

Environmental Infrastructure for Sustainable Cities

Fall 2024: URPL-GP 2625.001

# Instructor Information

* Amy Kenyon
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* Office Hours: Mondays after class or by appointment (via Zoom)

# Course Information

* Class Meeting Times: Mondays 4:55 - 6:35pm
* Class Location: Room 265, Global Center for Academic and Spiritual Life

# Course Prerequisites

1. CORE-GP.1018, Microeconomics for Public Management, Planning, and Policy Analysis

# Course Description

This class is about the infrastructure systems that make up the built environment of cities, and that can make cities more or less sustainable and equitable. As humans face concurrent crises of climate change and inequality, most of the earth’s population lives in cities and relies on environmental infrastructure for basic needs like water, sanitation, housing, and mobility. What makes a system sustainable and resilient to climate change? What makes infrastructure equitable? How infrastructure is designed, built, paid for, and governed all has an impact on the outcomes.

In the United States, the federal government is for the first time in generations investing hundreds of billions of dollars in climate and infrastructure, and some states are pursuing innovative policy and investment frameworks. Yet it is at the local and regional level where most land use and infrastructure investment decisions get made. How are cities responding to advance sustainable and resilient infrastructure, and what lessons can be learned from past efforts?

# Course and Learning Objectives

This course is designed to give students a broad overview of the physical infrastructure systems of urban areas and how they are impacted by climate change, as well as their role in making a city resilient, equitable, and sustainable. Students will explore at a high level the decisions involved in environmental infrastructure policy, design, funding, construction, and operation. The course primarily uses case studies to examine successes and failures in urban infrastructure, including transportation, mobility, water/sanitation, energy, waste, public space, housing, and digital connectivity. Students are encouraged to apply a critical lens to the planning, policy, and finance aspects involved in these systems, and will discuss the challenges, benefits, and

trade-offs involved in different approaches to sustainable infrastructure development and operation.

At the end of the course, students will have applied a sustainability and systems lens to understanding environmental infrastructure policies and projects, and will better understand the roles they will play in sustainable infrastructure, as practitioners, as public sector leaders, and as civic participants.

Students who complete this course successfully will have:

1. developed their understanding of major environmental infrastructure systems in cities and the policy debates and planning challenges related to their sustainability,
2. created their own case analysis of a recent urban infrastructure investment or policy and its contribution to a city’s sustainability,
3. practiced giving and receiving feedback among peers,
4. contributed to group discussions and analysis of infrastructure, sustainability, and urban development, and
5. considered the challenges and benefits involved in investing in sustainable infrastructure from a variety of roles and perspectives.

# Learning Assessment Table

|  |  |
| --- | --- |
| **Graded Assignment** | **Course Objective Covered** |
| Class participation & short assignments | #1, #2, #3, #4, #5 |
| Final Paper | #1, #2, #4, #5 |
| Presentation | #2, #3, #4, #5 |

**Assignments and Evaluation**

## Class Participation & Short Assignments (50%):

This class is designed to facilitate discussion, so full and active participation is a key, and graded, part of the course.

* + Discussion boards. I will be assigning students each week to post reflections on the topic and readings before each class on a discussion board, and to lead an in-class discussion. It is my expectation that others will jump in with additional observations, disagreements, and other reactions.
  + In class discussion. Students will sign up for a week to share their reflections on the readings and lead a discussion in class. My expectation is that all students will take part in in-class discussion and activities.

Students are required to attend all classes and contribute to discussion both in class and on Brightspace. All students should be prepared to discuss and answer questions about the week’s readings in class. Required readings and materials will be found in the Class folder on the NYU Brightspace website. Near the end of the term peer feedback on the student presentations will also be taken into account for the participation grade (see below).

For almost every class students will be asked to answer in advance brief questions relating to the week’s readings, and in some cases to summarize in a few sentences takeaways from the previous class. The answers for these Short Assignments usually involve only a few bullet points or sentences; they do not require significant work beyond completing the reading and spending a few moments reflecting on it, and the discussion from the last class. At the beginning and end of the course students will submit a brief reflection on their overall learning and contribution to the class. These short assignments are not individually graded but consistent failure to submit them on time or at all will have a significant effect on one’s class participation grade.

