OUT OF THE SHADOWS:

COMMUNITY MEETING ON LONGWOOD PLACE

Monday, February 27, 2023

Since 1961, working to build a safe, clean, and beautiful Fenway

SPEAKERS

- TIM HORN, PRESIDENT, FENWAY CIVIC ASSOCIATION
- ELENA SAPORTA, ASLA, RLA, LEED AP
- JACK SCHLEIFER, MASTER OF ENVIRONMENTAL MANAGEMENT, YALE UNIVERSITY, FIELD OPERATIONS MANAGER, EMERALD NECKLACE CONSERVANCY
- STEVE WOLF, BOARD OF PARK ADVISORS, EMERALD NECKLACE CONSERVANCY

WELCOME

AGENDA:

- WELCOME – WHY WE ARE HERE
- SHADOW PRESENTATION
- ENVIRONMENTAL IMPLICATIONS
- FILING REVIEW
- COMMUNITY CONVERSATION AND NEXT STEPS

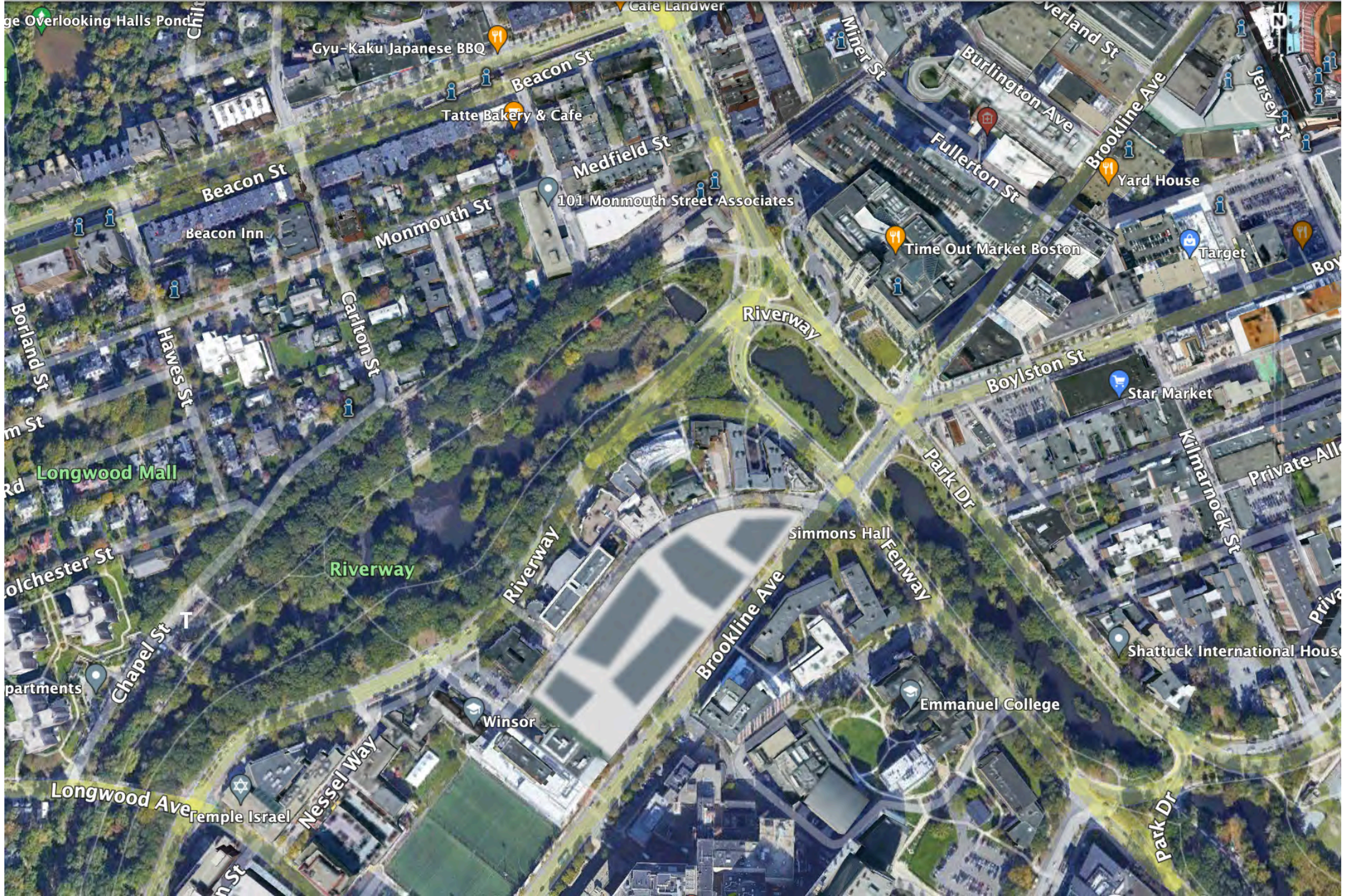
IMPORTANT: BOSTON ZONING COMMISSION HEARING IS MARCH 1 AT 9:00 AM. *(We'll provide details at the end.)*

