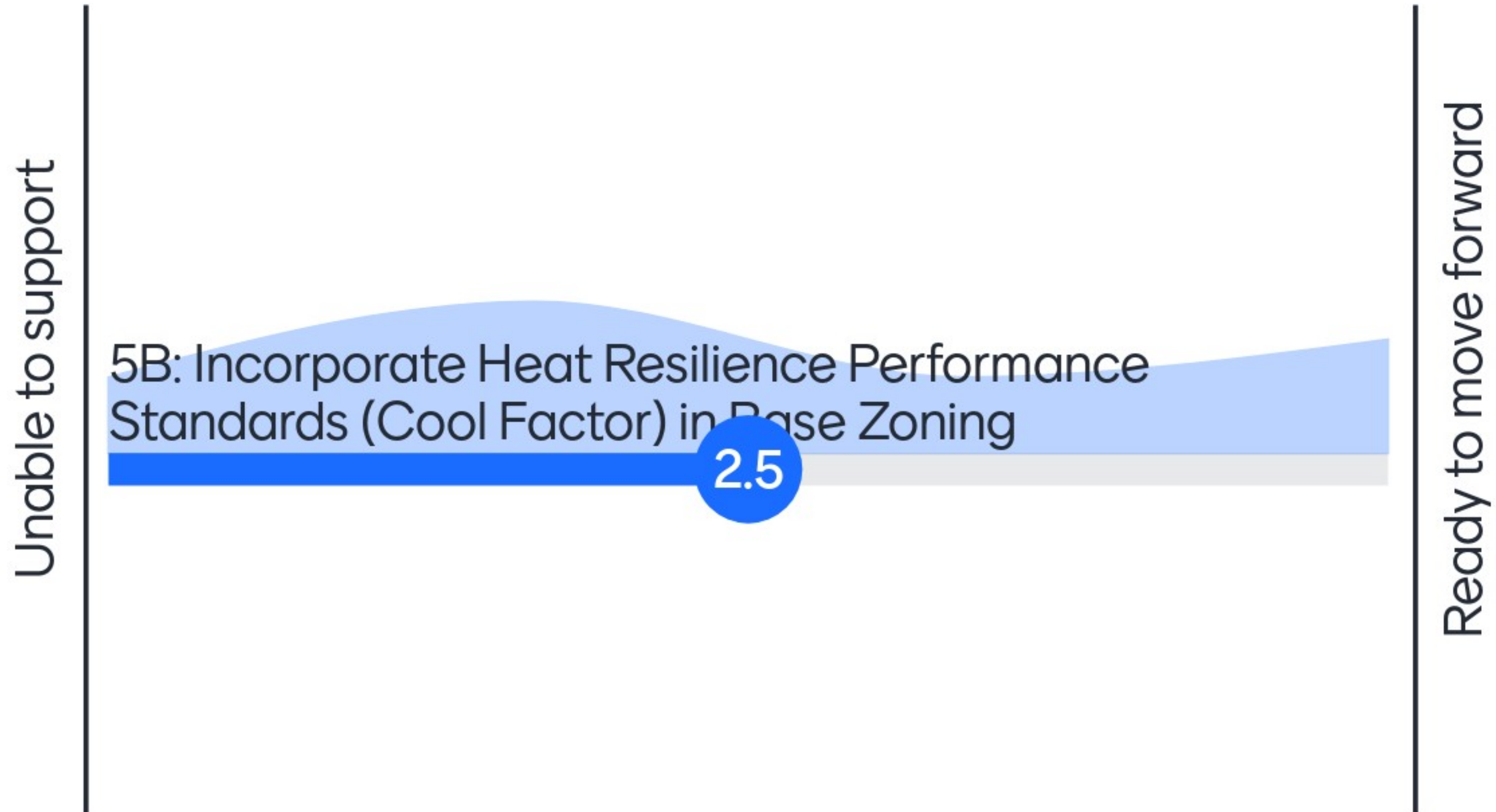
## Alternative:

- Only apply in selected areas of the city.

## Additional Options:

- Standards for parking lot landscaping (Section 6.48.1) could also incorporate Cool Factor standard.
- Differentiate among different land uses (residential, commercial, other).
- Modifications could be allowed by special permit, otherwise would require a variance.

# What do you think about this recommendation?





# Discussion

Please raise your hand using Zoom.

# 5C: Incorporate Heat Resilience Prescriptive Standards in Base Zoning

In addition to current open space requirements in Section 5.22, open space would be required to meet other prescriptive standards such as minimum tree planting, vegetation, shading of paved area **and/or** high-SRI surface.