All Short Assignments are due by the Saturday prior to class at 5 pm so that students and the professor have time to read submissions by Monday’s class, unless otherwise noted.

## Final Project (Paper) (40%):

Each student will write one final paper, (10 to 15 pages) looking at an infrastructure investment or policy of their choice, providing an analysis and a set of recommendations. The paper should include the following:

* + a short description of the infrastructure investment or policy and the rationale for it;
  + an overview of the costs and benefits (environmental and social), including how it is financed;
  + an analysis of the governance and operation of the system,
  + an exploration of the perspectives of various decision-makers and stakeholders involved at different phases of the project or policy design and implementation, and a reflection on their roles in advancing sustainability long-term;
  + a set of recommendations regarding how the system or project could do more to contribute to sustainability, or how the lessons from this project could contribute to future sustainable cities.

In conducting research for the paper and to develop a set of recommendations, each student should interview at least one stakeholder with familiarity with the project or policy implementation.

The paper will be evaluated for its use of multiple sources of information, effective synthesis of information to present a case, the strength and practicality of the recommendations, and the analysis of the interests and roles of different decision-makers involved in the project.

## Final Project (Presentation) (10%)

Leading up to the final paper, each student will select the infrastructure policy or project they want to write about, and prepare a short oral presentation and Powerpoint summary of the themes and recommendations their final paper will cover. This will help to provide practice in oral presentation and will give students the opportunity for peer feedback to refine the final paper.

*Progress Milestones for final paper & presentation:*

* + *Indicate general area of interest (Class 3)*
  + *Topics submitted (Class 5); consultation with professor (by Zoom or office hours);*
  + *Interviews with stakeholder scheduled and class discussion (Classes 6-9)*
  + *In-class presentation with questions and feedback from students & instructor (Classes 9 & 10)*
  + *Final paper due (end of semester)*

# Class Policies

To support a learning environment conducive to co-learning and co-creation, it is important that everyone be respectful of different points of view, and approach dialogue and learning with curiosity and mutual respect. There are also some specific policies I adopt for this course, including the following:

1. Attendance: Students are expected to attend all classes. Unexcused absences will impact the participation portion of your grade.
2. Assignment timeliness: without prior approval, late assignments will not be accepted. Extensions will be granted only in case of emergency or special circumstances (by prior arrangement).
3. In addition to office hours or scheduled appointments, I am available by email. I will make every effort to respond within 48 hours of emails I receive.

# Use of AI

You should not use AI tools in this class for the short assignments to reflect on the readings, unless specifically noted in the description of an individual assignment.

For your final paper, you may use AI tools to help you generate your topic and sources. We will discuss and learn together the strengths and weaknesses of these tools in sustainability policy and planning. For the final paper only, you may use any tool, within these limits:

1. You understand that you are responsible for understanding everything you submit. You need to identify and fix any weaknesses or errors in AI output.
2. You document your process and submit that along with your assignment. You need to acknowledge your use of AI, describe your process, tell me which tools you used and why you chose them, and what prompts you used to generate the output.
3. I may also ask you to share AI strategies with the class, and I may ask you to elaborate on any work you hand in.

# Letter Grades

Letter grades for the entire course will be assigned as follows:

|  |  |
| --- | --- |
| **Letter Grade** | **Points** |
| **A** | 4.0 points |
| **A-** | 3.7 points |
| **B+** | 3.3 points |
| **B** | 3.0 points |
| **B-** | 2.7 points |
| **C+** | 2.3 points |
| **C** | 2.0 points |
| **C-** | 1.7 points |
| **F** | 0.0 points |