LMA Interim Guidelines

Parks and Boulevards Protection Zone

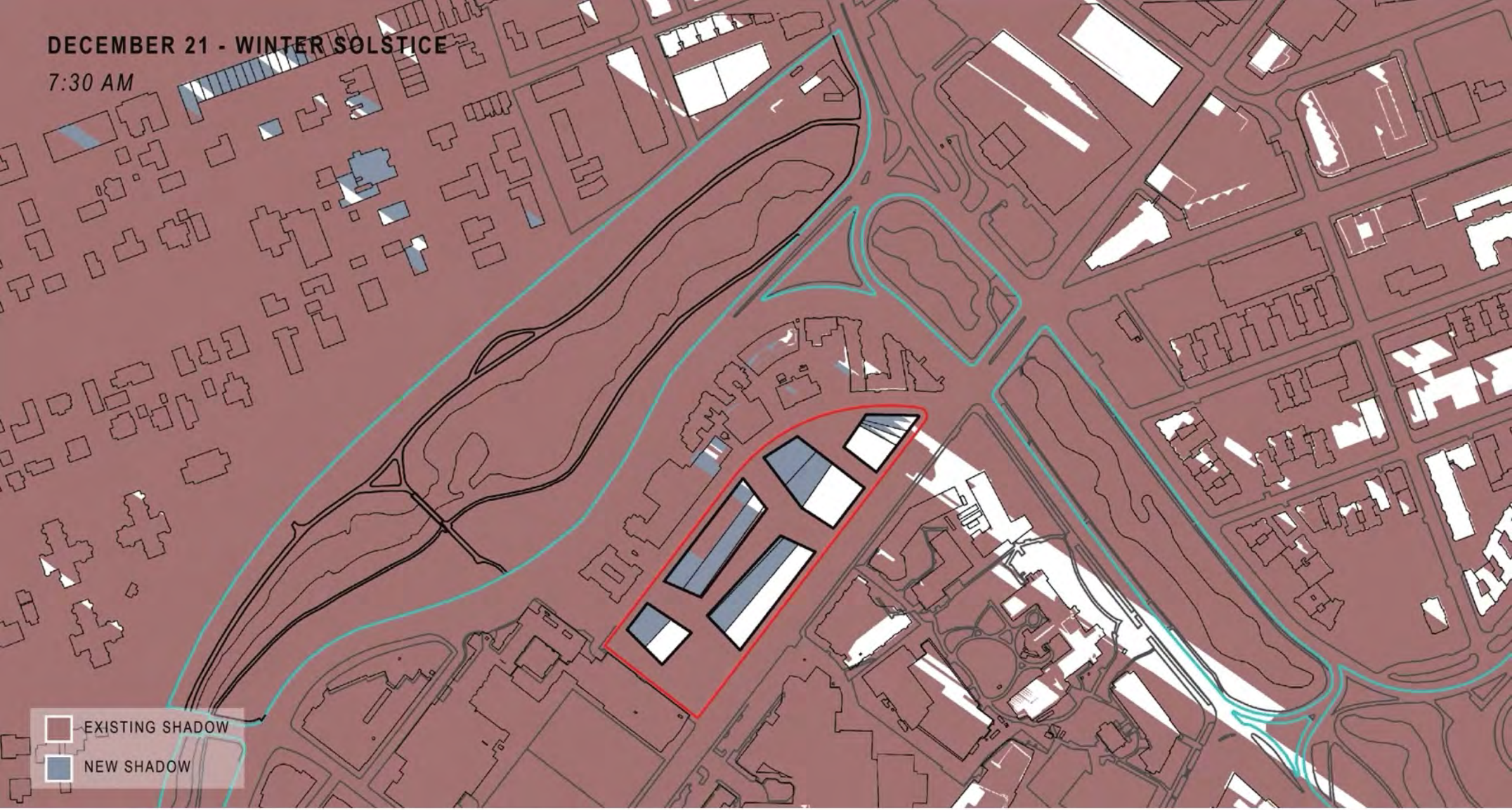
- no buildings; no shadows of greater duration than one hour
- prevailing building height; potential maximum of 75'

