Resilient Connecticut Synthesis Report Appendix C

Zoning Library

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Climate Resilient Zoning Library Summary

Zoning is one tool communities can use to enhance local resilience to climate change impacts like flooding, sea level rise, and increased heat. Regulations can be targeted to protect natural buffering features and green infrastructure, incentivize development density in specific areas, and specify resilient design to reduce impacts of storms, sea level rise, and increasing heat.

Towns in Connecticut are authorized by the state government to regulate how land can be used through zoning under C.G.S. §§ 8-2 to 13a. Each town's legislative body can adopt the provisions in the statute detailing the powers of a zoning commission, its make up, and the extent of the zoning commission's authority. Guided by planning and development staff, and consistent with the town Plan of Conservation and Development, zoning commissions pass regulations to describe what uses land can be put to and in what areas, with the intent to protect the health and safety of all. As climate change threatens people and the environment, municipalities can implement strategic land use planning and zoning regulations to improve local climate adaptation and resilience and direct development away from vulnerable areas.

As the changing climate increases vulnerability and intensifies risk, zoning commissions should be aware of state, regional, and local hazard mitigation plans and localized vulnerability assessments when determining land uses. Policies like transportation-oriented development can help climate change mitigation by reducing transportation needs (and thus fossil fuel use) while furthering housing and development goals. Adaptation polices can avoid sprawl and site development away from climate-vulnerable areas like flood zones. By evaluating current and future climate vulnerability, development can be sited in appropriate, low hazard areas, and be designed and built to standards to withstand predicted climate risks.

Zoning regulation can also be used to meet overlapping municipal priorities, like increasing affordable housing options while minimizing hazard risk. For example, reducing minimum lot size in certain zones can help concentrate density in less climate risky places while increasing affordability for lower income property buyers. Affordable housing options can be integrated into projects that also meet resilient design criteria helping municipalities avoid climate risk and meet obligations under C.G.S. 8-30g's affordable housing land use appeals procedure.

The CIRCA Climate Resilient Zoning library contains factsheets about specific zoning policies which can help municipalities become more resilient to climate change like using transferable development rights to shift development from vulnerable areas while preserving property value. Overlay zones are a zoning tool that can add protections in areas impacted by particular threats, like flooding, that may cross other established land use zones. Minimum lot size, parking minimums, and maximum lot coverage are regulatory standards that can be adjusted to address specific vulnerabilities in certain zones, allowing limits on impervious cover or increasing housing density in appropriate areas. Using zoning codes to set standards on building and landscape design can increase climate resilience by requiring heat mitigating materials and incorporation of green areas on sites. While zoning alone cannot solve flooding or excessive heat, it can be a tool to mitigate these problems or help municipalities adapt to changing conditions going forward.













Zoning for Municipal Resilience

Connecticut Institute for Resilience and Climate Adaptation Zoning Fact Sheet Series

Transferable Development Rights

Transferable Development Rights

- Land-owner retains all rights to property, except development rights.
- Home-owners in climate change vulnerable areas can remain in their homes.
- Property value lost through climate vulnerability (for example, increasingly flood prone areas) is recovered through sale of development rights.

Transferable Development Rights (TDR) are a regulatory technique allowing development rights to a property to be severed, transferred, and relocated to another parcel of land. The landowner retains the title and other rights to the property and may sell or exchange the land title or development rights separately. The development rights are expressed as a conservation easement recorded in the land records. TDR programs can advance land use management goals of a municipality without causing a financial burden to landowners or restricting needed development. These programs have traditionally been designed to preserve and protect natural or historic resources for the benefit of the public but could be used to promote climate resilience by limiting development in areas of higher climate risk and encouraging development in less sensitive areas.

TDR programs preserve a landowners' assets by shifting the right to build in area where increased development would be detrimental to an area where development is encouraged. Creating transferable development rights avoids legal issues with constitutional "takings" that could arise from restrictive re-zoning prohibiting development outright. The protected zone, or *Sending Zone*, directs the rights to development out of the area. *Receiving Zones* then allow for use of development rights from the sending zone permitting more density than authorized by local zoning ordinance.

TDR programs are advantageous because they can create a win-win situation for landowners and regulators. Permanent protection from further development is granted to the property within a sending zone, and the property owner is financially compensated without major public expenditure.

TDRs as a Tool for Municipal Climate Resilience

TDRs have the potential to shift development away from vulnerable areas like shorelines and towards preferred inland areas. Currently, TDRs are mainly used nationally by municipalities for agricultural or open space preservation. However, several municipalities across the nation are evaluating TDRs as a climate resilience strategy. Governments can create disincentives for new development in vulnerable coastal areas, while using TDRs to increase inland density. For example, coastal communities can use TDR programs to retreat from the shoreline by designating parcels along the coast as sending zones, limiting development, and incentivizing development elsewhere.





Funding for this project is provided by the U.S. Department of Housing and Urban Development through the Community Block Grant National Disaster Recovery Program, as administered by the Connecticut Department of Housing.