## Student grades will be assigned according to the following criteria:

* + (A) Excellent: Exceptional work for a graduate student. Work at this level is unusually thorough, well-reasoned, creative, methodologically sophisticated, and well written. Work is of exceptional, professional quality.
  + (A-) Very good: Very strong work for a graduate student. Work at this level shows signs of creativity, is thorough and well-reasoned, indicates strong understanding of appropriate methodological or analytical approaches, and meets professional standards.
  + (B+) Good: Sound work for a graduate student; well-reasoned and thorough, methodologically sound. This is the graduate student grade that indicates the student has fully accomplished the basic objectives of the course.
  + (B) Adequate: Competent work for a graduate student even though some weaknesses are evident. Demonstrates competency in the key course objectives but shows some indication that understanding of some important issues is less than complete. Methodological or analytical approaches used are adequate but student has not been thorough or has shown other weaknesses or limitations.
  + (B-) Borderline: Weak work for a graduate student; meets the minimal expectations for a graduate student in the course. Understanding of salient issues is somewhat incomplete. Methodological or analytical work performed in the course is minimally adequate. Overall performance, if consistent in graduate courses, would not suffice to sustain graduate status in “good standing.”
  + (C/-/+) Deficient: Inadequate work for a graduate student; does not meet the minimal expectations for a graduate student in the course. Work is inadequately developed or flawed by numerous errors and misunderstanding of important issues. Methodological or analytical work performed is weak and fails to demonstrate knowledge or technical competence expected of graduate students.
  + (F) Fail: Work fails to meet even minimal expectations for course credit for a graduate student. Performance has been consistently weak in methodology and understanding, with serious limits in many areas. Weaknesses or limits are pervasive.

# Brightspace

All announcements, resources, and assignments will be delivered through the Brightspace site. I may modify assignments, due dates, and other aspects of the course as we go through the term with advance notice provided as soon as possible through the course website.

# Academic Integrity

Academic integrity is a vital component of Wagner and NYU. All students enrolled in this class are required to read and abide by [Wagner’s Academic Code](https://wagner.nyu.edu/portal/students/policies/code). All Wagner students have already read and signed the [Wagner Academic Oath](https://wagner.nyu.edu/portal/students/policies/academic-oath). Plagiarism of any form will not be tolerated and students in this class are expected to report violations to me. If any student in this class is unsure about what is expected of you and how to abide by the academic code, you should consult with me.

# Henry and Lucy Moses Center for Student Accessibility

Academic accommodations are available for students with disabilities. Please visit the [Moses](https://www.nyu.edu/students/communities-and-groups/students-with-disabilities.html) [Center for Students with Disabilities (CSD) website](https://www.nyu.edu/students/communities-and-groups/students-with-disabilities.html) and click the “Get Started” button. You can also call or email CSD (212-998-4980 or [mosescsd@nyu.edu](mailto:mosescsd@nyu.edu)) for information. Students who are requesting academic accommodations are strongly advised to reach out to the Moses Center as early as possible in the semester for assistance.

# NYU’s Calendar Policy on Religious Holidays

[NYU’s Calendar Policy on Religious Holidays](https://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/university-calendar-policy-on-religious-holidays.html) states that members of any religious group may, without penalty, absent themselves from classes when required in compliance with their religious obligations. You must notify me in advance of religious holidays or observances that might coincide with exams, assignments, or class times to schedule mutually acceptable alternatives. Students may also contact [religiousaccommodations@nyu.edu](mailto:religiousaccommodations@nyu.edu) for assistance.

# NYU’s Wellness Exchange

[NYU’s Wellness Exchange](http://www.nyu.edu/life/safety-health-wellness/wellness-exchange.html) has extensive student health and mental health resources. A private hotline (212-443-9999) is available 24/7 that connects students with a professional who can help them address day-to-day challenges as well as other health-related concerns.