## Additional Options:

- Standards for parking lot landscaping (Section 6.48.1) could be modified to increase planting requirements, shade canopies, etc.
- Modifications could be allowed by special permit, otherwise would require a variance.

# What do you think about this recommendation?



# Discussion

Please raise your hand using Zoom.

# 1A: Flood Elevation Definitions

Define “10%-Probability Long-Term Flood Elevation” (10%-LTFE) and “1%-Probability Long-Term Flood Elevation” (1%-LTFE) based on 2070 (approx. 50-year) projections of annual flood risk due to precipitation, storm surge, or sea level rise, whichever is higher (see FloodViewer), subject to periodic review and updating.

# What do you think about this recommendation?



# Discussion

Please raise your hand using Zoom.



# Public Comment





# Next Steps

# Workplan

Meeting #15 – October 22<sup>nd</sup>

Present work-to-date, share updates since March 4<sup>th</sup> meeting

Meeting #16 – November 19<sup>th</sup>

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**Come to consensus on final draft of recommendations**

***Early 2020***

***Review and comment on final report***



# 2020 Options

- Possible January or February meeting to finish discussing final draft of recommendations
- Staff to draft final report, then circulate for Task Force member input
- Eventual submission of final report from Task Force to City Manager



**Thank You!**



# Extra Slides

# 1C: Heat Resilient Definition (i.e. Cool Factor)

“Heat Resilient” means a site achieves its “Cool Target” using the “Cool Factor” system.

## Application Options:

- “Cool Target” is determined based on the Open Space requirement in the zoning district, with a baseline minimum of 15%.
- “Cool Target” is uniform across all zoning districts but is greater for larger lots or development parcels.
- “Cool Target” is uniform across all zoning districts, but varies by land use (e.g., higher target for residential vs. non-residential uses).
- “Cool Target” is uniform across all zoning districts and all sites.

# What do you think about this recommendation?



# Discussion

Please raise your hand using Zoom.



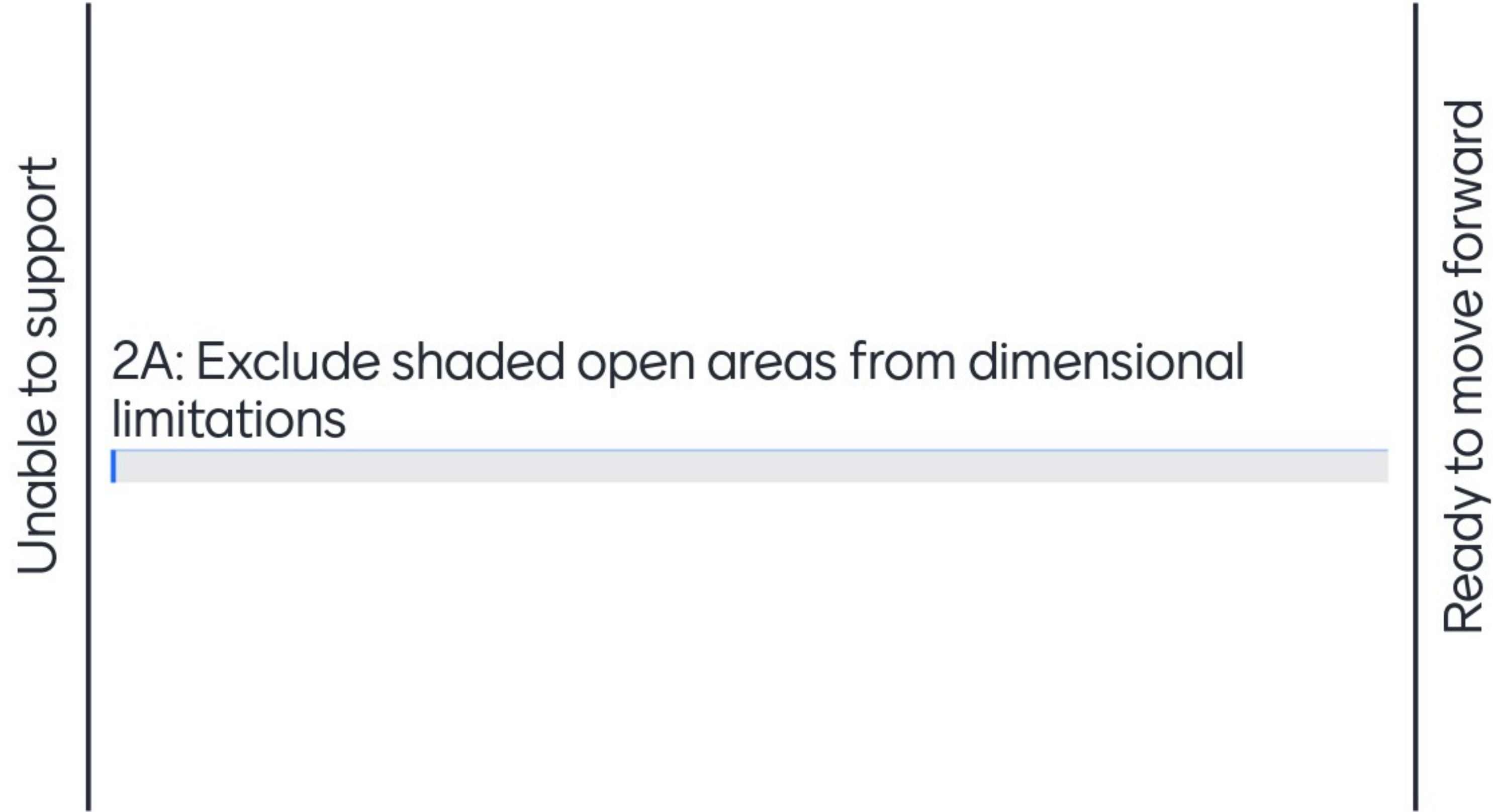
## 2A: Exclude shaded open areas from dimensional limitations