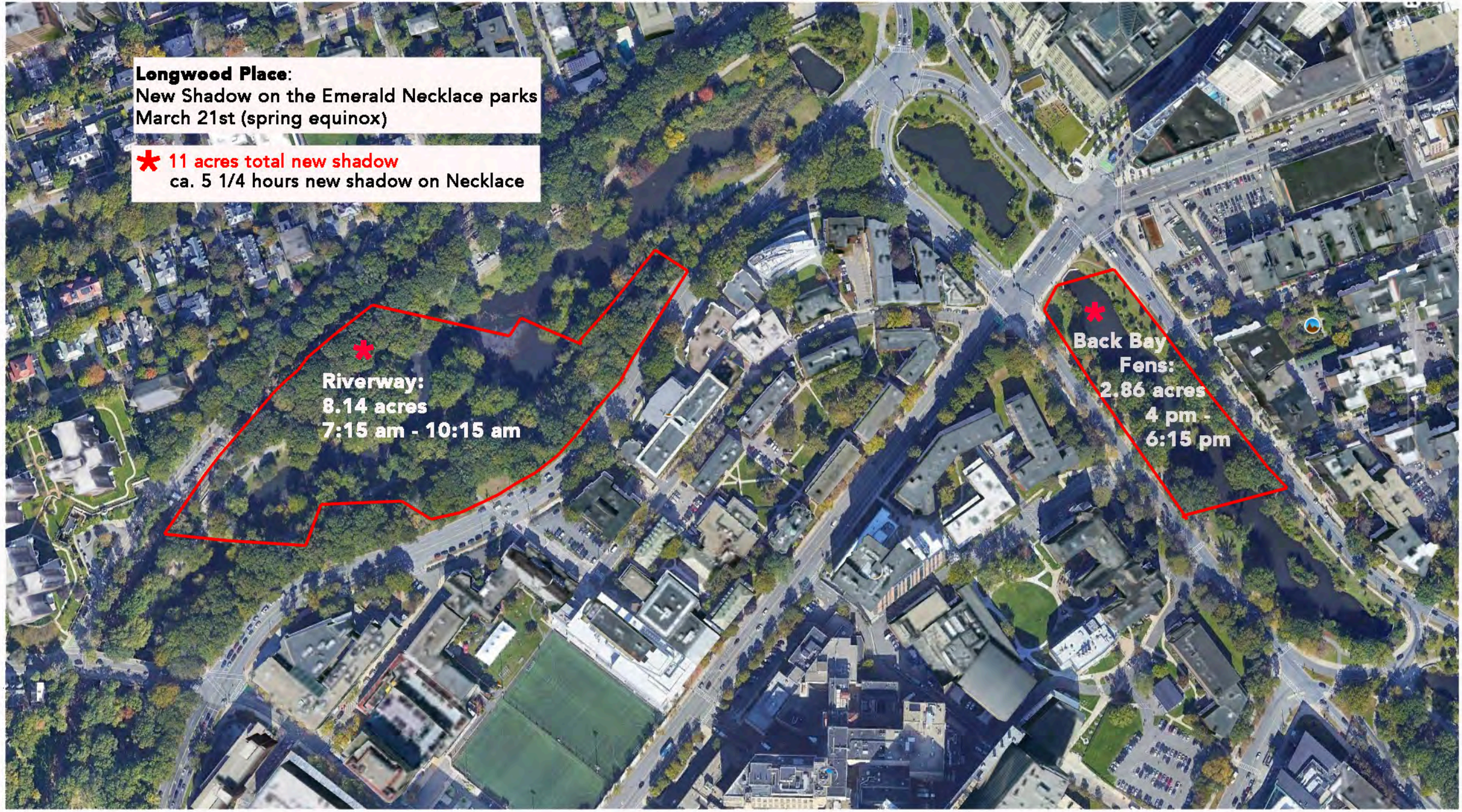
Boston Redevelopment Authority

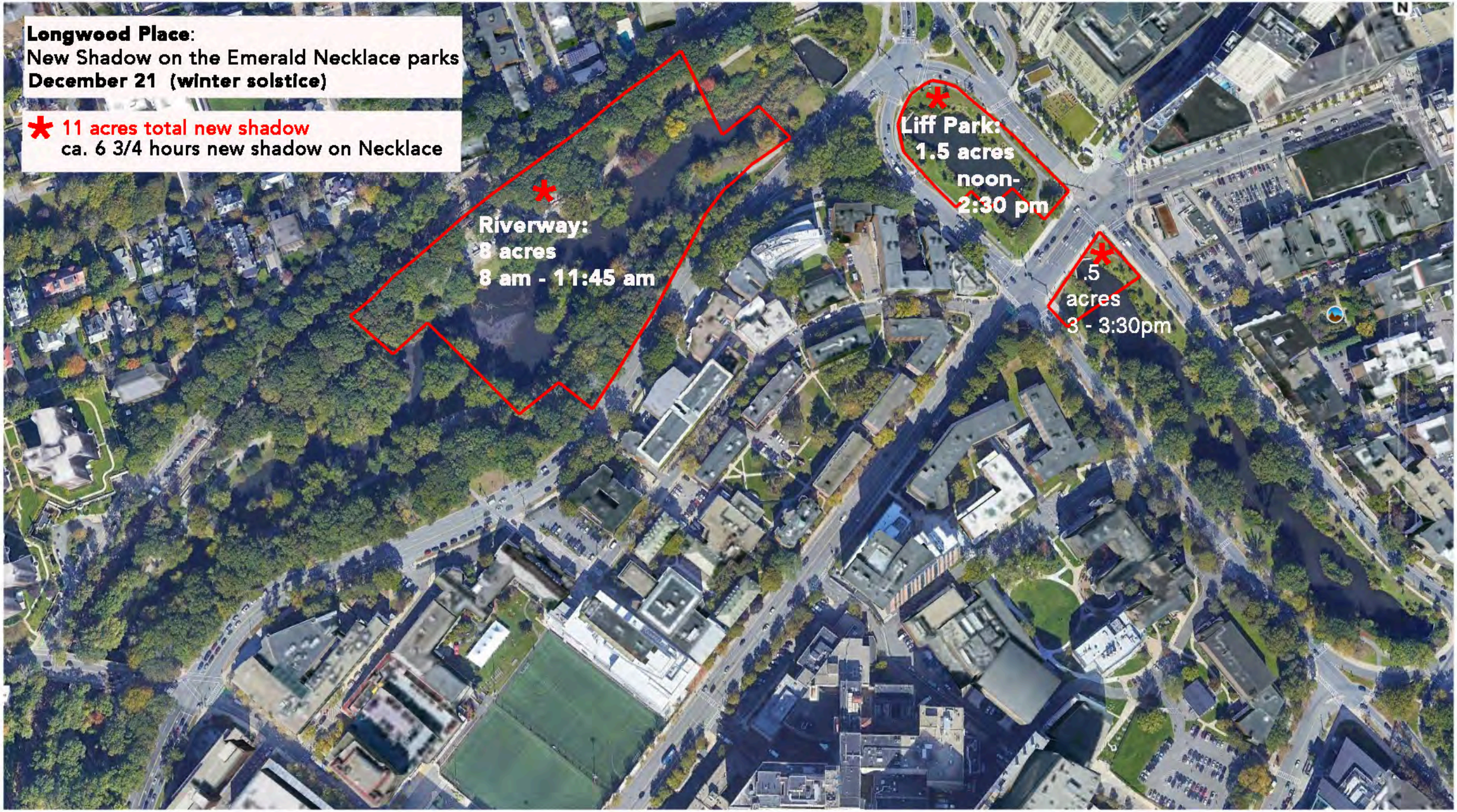

Gyu-Kaku Japanese BBQ
Beacon St
Tatte Bakery & Cafe
Medfield St
Beacon St
Monmouth St
101 Monmouth Street Associates
Beacon Inn
Miner St
Burlington Ave
Fullerton St
Brookline Ave
Yard House
Time Out Market Boston
Target
Riverway
Boylston St
Star Market
Borland St
Hawes St
Carlton St
Longwood Mall
Park Dr
Kilmarnock St
Simmons Hall
Fenway
Riverway
Riverway
Brookline Ave
Chapel St
Shattuck International
Emmanuel College
Winsor
Nessel Way
Longwood Ave
Temple Israel
Park Dr


ONLY


MARCH 21 - VERNAL EQUINOX
6:30 PM
EXISTING SHADOW
NEW SHADOW


DECEMBER 21 - WINTER SOLSTICE
7:30 AM
EXISTING SHADOW
NEW SHADOW


Longwood Place:
New Shadow on the Emerald Necklace parks
March 21st (spring equinox)
11 acres total new shadow
ca. 5 1/4 hours new shadow on Necklace
Riverway:
8.14 acres
7:15 am - 10:15 am
Back Bay
Fens:
2.86 acres
4 pm -
6:15 pm


Longwood Place:
New Shadow on the Emerald Necklace parks
December 21 (winter solstice)
11 acres total new shadow
ca. 6 3/4 hours new shadow on Necklace
Riverway:
8 acres
8 am - 11:45 am
Liff Park:
1.5 acres
noon-
2:30 pm
.5
acres
3 - 3:30pm
N

"We want a ground to which people may easily go when the day's work is done, and where they may stroll for an hour, seeing, hearing and feeling nothing of the bustle and jar of the streets where they shall, in effect, find the city put far away from them."

FREDERICK LAW OLMSTED, SR.,
FROM HIS 1870 ADDRESS "PUBLIC PARKS AND THE ENLARGEMENT OF TOWNS"

Emerald Necklace
CONSERVANCY

Environmental Impacts of Shadow on Parks

Jack Schleifer
February 27, 2023

Emerald Necklace
CONSERVANCY

Agenda

Emerald Necklace CONSERVANCY

- Story of ongoing stewardship in Riverway and Liff Park
- Ecological concerns
  - Soil health
  - Invasive species
  - Canopy trees
  - Water quality
- Broader considerations

Ongoing Work and Conditions

Emerald Necklace CONSERVANCY

- The Conservancy has invested more than $3 million into tree work since 2015
- Partnership with Boston, Brookline, and DCR
- Public visitor center and programs

- Work includes:
  - Planning tree plantings
  - Restoring native habitat by managing invasive species
  - Muddy River dredging and maintenance
  - Managing mature tree stress

OLMSTED TREE SOCIETY

BOSTON PARKS & RECREATION

BROOKLINE PARKS AND OPEN SPACE

dcr Massachusetts

Topics of Focus

Soil

Plants

Water

Emerald Necklace
CONSERVANCY

Soil Health

Emerald Necklace CONSERVANCY

- Shade reduces soil temperature

- Impacts of colder soil:
  - Reduced germination rate of seeds
  - Challenges with root establishment
  - Reduced microclimates
  - Longer freeze cycles
    - Encourage erosion
    - **Favor invasive species**

Soil Health Sources

Emerald Necklace CONSERVANCY

Quantifying the Effect of a Freeze–Thaw Cycle on Soil Erosion

Laboratory Experiments

US Army Corps of Engineers® Engineer Research and Development Center

M.G. Ferrick and L.W. Gatto

July 2004

ECOLOGY
ECOLOGICAL SOCIETY OF AMERICA

Article

SEED SIZE, NITROGEN SUPPLY, AND GROWTH RATE AFFECT TREE SEEDLING SURVIVAL IN DEEP SHADE

Michael B. Walters, Peter B. Reich

First published: 01 July 2000 | https://doi.org/10.1890/0012-9658(2000)081[1887:SSNSAG]2.0.CO;2 | Citations: 187

LDD Land Degradation & Development

RESEARCH ARTICLE

The impact of freeze–thaw cycles and soil moisture content at freezing on runoff and soil loss