# Overview of the Semester

\*note - this is an evolving plan and the focus of each week may shift depending on the interests and discussion of the class

|  |  |  |
| --- | --- | --- |
| **Week** | **Date** | **Topic** |
| Week 1 | Sept 9 | Welcome, Course Overview  What are sustainable infrastructure systems? |
| Week 2 | Sept 16 | Stakeholders, Politics, & Planning |
| Week 3 | Sept 23 | Water  Discussion: Topics for final paper |
| Week 4 | Sept 30 | Urban Mobility |
| Week 5 | October 7 | Housing/Buildings  ***Submit paper topic, schedule meeting to discuss*** |
| Week 6 | Oct 15th | ***Note: Tuesday class***  Solid Waste, Energy |
| Week 7 | October 21 | Public space / parks Broadband/telecommunications |
| Week 8 | October 28 | Funding, Financing, and Political Will |
| Week 9 | Nov 4 | Community Engagement |
| Week 10 | Nov 11 | Class Presentations |
| Week 11 | Nov 18 | Class Presentations |
| Week 12 | Nov 25 | Infrastructure Governance & Operations |
| Week 13 | Dec 2 | Disaster Recovery and Resiliency |
| Week 14 | Dec 9 | Infrastructure Stakeholders and Politics |
|  | Dec 16 | NO CLASS, EXAMS WEEK  Final Papers Due |

# Detailed Course Overview

## WEEK 1: Welcome, Course Overview, What is Sustainable Infrastructure?

This class focuses on the relationship between infrastructure, the economy, public health, and the environment. We will begin to explore the idea of infrastructure as systems and identify its impacts on public health, the economy, and culture.

Discussion topics: Public “environmental infrastructure” and its relationship with social/civic, educational, housing, private facilities, and other infrastructure; systems thinking and infrastructure; patterns of development in an increasingly urban, coastal world; importance of managing infrastructure management to cities, economies, and the environment; public health and environmental metrics; historical interrelationship between infrastructure, economic development and the environment; preservation versus conservation; widespread changes in land use and climate change, how it informs our understanding of the “natural” world; climate change and adaptation; the unique interaction of the federal and state governments for infrastructure development in the US; COVID19 and the future of cities.

### Readings (found on Brightspace)

1. Neuman, M. (2021). Sustainable Infrastructure for Cities and Societies, Introduction. <https://doi-org.proxy.library.nyu.edu/10.4324/9780429323508>
2. Donella Meadows, Thinking in Systems, Introduction and Chapter 1, “The Basics”. [https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library](https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library/climate-communications/psychology-amp-behavior/Meadows-2008.-Thinking-in-Systems.pdf)

[/climate-communications/psychology-amp-behavior/Meadows-2008.-Thinking-in-System](https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library/climate-communications/psychology-amp-behavior/Meadows-2008.-Thinking-in-Systems.pdf) [s.pdf](https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library/climate-communications/psychology-amp-behavior/Meadows-2008.-Thinking-in-Systems.pdf)

1. Yanamandra, S., (2020) Sustainable Infrastructure: An Overview Placing Infrastructure in the context of sustainable development. University of Cambridge. Institute for Sustainability Leadership (p 1-26) ([https://www.cisl.cam.ac.uk/system/files/documents/sustainable-infrastructure-an-overvie](https://www.cisl.cam.ac.uk/system/files/documents/sustainable-infrastructure-an-overview.pdf) [w.pd](https://www.cisl.cam.ac.uk/system/files/documents/sustainable-infrastructure-an-overview.pdf)f)
2. Klinenberg, Eric., and Eric. Klinenberg. *Palaces for the People : How Social Infrastructure Can Help Fight Inequality, Polarization, and the Decline of Civic Life*, 2018. Introduction, pp 10-29. *ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/nyulibrary-ebooks/detail.action?docID=6059582>.
3. How Hannah Beachler Built Black Panther’s Wakanda. Nicole Flatow, Bloomberg [https://www.bloomberg.com/news/articles/2018-11-05/how-hannah-beachler-built-black-](https://www.bloomberg.com/news/articles/2018-11-05/how-hannah-beachler-built-black-panther-s-wakanda) [panther-s-wakanda](https://www.bloomberg.com/news/articles/2018-11-05/how-hannah-beachler-built-black-panther-s-wakanda)

#### Supplemental readings:

Catherine Brinkley, Pandemics Have Actually Made Cities Better, Fast Company, (May 19, 2020)

Neuman, Michael. Sustainable Infrastructure for Cities and Societies, Taylor & Francis Group, 2022. ProQuest Ebook Central, p 50 & 51, p 72-78. <http://ebookcentral.proquest.com/lib/nyulibrary-ebooks/detail.action?docID=6809955>.