Exclude pen areas (e.g., parking, entryways, porches) covered by shade canopy from Gross Floor Area and yard (setback) limitations.

### **Additional Options:**

- Also exclude from height limitations, when placed on a roof.
- Possibly require high-SRI or solar panel surface.

# What do you think about this recommendation?



# Discussion

Please raise your hand using Zoom.

## **2B: Allow stairs/ramps in front setbacks as-of-right for Flood Resilient buildings**

Elevated access: Ensure that stairs/ramps in front setbacks can be allowed as-of-right for Flood Resilient buildings.

# What do you think about this recommendation?



# Discussion

Please raise your hand using Zoom.

## 2C: Exclude Functional Green Roof Area from GFA & height limitations as-of-right in all cases

Functional Green Roof Area: Exclude from Gross Floor Area and height limitations as-of-right in all cases.

(Currently requires a special permit if it is intended for use and enjoyment of occupants, to ensure ongoing viability.)

### **Additional Options:**

- Possibly require administrative review of a planting and maintenance plan.

# What do you think about this recommendation?

Unable to support

2C: Exclude Functional Green Roof Area from GFA & height limitations as-of-right in all cases

Ready to move forward





# Discussion

Please raise your hand using Zoom.

## 2D: Exclude headhouses for accessing usable roof space from height limitations

Headhouses for accessing usable roof space: Exclude from height limitations (with limitations on total area).

### Alternative:

- Allow relief only where a functional green roof is provided.

# What do you think about this recommendation?

Unable to support

2D: Exclude headhouses for accessing usable roof space from height limitations

Ready to move forward



# Discussion

Please raise your hand using Zoom.

## **2F: Allow building height increase when building is raised to be Flood Resilient**

Height: Allow a compensating building height increase (within limitations) where the ground floor of the building is raised to meet Flood Resilience standards.

# What do you think about this recommendation?



# Discussion

Please raise your hand using Zoom.