Xia Wei, Chihua Huang, Ning Wei, Hengce Zhao, Yan He, Xiaodong Wu

First published: 10 December 2018 | https://doi.org/10.1002/ldr.3243 | Citations: 9

Journal of Plant Nutrition and Soil Science

IUSS - UISS - IBU

Focus Issue: Soil Processes under Extreme Meteorological Conditions

Repeated freeze–thaw events affect leaching losses of nitrogen and dissolved organic matter in a forest soil†

Kerstin Hentschel, Werner Borken, Egbert Matzner

First published: 30 September 2008 | https://doi.org/10.1002/jpln.200700154 | Citations: 72

Global Change Biology

Global Change Biology (2011) **17**, 2145–2161, doi: 10.1111/j.1365-2486.2010.02368.x

REVIEW

Climate change and plant regeneration from seed

JEFFREY L. WALCK*, SITI N. HIDAYATI*, KINGSLEY W. DIXON†‡, KEN THOMPSON§ and PETER POSCHLOD¶

**Department of Biology, Middle Tennessee State University, Murfreesboro, TN 37132, USA, †Kings Park and Botanic Garden, Fraser Avenue, West Perth, WA 6005, Australia, ‡School of Plant Biology, The University of Western Australia, Crawley, WA 6009, Australia, §Department of Animal and Plant Sciences, The University, Sheffield S10 2TN, UK, ¶Institute of Botany, University of Regensburg, Regensburg D-93040, Germany*

Low temperature limits of root growth in deciduous and evergreen temperate tree species

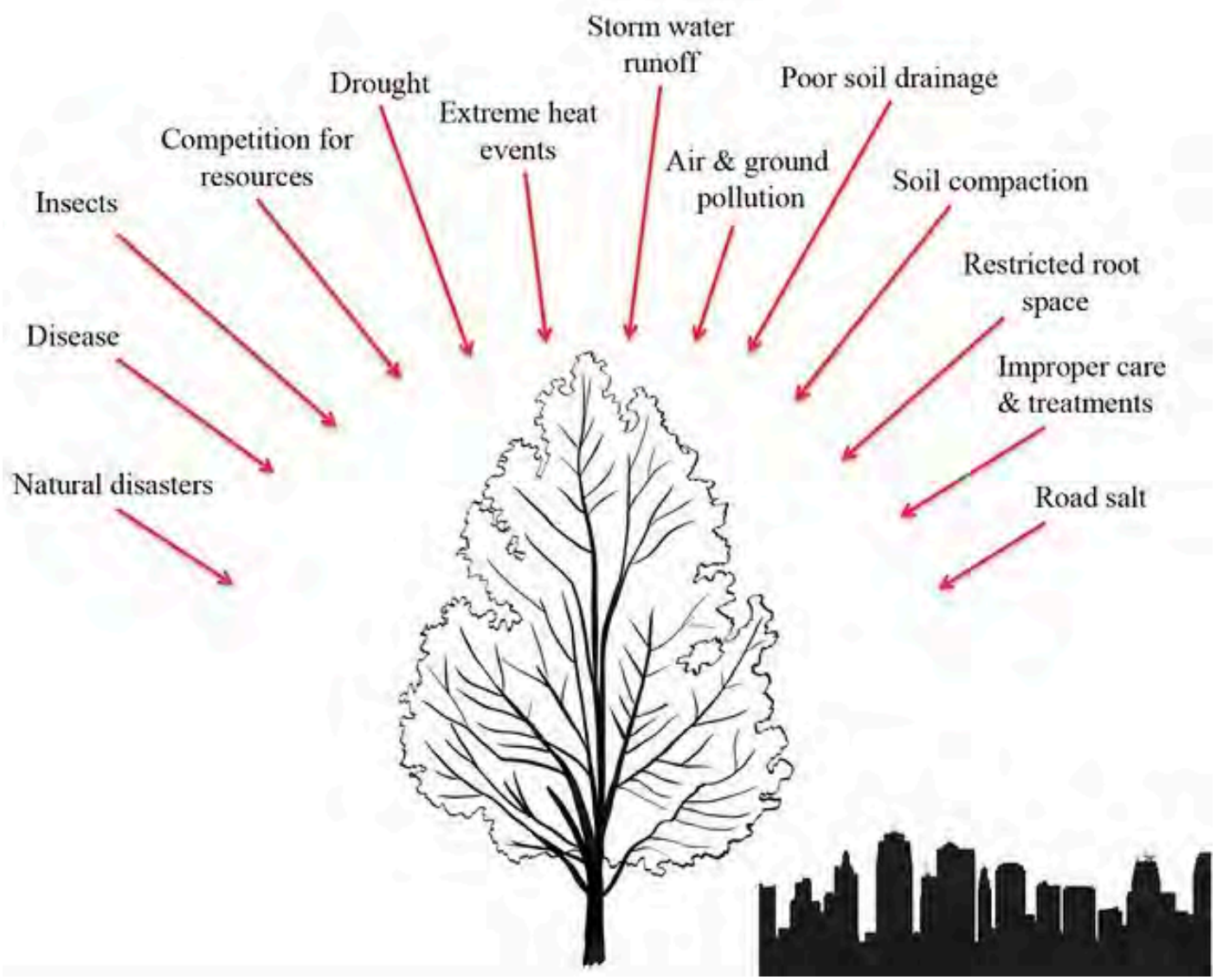
Functional Ecology 2007 **21**, 211–218

P. ALVAREZ-URIA† and C. KÖRNER

Institute of Botany, University of Basel, Schönbeinstrasse 6, CH-4056 Basel, Switzerland