Thomas L. Daniels (2009) A Trail Across Time: American Environmental Planning From City Beautiful to Sustainability, Journal of the American Planning Association

##### Reflection Questions

As you read, consider these questions:

* What makes infrastructure sustainable and resilient? What are the elements of sustainable infrastructure?
* Why is it important to think in systems when analyzing, developing, or improving infrastructure?
* Does infrastructure always contribute to sustainability and resiliency? Do climate and social goals ever conflict when making infrastructure decisions?
* Does culture shape infrastructure design and planning, or vice versa?

##### Assignment

(to submit in Brightspace discussion by September 6th at 5pm, no more than one page)

* What are your learning goals for yourself for this course?
* What do you hope to contribute to the class from your skills, interests, and experience?
* What is something that gives you hope or joy about the future of cities?

### WEEK 2: Stakeholders, Politics, and Planning

This class provides an overview of the present state of the U.S. infrastructure and within that context focuses on (1) key decision-makers, the political context of infrastructure, the role of strategic planning, and other methods for creating momentum for investment in infrastructure,

(2) the preliminary studies necessary for the development of infrastructure, and (3) the role of community engagement and partnerships. The class will also look at recent federal legislation in the U.S. that is intended to allow a massive new investment in climate and environmental infrastructure.

Discussion topics: (1) The role of politics, interest groups, elected leaders, public opinion, and governmental institutions in the formulation and management of public policy and programs; (2) deciding what, when, and how to build; relationship between strategic plans, master plans, facility plans; agenda setting; stakeholder and citizen participation; setting priorities; understanding and communicating risk; (3) Planning, Pre-Design, Feasibility Studies, and Site Selection; assessment and management; condition assessment and asset management; benefit-cost analysis; life-cycle analysis; time value of money; business cases; alternatives analysis; environmental review; permitting; site assembly; eminent domain; and (4) community mobilization and engagement; stakeholder meetings and charrettes; siting and environmental

justice.

#### Readings:

* [Infrastructure Investment Decisions Are Political, Not Technical - Center for American](https://www.americanprogress.org/article/infrastructure-investment-decisions-political-not-technical/) [Progress](https://www.americanprogress.org/article/infrastructure-investment-decisions-political-not-technical/)
* Thacker, S., Adshead, D., Fay, M. et al. Infrastructure for sustainable development, Nature Sustainability 2: 324–331 (Apr. 1, 2019)
* Regional Plan Association, The Fourth Regional Plan (2017), [Executive Summary](http://fourthplan.org/about/executive-summary)
* [Introducing the Brookings Federal Infrastructure Hub: A comprehensive guide to the](https://www.brookings.edu/articles/introducing-the-brookings-federal-infrastructure-hub-a-comprehensive-guide-to-the-infrastructure-law/) [infrastructure law](https://www.brookings.edu/articles/introducing-the-brookings-federal-infrastructure-hub-a-comprehensive-guide-to-the-infrastructure-law/)
* [How States and Cities Can Benefit from Climate Investments in the Inflation Reduction](https://www.americanprogress.org/article/how-states-and-cities-can-benefit-from-climate-investments-in-the-inflation-reduction-act/) [Act](https://www.americanprogress.org/article/how-states-and-cities-can-benefit-from-climate-investments-in-the-inflation-reduction-act/). Center for American Progress, 2022.
* [Is Federal Infrastructure Investment Advancing Equity Goals? | Urban Institute](https://www.urban.org/sites/default/files/2023-10/Is%20Federal%20Infrastructure%20Investment%20Advancing%20Equity%20Goals.pdf) Executive Summary

Listen

* [226 | Johanna Hoffman on Speculative Futures of Cities – Sean Carroll](https://www.preposterousuniverse.com/podcast/2023/02/13/226-johanna-hoffman-on-speculative-futures-of-cities/)