While usually used to protect environmentally or culturally sensitive areas from development pressure, *TDR* programs can address climate-intensified hazards such as:

 Flood and sea level rise 	•Soil Hazards	•Wildfire
•Erosion	 Landslides 	 Poor Water Quality

Benefits of TDR Programs

- Preserve environmentally sensitive areas from becoming impaired or to protect a critical ecosystem service
- Reduce development in hazardous areas without expenditures of tax dollars
- Give developers and landowners more flexibility than under strict zoning
- Potential to compensate landowners for downzoning or other restrictions on their land
- Accommodate growth and still preserve land from development
- Selling development rights is voluntary; developers purchase density bonuses and costs are not handed down to homebuyers
- Economic, environmental and health benefits received by the public:
 - Reduced development in flood prone areas
 - Cleaner drinking water (protection of public water supply)
 - More diverse and affordable housing options with higher-density development

Establishing TDR Programs in Connecticut

Nationally, TDR programs can be implemented by state, regional, local planning agencies or legislative bodies. In Connecticut, C.G.S. § 8-2 enables municipal zoning authorities to implement TDR ordinances. However, C.G.S. § 8-2(f) establishes development rights can only be directly transferred between a seller and purchaser upon joint application; there is no provision allowing a third party to hold or bank rights until a suitable purchaser is found. This makes the transfer of development rights in Connecticut challenging. The Connecticut State Legislature may consider revisiting this policy to increase its utility. Current Connecticut law (C.G.S. § 8-2e) does allow for development rights to be transferred across municipal boundaries, if enabled by the participating municipalities' legislative bodies. Working together, two or more municipalities could design a TDR program for mutual benefit. Potential multi-town approaches could be coordinated by a supraorganization or land trusts, a council of governments, or the Connecticut Green Bank.

Challenges to Creating TDR Programs for Climate Resilience

There must be significant investment to educate property owners in the sending area of the value of transferable development rights. Without adequate explanation, property owners can be cautious about participating in TDR programs for worry that future buyers will be hesitant to purchase property with recorded easements, or because the sending zone is identified as a climate vulnerable area, which could impact property values. Municipalities should be aware of these concerns when designing the program. Programs may also consider the anticipated timeline and magnitude for a specific climate-related hazard.

Areas vulnerable to climate hazards, especially coastal areas, are attractive places to live and work, and significant financial investments for owners. TDR programs can be an opportunity for landowners to recoup value and residential development potential lost to climate risk while promoting municipal resilience.

Municipalities Developing a TDR Program for Climate Resilience Should:

- **Determine the goal of the program**. What risks will the program reduce? What development goals will be met? For example, does the TDR program reduce further development in a flood prone area and increase development density in an area with good transportation infrastructure?
- Define the area for Sending and Receiving Zones. Carefully delineate the areas where the program will apply by assessing vulnerabilities. Both areas could be broadly or narrowly based on geography, design criteria, or risk assessment.
- **Determine value of the rights to be transferred**. A successful program will depend on careful balancing of market forces, including other concurrent incentive programs, and local development needs. The program should benefit both seller and buyers and lead to a safer, more resilient community.
- **Create procedures to manage the program.** Because Connecticut only allows direct transfer, municipalities will need to establish procedures for documenting and recording the transactions, and how incentives can be utilized. Data on transactions will be crucial for determining the success of the program.
- **Meet with stakeholders**. A successful program is transparent to the property owners affected. The municipality should offer multiple opportunities for public education and feedback and proceed with the support of the community.
- **Adopt the ordinance.** The specific TDR ordinance adopted for climate resilience will be similar to those established for other purposes in the state (land/cultural resource protection) but tailored to the program goals, specifying sending and receiving zones, and how the units of the development right are calculated.

Connecticut TDR Statutes

C.G.S. Sec. 8-2 Regulations (a)...Such regulations may provide for a municipal system for the creation of development rights and the permanent transfer of such development rights, which may include a system for the variance of density limits in connection with any such transfer....

C.G.S. Sec. 8-2e. Municipal agreements regarding development rights. Any two or more municipalities which have adopted the provisions of this chapter or chapter 125a or which are exercising zoning power pursuant to any special act may, with the approval of the legislative body of each municipality, execute an agreement providing for a system of development rights and the transfer of development rights across the boundaries of the municipalities which are parties to the agreement. Such system shall be implemented in a manner approved by the legislative body of each municipality and by the commission or other body which adopts zoning regulations of each municipality.

C.G.S. Sec. 8-2f. Joint applications necessary for transfer of development rights. Any zoning regulations adopted pursuant to section 8-2 concerning development rights shall authorize the transfer of the development rights to land only upon joint application of the transferor and transferee.

Applied TDR Programs

While not specifically designed for climate resilience, TDR programs that protect natural areas could aid in protecting or establishing natural buffers to reduce flooding, protect water supply, or mitigate ground level heating. Listed below are example TDR programs in use in Connecticut and throughout the country. To read more about these examples, see the "For More Information" and "References" sections below.