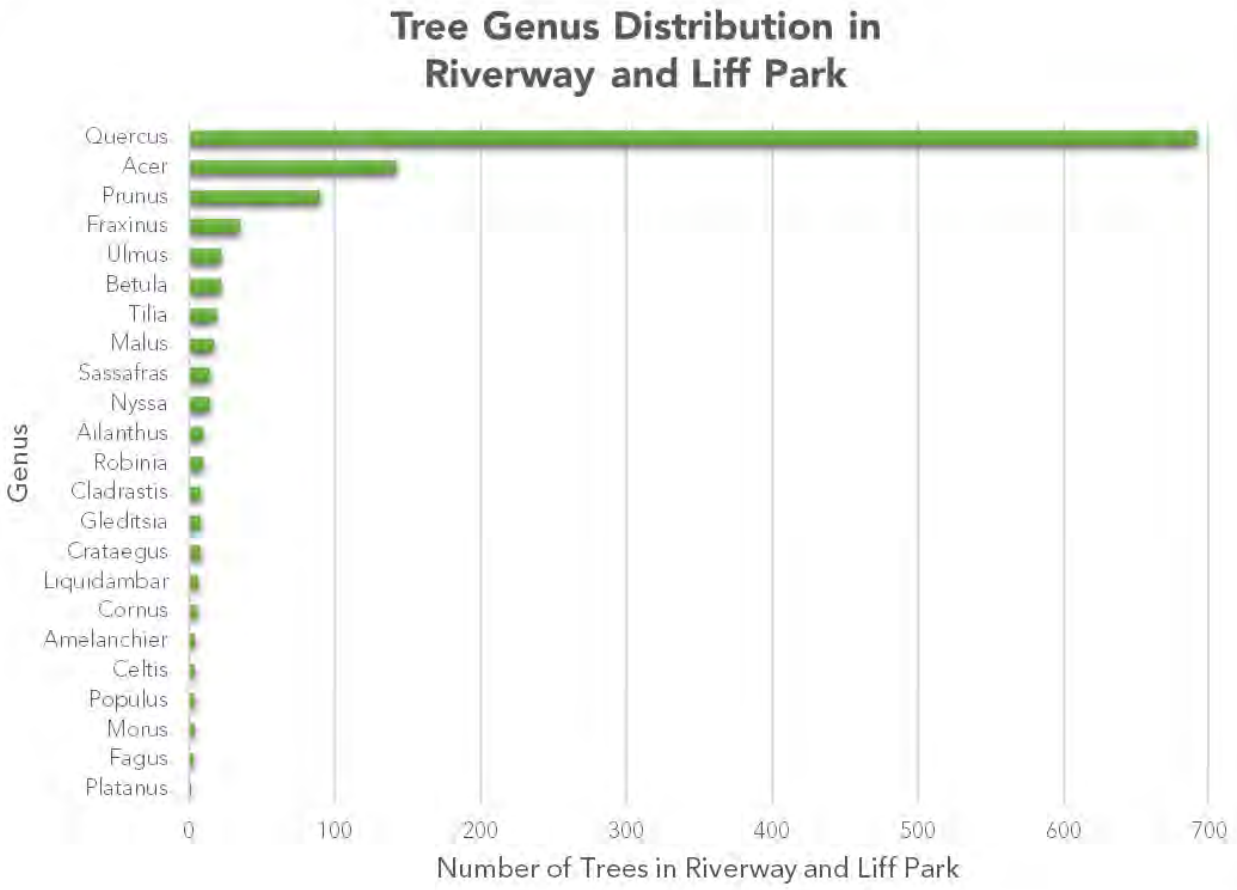
Urban Tree Stress

Emerald Necklace
CONSERVANCY



Canopy Tree Health

- Assisted migration with changing climate
- Advanced regeneration and oaks in shade



Urban Tree Sources

Emerald Necklace CONSERVANCY

forests

MDPI

Review

The Complex Issue of Urban Trees—Stress Factor Accumulation and Ecological Service Possibilities

Monika Czaja [1,*], Anna Kołton [2] and Piotr Muras [1]

[1] Department of Ornamental Plants and Garden Art, Faculty of Biotechnology and Horticulture, University of Agriculture in Krakow, 29 Listopada 54, 31-425 Kraków, Poland; piotr.muras@urk.edu.pl
[2] Department of Botany, Physiology and Plant Protection, Faculty of Biotechnology and Horticulture, University of Agriculture in Krakow, 29 Listopada 54, 31-425 Kraków, Poland; anna.kolton@urk.edu.pl
* Correspondence: monika.czaja@urk.edu.pl

Received: 8 July 2020; Accepted: 24 August 2020; Published: 26 August 2020

check for updates

JOURNAL ARTICLE

A comparative study of physiological and morphological seedling traits associated with shade tolerance in introduced red oak (*Quercus rubra*) and native hardwood tree species in southwestern Germany

FREE

Christian Kuehne ✉, Peter Nosko, Tobias Horwath, Jürgen Bauhus

Tree Physiology, Volume 34, Issue 2, February 2014, Pages 184–193,
https://doi.org/10.1093/treephys/tpt124
Published: 14 February 2014 **Article history** ▾

JOURNAL ARTICLE

Reproductive Mode and Mechanisms for Self-Replacement of Northern Red Oak (*Quercus rubra*) - A Review

Get access

T. R. Crow

Forest Science, Volume 34, Issue 1, March 1988, Pages 19–40,
https://doi.org/10.1093/forestscience/34.1.19
Published: 01 March 1988

Published: September 1990

Some ecophysiological features in sun and shade leaves of tall beech trees

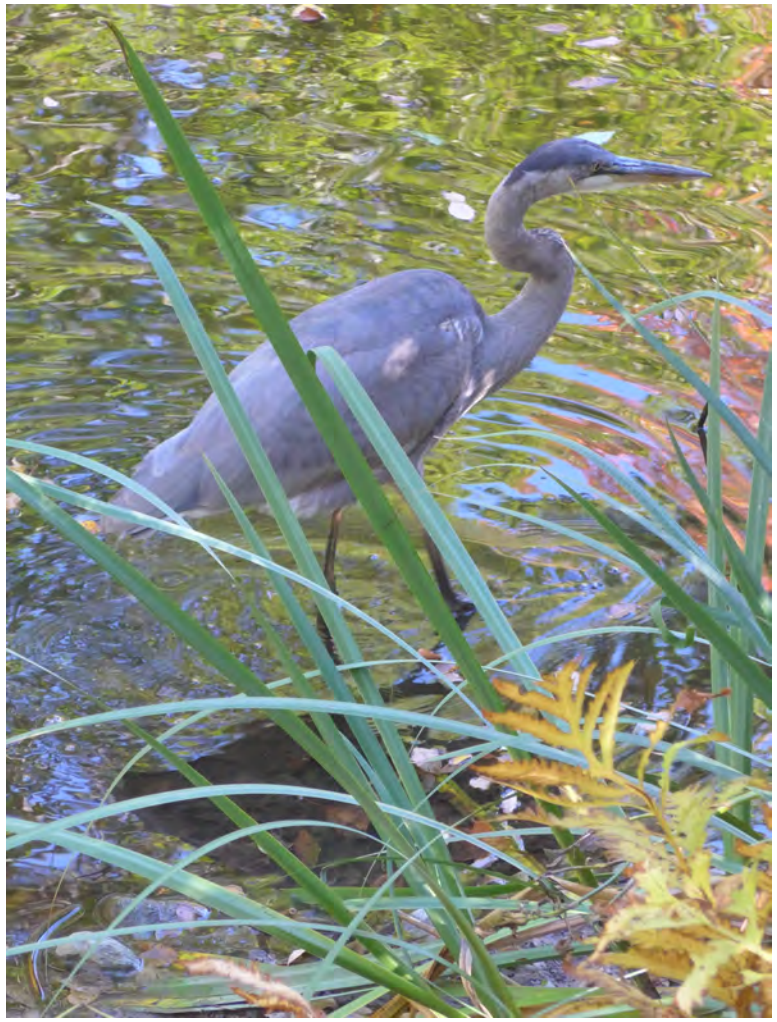
Elena Masarovicová & L. štefančík

Biologia Plantarum **32**, 374–387 (1990) | Cite this article

Water Quality and River Health

Emerald Necklace CONSERVANCY

- Urban waterways also endure significant stress
- Shade encourages soil freezing
- Soil runoff influences river chemistry
- Sunlight influences macroinvertebrate and phytoplankton growth