Supplemental Readings

* [Why America’s Infrastructure Is So Hard To Fix | TIME](https://time.com/6977919/america-infrastructure/) May 15th 2024
* American Society of Civil Engineers, Infrastructure Report Card (2021) <https://infrastructurereportcard.org/>
* What\_is\_Sustainable\_Infrastructure? A Framework to Guide Sustainability Across the Project Cycle. March 2018 (in Brightspace)
* National League of Cities: [Local Authority and Federal Infrastructure Investments: A](https://www.nlc.org/resource/local-authority-and-federal-infrastructure-investments-a-state-by-state-analysis/) [State-by-State Analysis - National League of Cities](https://www.nlc.org/resource/local-authority-and-federal-infrastructure-investments-a-state-by-state-analysis/)

##### Reflection Questions:

* What stood out to you in the readings?
* Do you feel that sustainable infrastructure investment is driven by good plans, or good policy and political will? *Does one enable the other?*
* Who are various ‘decision-makers’ at different points in infrastructure planning, policy, and implementation? What are some of their interests related to sustainability?
* What role do designers, journalists, storytellers play in the future sustainability of cities and infrastructure?

Week 3: Water

This class will discuss water (drinking, waste, and stormwater) public health systems that have been critical to the very concept of dense development since the earliest cities. Discussion topics will include government and regulated private utility arrangements, New York City’s drinking water system history, wastewater and stormwater management, and green vs. grey infrastructure.

Discussion topics: how do we pay for our water systems in the U.S.? Public vs private water utilities. What is the future of sustainability in urban water systems? What is the role of planners, finance, technology and science, and artists?

In class, we will discuss potential topics for the final paper.

#### Required readings:

[ASCE, Drinking Water Report Card (2021)](https://infrastructurereportcard.org/cat-item/drinking-water-infrastructure/) [ASCE, Wastewater Report Card (2021)](https://infrastructurereportcard.org/cat-item/wastewater-infrastructure/)

Janet Hering et al., [A Changing Framework for Urban Water Systems](https://pubs.acs.org/doi/10.1021/es4007096), Environ. Sci. Technol. 47:19, 10721–10726 (May 8, 2013)

[BlueGreen Alliance | Water](https://www.bluegreenalliance.org/site/transportation/water/)

[A Growing Drinking Water Crisis Threatens American Cities and Towns](https://www.scientificamerican.com/article/a-growing-drinking-water-crisis-threatens-american-cities-and-towns/) [Los Angeles is running out of water, and time. Are leaders willing to act?](https://www.latimes.com/environment/story/2022-10-13/as-election-nears-future-l-a-water-supply-gains-focus) [PVC Pipes: Not the Solution for Lead Pipe Replacement](https://www.momscleanairforce.org/pvc-pipes-drinking-water/)

[Advancing One Water Through Arts and Culture: A Blueprint for Action](https://uswateralliance.org/wp-content/uploads/2023/09/uswa_artsculture_FINAL_PAGES_RGB_0.pdf)

NYC Water systems

<https://www.ncbi.nlm.nih.gov/books/NBK566285/> Chapter 3: New York City’s Water Supply System: Past, Present, and Future

New York Times [Living City | A Billion Gallons a Day - The New York Times](https://www.nytimes.com/video/nyregion/100000003176142/living-city-a-billion-gallons-a-day.html) (2014) (Video) <https://climate.cityofnewyork.us/wp-content/uploads/2022/10/stormwater-resiliency-plan.pdf> [Green Infrastructure: How to Manage Water in a Sustainable Way](https://www.nrdc.org/stories/green-infrastructure-how-manage-water-sustainable-way#types)

Other cities (possible project topics):

[10 Most Sustainable Cities: Leaders in Water Management Practices – Tappwater](https://tappwater.co/blogs/blog/10-sustainable-cities-water-management)

##### Supplemental readings (depending on your project):

Case Study:

[A water crisis swept through Pittsburgh five years ago: This is the fullest account of what](https://www.publicsource.org/pittsburgh-water-crisis-and-turnaround/) [happened. - PublicSource](https://www.publicsource.org/pittsburgh-water-crisis-and-turnaround/)