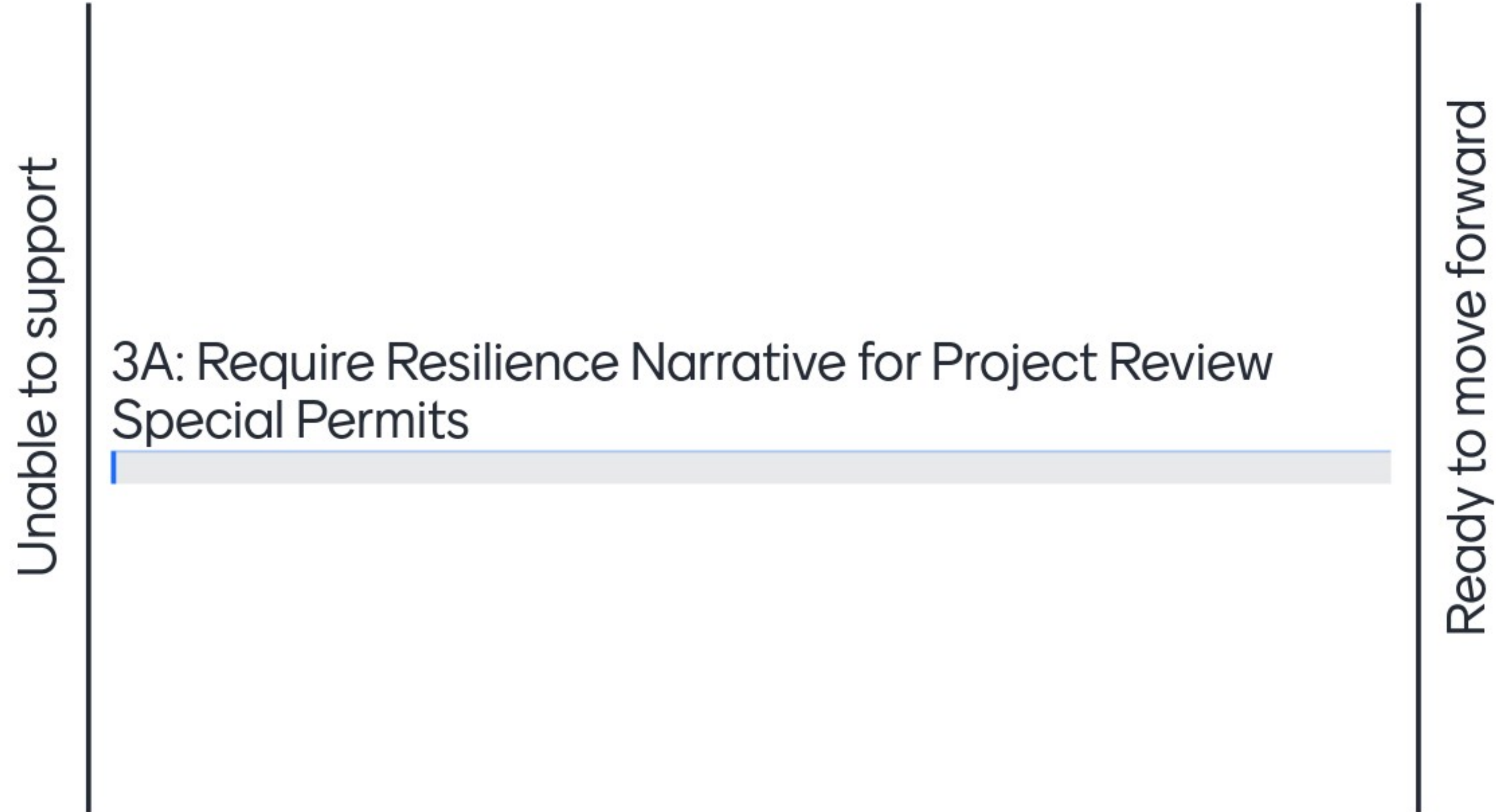
# 3A: Require Resilience Narrative for Project Review Special Permits

Narrative could include:

- Analysis of long-term flood and heat projections based on CCVA (as it may be updated with new data). Specifically include 10%-LTFE and 1%-LTFE projections as well as temperature projections.
- Detailed description of mitigating measures, including flood-protective design features, passive survivability, shading and other design features to reduce heat inside and outside of the building (including on public realm), recovery plans, emergency management plans.
- Cool Factor materials.



# What do you think about this recommendation?



# Discussion

Please raise your hand using Zoom.