Water Quality Sources

Emerald Necklace CONSERVANCY

ELSEVIER

Water Research

Volume 20, Issue 7, July 1986, Pages 831-834

Soil freezing effects on upland stream solute chemistry

A.C. Edwards, J. Creasey, M.S. Cresser

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https://doi.org/10.1016/0043-1354(86)90169-7 Get rights and content

ELSEVIER

Geomorphology

Volume 32, Issues 1–2, February 2000, Pages 147-160

Soil freeze–thaw-induced changes to a simulated rill: potential impacts on soil erosion

Lawrence W Gatto

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https://doi.org/10.1016/S0169-555X(99)00092-6 Get rights and content

ELSEVIER

Science of The Total Environment

Volume 690, 10 November 2019, Pages 1140-1150

The role of freeze-thaw action in dam reservoir cliff degradation assessed by terrestrial laser scanning: A case study of Jeziorsko Reservoir (central Poland)

Halina Kaczmarek [a], Sebastian Tyszkowski [a], Arkadiusz Bartczak [a], Mateusz Kramkowski [a], Katarzyna Wasak [b]

Geology, Ecology, and Landscapes

Volume 1, 2017 - Issue 1

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71,932 Views

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Original Articles

Impact of soil erosion and degradation on water quality: a review

Sakinatu Issaka & Muhammad Aqeel Ashraf

Pages 1-11 | Received 14 Nov 2016, Accepted 13 Feb 2017, Published online: 20 Mar 2017

Download citation https://doi.org/10.1080/24749508.2017.1301053 Check for updates

Precautionary Principle

Emerald Necklace
CONSERVANCY

Emerald Necklace
CONSERVANCY

THANK YOU!

With your help, we continue to
restore and improve the Emerald Necklace for all.

Works Cited

Emerald Necklace CONSERVANCY

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Czaja, M., Kołton, A., & Muras, P. (2020). The Complex Issue of Urban Trees—Stress Factor Accumulation and Ecological Service Possibilities. *Forests*, *11*(9), Article 9. https://doi.org/10.3390/f11090932

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Ferrick, M. G., & Gatto, L. W. (2005). Quantifying the effect of a freeze-thaw cycle on soil erosion: Laboratory experiments. *Earth Surface Processes and Landforms*, *30*(10), 1305–1326. https://doi.org/10.1002/esp.1209

Gatto, L. W. (2000). Soil freeze–thaw-induced changes to a simulated rill: Potential impacts on soil erosion. *Geomorphology*, *32*(1), 147–160. https://doi.org/10.1016/S0169-555X(99)00092-6

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Issaka, S., & Ashraf, M. A. (2017). Impact of soil erosion and degradation on water quality: A review. *Geology, Ecology, and Landscapes*, *1*(1), 1–11. https://doi.org/10.1080/24749508.2017.1301053

Kaczmarek, H., Tyszkowski, S., Bartczak, A., Kramkowski, M., & Wasak, K. (2019). The role of freeze-thaw action in dam reservoir cliff degradation assessed by terrestrial laser scanning: A case study of Jeziorsko Reservoir (central Poland). *Science of The Total Environment*, *690*, 1140–1150. https://doi.org/10.1016/j.scitotenv.2019.07.032

Kuehne, C., Nosko, P., Horwath, T., & Bauhus, J. (2014). A comparative study of physiological and morphological seedling traits associated with shade tolerance in introduced red oak (Quercus rubra) and native hardwood tree species in southwestern Germany. *Tree Physiology*, *34*(2), 184–193. https://doi.org/10.1093/treephys/tpt124

Masarovicová, E., & štefančík, L. (1990). Some ecophysiological features in sun and shade leaves of tall beech trees. *Biologia Plantarum*, *32*(5), 374–387. https://doi.org/10.1007/BF02898503

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Walters, M. B., & Reich, P. B. (2000). Seed Size, Nitrogen Supply, and Growth Rate Affect Tree Seedling Survival in Deep Shade. *Ecology*, *81*(7), 1887–1901. https://doi.org/10.1890/0012-9658(2000)081[1887:SSNSAG]2.0.CO;2

Wei, X., Huang, C., Wei, N., Zhao, H., He, Y., & Wu, X. (2019). The impact of freeze–thaw cycles and soil moisture content at freezing on runoff and soil loss. *Land Degradation & Development*, *30*(5), 515–523. https://doi.org/10.1002/ldr.3243

LMA GUIDELINES

LMA GUIDELINES BACKGROUND

GUIDELINE PRINCIPLES:

"To enhance and protect the physical assets of the LMA—its neighborhoods, parks, streets, and sidewalks, views, landmarks, and human scale:

- Create no-build zones along the Riverway and Fenway, Avenue Louis Pasteur and Brookline Avenue to protect existing parks and parkways;
- Restrict new shadow impacts on City of Boston parks. **In the interim period, no project will be approved if it casts any new shadow for more than one hour on March 2st on the Emerald Necklace…"**

ORIGIN

The BRA developed and employed interim guidelines in 2003 to "govern proposed development, prevent ad hoc growth in the LMA, and control growth in a fair and equitable manner"

APPLICATIONS

- 2020: Simmons Institutional Master Plan
- 2018: Beth Israel Deaconess Master Plan
- 2018: Joslin Diabetes Center Master Plan
- 2015: Emmanuel College Master Plan
- 2013: Children's Hospital Master Plan
- 2012: Brigham and Women's Master Plan

UNDERLYING PRINCIPLES

- Protect parks and neighborhoods
- Set specific limits for new shadow

SUMMARY

No other Longwood projects that propose shadows on parkland have been submitted to the BPDA without detailing adherence to LMA guidelines

LONGWOOD PLACE PROJECT PLAN LANGUAGE

PLAN LANGUAGE

	Maximum height	Maximum shadow	Mitigation
PLAN EXCERPT	*"The Maximum Height set forth above and herein shall not be reduced based on or due to any regulation, legislation, guidance, guidelines, planning studies or the like that is not now in full force and effect as of the effective date of the adoption of this Development Plan"*	*"Any regulation, legislation, guideline, planning study or the like not in effect as of the date of the effective date of this Development Plan as adopted shall not have any effect on the right of this Project to cast the maximum shadows as analyzed in this Development Plan and its appendices, nor shall it have the effect of additional shadow related mitigation that has already been accounted for in both the design of this Project and the Parks endowment fund set forth above and herein."*	• $1 million—tied to unappealed zoning approval—to fund a study of shadow impacts on parks citywide. The PDA language exempts the project from any resulting restrictions. • $6 million tied to issuance of a building permit for Phase 1 construction
IMPACT	BUILDING 1 HEIGHT: 295′	5+ HOURS ON MARCH 21 6.75 HOURS ON DECEMBER 21	
LMA GUIDELINES	Height limits, varying by location, of 75′, 150′, and 205′	No approval for a project casting more than 1 hour of new shadow on March 21 (spring equinox)	