[https://toolkit.climate.gov/case-studies/pittsburgh-unifies-its-approach-updating-stormwater-man](https://toolkit.climate.gov/case-studies/pittsburgh-unifies-its-approach-updating-stormwater-management) [agement](https://toolkit.climate.gov/case-studies/pittsburgh-unifies-its-approach-updating-stormwater-management)

[10 Years After Crisis, Flint Is Still Fighting for Clean Water](https://www.foodandwaterwatch.org/2024/04/25/flint-10-years-later/) Food and Water Watch

[More Critical Minerals Mining Could Strain Water Supplies in Stressed Regions](https://www.wri.org/insights/critical-minerals-mining-water-impacts) [How Cities Can Prepare Now to Meet New PFAS Drinking Water Regulations](https://www.nlc.org/article/2024/06/17/how-cities-can-prepare-now-to-meet-new-pfas-drinking-water-regulations/)

[Integrating Green and Gray: Creating Next Generation Infrastructure | World Resources Institute](https://www.wri.org/research/integrating-green-and-gray-creating-next-generation-infrastructure)

#### Reflection Questions:

What stood out to you in the readings?

What are the most critical elements of sustainability for city leaders to focus on:

* in Los Angeles
* in NYC
* in Flint

What might be some of the considerations city leaders must grapple with when exploring green vs. grey infrastructure options?

#### Short Assignment:

What topic are you considering for your final project (paper and presentation)? What questions or concerns are you running into as you consider what topic to choose? Why is this topic meaningful to you? *This can be short - just a few sentences or a couple of paragraphs.*

### Week 4: Urban Mobility

This class will discuss transportation infrastructure issues, in particular the relationship between economic development, urban mobility, sustainability and mobility justice, and the contested future of sustainable mobility.

Discussion topics: Why do we value mobility? How do we pay for transportation services? What are the alternatives? What is the future of sustainable mobility, and sustainable mobility for who?

#### Required Readings:

* S. Griffiths et al, Policy mixes to achieve sustainable mobility after the COVID-19 crisis, Renewable and Sustainable Energy Reviews, Vol. 143:110981 (June 2021) (PDF)
* Kunze, Oliver, and Fabian Frommer. ["The Matrix Vs. the Fifth Element—Assessing](https://www.proquest.com/docview/2650196127?parentSessionId=UgWgvCRe8rHVz2dHV%2BawXCzZTxLwKJIOBdXm1mIqD08%3D&pq-origsite=primo&accountid=12768&sourcetype=Scholarly%20Journals) [Future Scenarios of Urban Transport from a Sustainability Perspective.](https://www.proquest.com/docview/2650196127?parentSessionId=UgWgvCRe8rHVz2dHV%2BawXCzZTxLwKJIOBdXm1mIqD08%3D&pq-origsite=primo&accountid=12768&sourcetype=Scholarly%20Journals)" *Sustainability*, vol. 13, no. 6, 2021, pp. 3531
* [Decarbonizing Transportation Must Come with People-Powered Mobility Justice - Union](https://blog.ucsusa.org/science-blogger/decarbonizing-transportation-must-come-with-people-powered-mobility-justice/) [of Concerned Scientists](https://blog.ucsusa.org/science-blogger/decarbonizing-transportation-must-come-with-people-powered-mobility-justice/)
* Fried, T., Verma, R., & Goodchild, A. (2024). Ecommerce and Environmental Justice in Metro Seattle. Research in Transportation Economics, 103, 101382. <https://doi.org/10.1016/j.retrec.2023.101382>
* [EVs Are Not the Answer: A Mobility Justice Critique of Electric Vehicle Transitions](https://environment.sfsu.edu/sites/default/files/2023-01/Henderson%202020%20Annals%20AAG%20EV%20Paper.pdf)
* Transportation: A Blindspot in US Climate Policy <https://climateandcommunity.org/research/blog-transportation-blindspot/>
* [https://thecityfix.com/blog/are-trains-better-than-bus-rapid-transit-systems-a-look-at-the-e](https://thecityfix.com/blog/are-trains-better-than-bus-rapid-transit-systems-a-look-at-the-evidence-dario-hidalgo/) [vidence-dario-hidalgo/](https://thecityfix.com/blog/are-trains-better-than-bus-rapid-transit-systems-a-look-at-the-evidence-dario-hidalgo/)
* [Crip Mobility Justice: Ableism and Active Transportation Debates - Spotlight On The](https://www.ijurr.org/spotlight-on/disabling-city/crip-mobility-justice/) [Disabling City](https://www.ijurr.org/spotlight-on/disabling-city/crip-mobility-justice/)
* Mark J. Nieuwenhuijsen, Haneen Khreis, Car free cities: Pathway to healthy urban living, Environment International, Volume 94, 2016, Pages 251-262, <https://doi.org/10.1016/j.envint.2016.05.032> (<https://www.sciencedirect.com/science/article/pii/S0160412016302161>)