# 4A: Include Flood Resilience Performance Requirement in Section 19.50

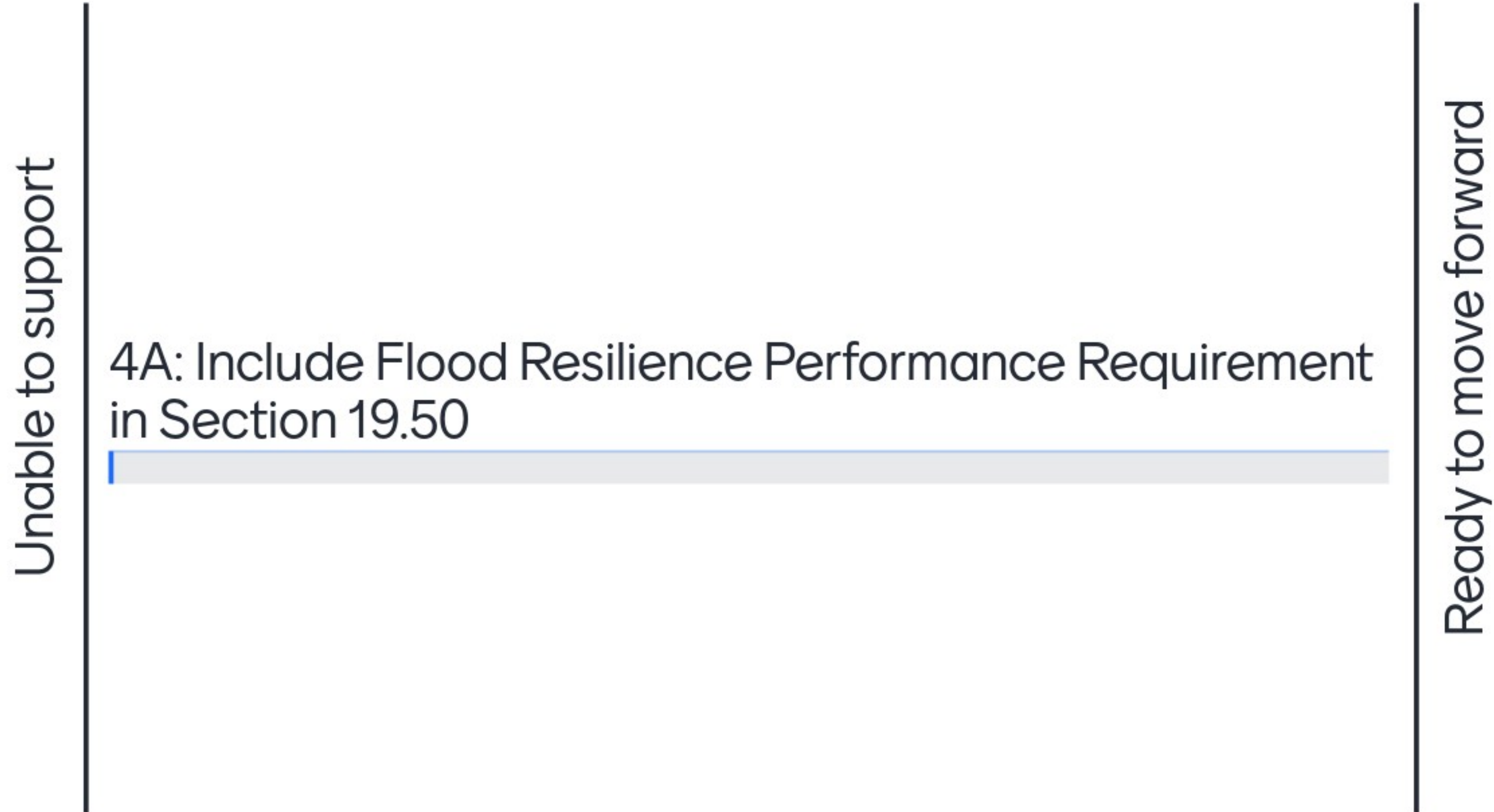
Requirement could include:

- New development would be subject to administrative review/certification for conformance with Flood Resilient standard.
- Existing buildings could not be altered to make them less conforming to standards than existing conditions.
- Planning Board may approve modifications by special permit.

## Additional Options:

- Differentiate among different land uses (e.g., residential, commercial).

# What do you think about this recommendation?



# Discussion

Please raise your hand using Zoom.

# 4B: Include Heat Resilience Performance Requirement in Section 19.50

New development would be subject to administrative review/certification for meeting Heat Resilient standard.

## Alternative:

- Provisions could be included to meet the requirement across multiple lots (i.e., “transfer of Cool Factor Score”) to provide more contiguous planted area and/or provide greater cooling in priority areas, possibly with special permit review.

## Additional Options:

- In cases of substantial alteration/change of use, consider a “Cool Score Improvement” requirement.
- Differentiate among different land uses (e.g., residential, commercial).
- Modifications could be allowed by special permit.

# What do you think about this recommendation?



# Discussion

Please raise your hand using Zoom.



# Principles to Guide Zoning Strategies

1. Focus on **people, communities, & equity**
2. Account for **differentiation & choice**
3. Balance strategies to address **new construction & existing development**
4. Use **performance-based standards** as well as **prescriptive standards**
5. **Allow flexibility** in changing circumstances
6. Support actions with **co-benefits**
7. Seek **effectiveness**
8. Make decisions based on **best available data & science**

# Land Use & Development Objectives

1. Elevate & floodproof
2. Design to recover
3. Green infrastructure
4. Preserve vegetation
5. Create vegetation
6. Limit paved areas
7. Provide shading
8. Use reflective surfaces
9. Promote passive resilience
10. Shelter in emergencies
11. Create emergency plans
12. Implement area-wide strategies
13. Produce co-benefits