KEY ELEMENTS OF THE BPDA BOARD VOTE ON LONGWOOD PLACE

- Allowable uses, maximum heights, and shadows to be codified in zoning amendments through creation of a PDA overlay district covering 5.8 acres
- Exemption of the project's heights and shadows from any future regulation, legislation or guidelines
- Language spelling out shadow- and parks-related mitigation:
  - » Developer provision of $1,000,000 to fund a study of shadow impacts on parks and subsequent development of a policy to control shadows in parklands; money's release hinges on adoption of an unappealed approval of the PDA
  - » Developer provision of $6,000,000 to create an endowment managed by the Parks Department for affected areas of the Emerald Necklace

LONGWOOD PLACE VS. WINTHROP SQUARE

	LMA Guidelines	Longwood Place	Winthrop Square
SHADOW	No more than 1 hour of new shadow on the Emerald Necklace, March 21.	5.25 hours of new shadow on March 21, 6.75 hours on December 21 covering 11 acres	1.5 hours of new shadow on Boston Common and the Public Garden
PROJECT SIZE		1,750,000 SF	1,100,000 SF
MITIGATION		$6,000,000 + $1,000,000 for shadow study	$56,000,000

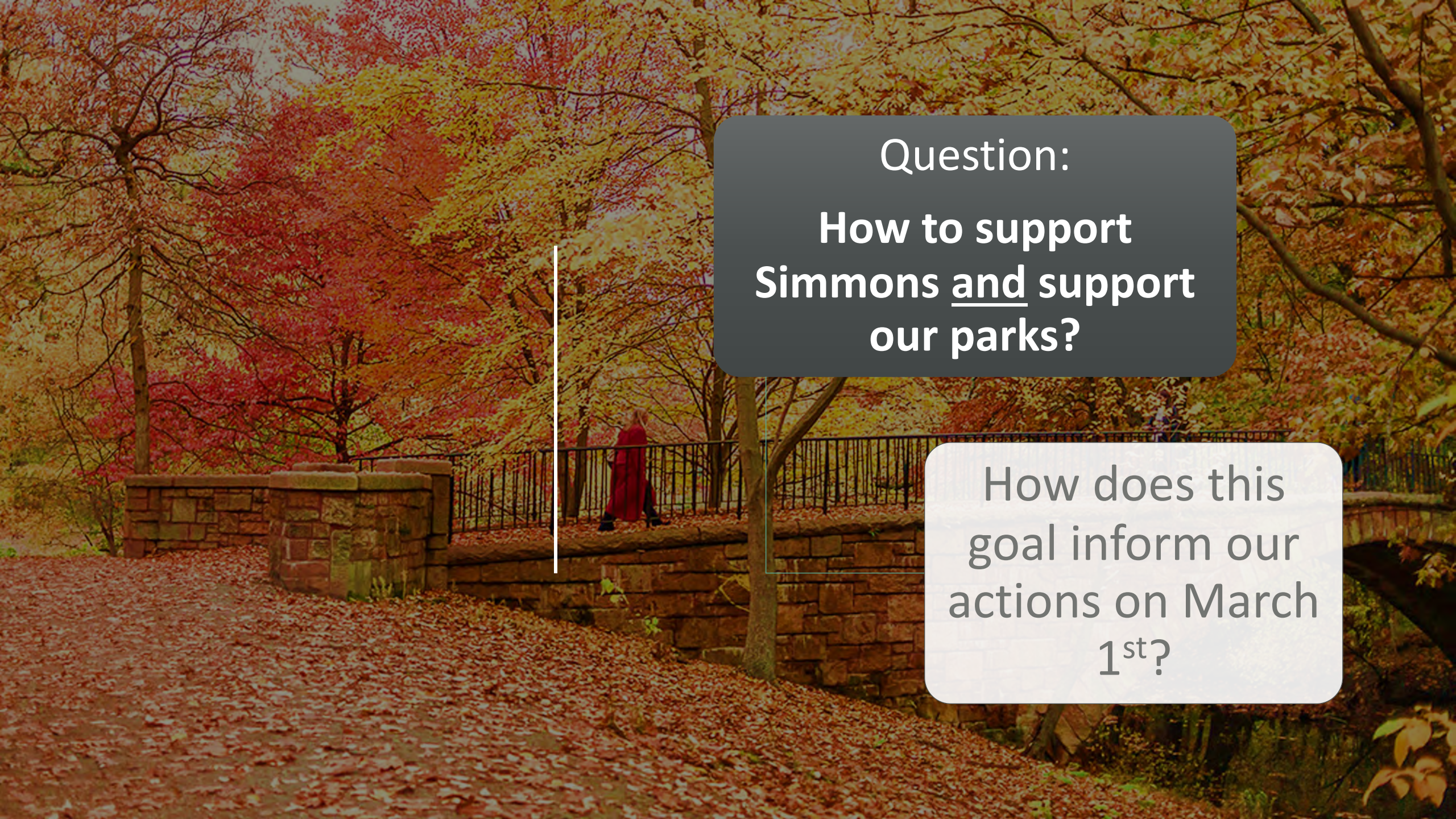
Boston Zoning Commission Hearing
March 1, 2023, 9:00am
Register at: https://bit.ly/BZC_Mar2023_1
Submit written comments to:
Zoningcommission@Boston.gov