##### Supplemental

Listen:

* [Minnesota builds climate change into transportation planning](https://www.volts.wtf/p/minnesota-forces-transportation-planners?utm_source=publication-search)

Read:

* [How Transit Advocates Scored a Major Victory in Minnesota - TransitCenter](https://transitcenter.org/how-transit-advocates-scored-a-major-victory-in-minnesota/)
* [Decolonizing the Transportation Industry: A Critique Through the Native Feminist Lens](https://escholarship.org/uc/item/4j72s6tz)
* [The 15-Minute City: A Feminist Utopia?](https://www.transformative-mobility.org/wp-content/uploads/2023/03/TUMI_WMW_Feminism_and_the15min_City-TZGmSO.pdf)

##### Week 5: Housing and Buildings

This class will investigate the impact of buildings, particularly housing, on climate and environmental health, and the intersection of land use planning, transit, and housing location.

Topics for discussion: what is housing and how is it infrastructure? How can housing and buildings be environmental infrastructure, and how do they contribute to or impede the

sustainability of cities? What about affordable housing, and transit-oriented development? How do we invest in the infrastructure needed to support more housing?

##### Required Readings:

Report: Why Creating and Preserving Affordable Homes Near Transit is a Highly Effective Climate Strategy. TransformCA, 2014

[Global greenhouse gas emissions from residential and commercial building materials and](https://www.nature.com/articles/s41467-021-26212-z) [mitigation strategies to 2060 | Nature Communications](https://www.nature.com/articles/s41467-021-26212-z)

[NRDC: Healthy, Climate-Resilient Homes for All - Centering Housing Justice and Health Equity](https://www.nrdc.org/sites/default/files/2023-12/housing-justice-health-equity-building-decarbonization-ib.pdf) [in Building Decarbonization (PDF)](https://www.nrdc.org/sites/default/files/2023-12/housing-justice-health-equity-building-decarbonization-ib.pdf)

[Addressing Our Nation’s Toxic School Infrastructure in the Wake of COVID-19](https://journals.sagepub.com/doi/abs/10.3102/0013189X211062846) Erika M. Kitzmiller and Akira Drake Rodriguez

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[Brownfields to Greenfields: Environmental Justice Versus Environmental Gentrification - PMC](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6210586/) [The Billionaire’s Plan to Solve California’s Housing Crisis](https://www.nytimes.com/2024/03/11/podcasts/the-daily/california-forever-tech-housing.html)

##### Supplemental

[How Do We Fix Public Insurance Programs? - Climate & Community Institute](https://climateandcommunity.org/research/fix-insurance-programs/) [Multifamily Affordable Housing Decarbonization Toolkit - RMI](https://rmi.org/multifamily-affordable-housing-decarbonization-toolkit/)

[Climate Resilience Implementation Guide: Community-Driven Relocation](https://files.hudexchange.info/resources/documents/Climate-Resilience-Implementation-Guide-Community-Driven-Relocation.pdf)

[Managed Retreat Toolkit » Social/Equity: Receiving Communities - Georgetown Climate Center](https://www.georgetownclimate.org/adaptation/toolkits/managed-retreat-toolkit/social-equity-receiving-communities.html?jurisdiction=10567)