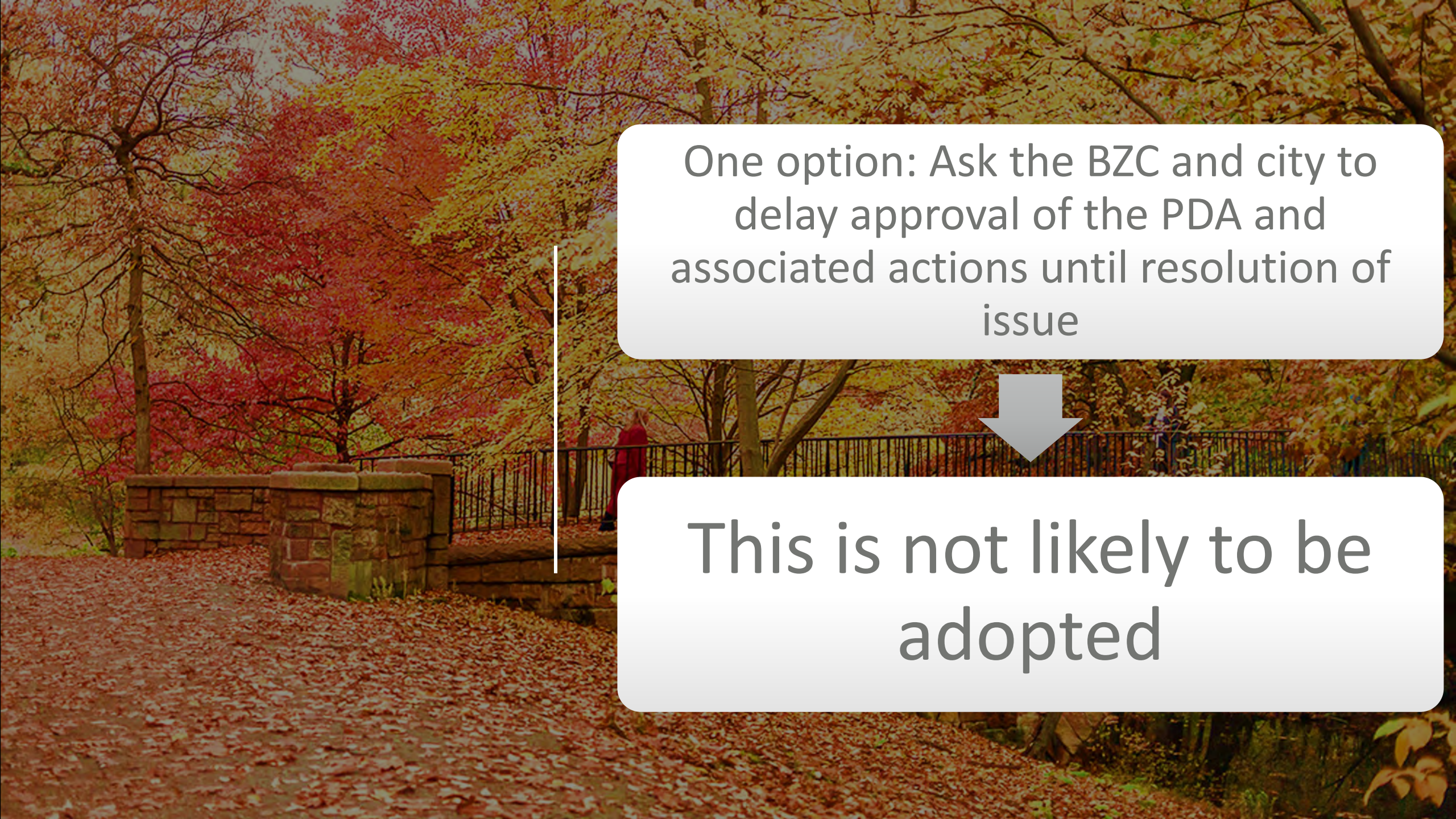
Refer to
Map Amendment Application No. 752
Planned Development Area No. 134,
Longwood Place
Map 1 Boston Proper

Vote is on a petition by the BPDA to approve the development plan and to approve the associated map amendment, which creates new zoning for the Planned Development Area

Zoning Commission approval will mean approval of all conditions within the filing and the BPDA memorandum laying out provisions for mitigation and shadow studies

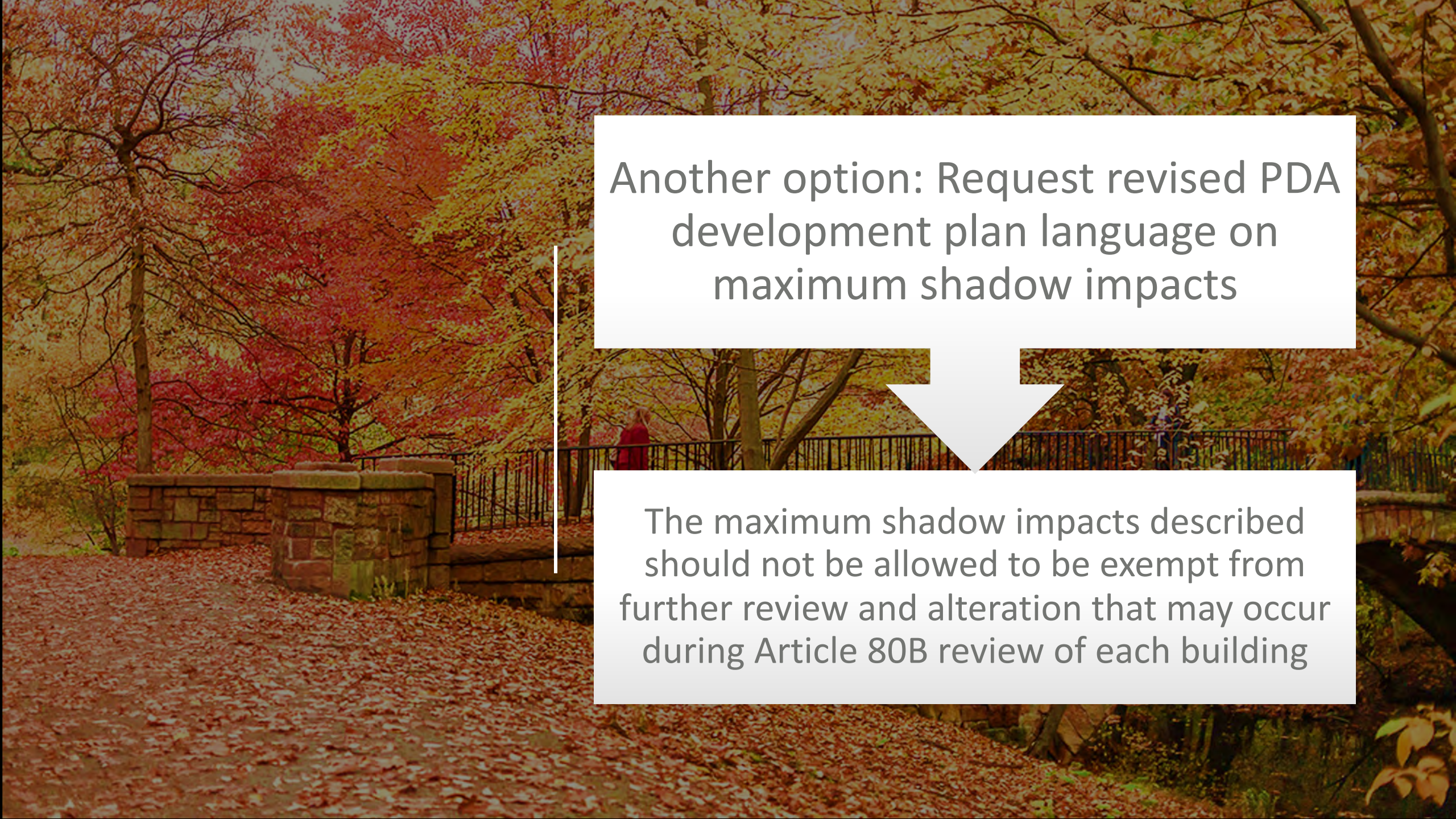
WE ENCOURAGE EVERYONE TO PARTICIPATE


Question:
How to support Simmons and support our parks?
How does this goal inform our actions on March 1st?



One option: Ask the BZC and city to delay approval of the PDA and associated actions until resolution of issue

This is not likely to be adopted



Another option: Request revised PDA development plan language on maximum shadow impacts

The maximum shadow impacts described should not be allowed to be exempt from further review and alteration that may occur during Article 80B review of each building

DISCUSSION

THANK YOU