Small towns, using TDR for specific conservation purposes:

Madison, Georgia

In 2014, to further a municipal micro-planning project, the town of Madison adopted a TDR ordinance designed to protect small areas of vital natural habitat, riparian and wildlife corridors, and urban greenspace. The city initially launched a pilot program that protected 25 acres. The TDR's generated were purchased by a developer and allowed for the construction of an additional 32 units in a Leadership in Energy and Environmental Design (LEED) certified affordable housing complex adjacent to transit. This type of micro application of TDRs would be a good model for Connecticut's smaller towns seeking ways to accomplish specific conservation and development goals.

Mequon, Wisconsin

The city of Mequon has created a TDR program for the purpose of protecting a nature preserve from neighboring development. A developer purchased the development rights to a 112-acre parcel that prohibits development through a conservation easement. The development rights were transferred by allowing increased density on a property north of the preserve that is owned by the developer.

Avon, Connecticut

The town of Avon uses a TDR program to preserve valuable natural resources and open space while directing development to more appropriate locations. The formula to the right from the Avon zoning code is used to calculate how density should be transferred.



Avon zoning map. Sending zone hatched.

	[(A)	+	(B)] x4	=	(C)
	Total # of acres of parcel in the receiv area after applicati of the Developable Land Calculation	ing on +	Total # of acres of parcel in the sending area after application of the Developable Land Calculation	x4 =	The maximum # of units which may be constructed in the receiving area*
	* The maximum # of un receiving area shall be developed (sending ar Developable Land Ca	its wh limite ea) doe culatio	ich may be transferred f ed such that the maximu es not exceed 8 units per on.	from th m den acre a	ne sending area to the sity on the parcel to be fter application of the
	The following is an ex	ample	of how the transfer of d	ensity	may be accomplished:
(A)	Transfer In Parcel = (Receiving Area)	13 ac 2 ac 2 ac 1 ac	res in total res of wetland soils res of steep slopes re of flood plain		
		8 Ac	res Total after Applicat	ion of l	Developable Land Calculation
(B)	Transfer Out Parcel = 12 acres total				
	(Sending Area)	1 ac 1 ac 0 ac	re of wetland soils re of steep slopes res of flood plain		
		10 Ac	res Total after Applicat	ion of	Developable Land Calculation
	Number of units after de	nsity t	ransfer:		
	[(13-5) + (12)]	-2) x	4 = C		
	(0 + 1	18 x	4 = 72		

Larger scale TDR examples

Montgomery County, Maryland

Montgomery County enacted a TDR program to address rising housing demands after World War II. County Officials sought to protect the open space and farmland that sustained the entire region by limiting the development on a 93,000-acre reserve to one house per 25 acres. This allowed development rights to be transferred to developers in other parts of the county.

Miami-Dade County, Florida

Miami Dade County Office of Resilience undertook a study in 2017 to assess the value of TDRs as part of a climate adaptation strategy. Florida passed the Community Planning Act in 2011 which allows local governments to designate an Adaption Action Area to focus adaptation planning and funding to a specific location impacted by coastal hazards and sea level rise. The study found that a carefully structured program responsive to market forces could be a useful tool to incentivize managed retreat from hazardous areas. The report also recommended forming a TDR bank to allow for more flexibility. Presently, Miami Dade County has not implemented a TDR program focused on climate resilience, in part because there remain many development incentives from other programs in the market. Because the market forces are not well balanced, transferred development rights have little value at this time. However, the Office of Resilience still hopes to use a TDR program as a climate resilience tool in the future.

Connecticut specific modification of TDR concept

Stamford, CT

The city of Stamford, CT adopted a modified TDR program to manage development densities and encourage historic preservation. Instead of traditional sending and receiving areas, the ordinance allows for redefining boundaries of adjacent lots for zoning purposes in a few of the city's densest zoning districts. Adjacent lots can be redefined as larger "zoning lots" and the development rights of one "tax lot" (traditional property boundaries) can be shifted to an adjacent "tax lot" within the greater "zoning lot". This creates a financial incentive to protect historic property by giving owners the ability to sell or use the development rights in an adjacent property. The development rights can then be used for increased density beyond that allowed by the base zoning code. Development must still meet parking and setback requirements and height limitations.

Stamford's novel use of TDR works within state law by providing for direct transfer of TDR between seller and purchaser. Without the ability to "bank" TDR credits, TDR programs can be limited in Connecticut. This application could be applied to promoting climate resilience in areas where protection of micro-resources would be of value, like shade islands, greenspace, or creating stormwater retention swales.



More information

A report from Maryland Department of Planning on TDRs with study findings and recommendations of incentive examples and next steps on how to enact TDRs:

> https://planning.maryland.gov/Documents /OurWork/envr-planning/TDR-committeereport-2016.pdf

A study by Miami-Dade County FL exploring TDR programs as a climate adaptation strategy:

https://seflorida.uli.org/wpcontent/upload s/sites/13/2018/06/ULI_TDR_Focus_Group __Report-1.pdf

TDR Programs in Managed Retreat Context and Legal Considerations:

https://www.georgetownclimate.org/adapt ation/toolkits/managed-retreattoolkit/transfer-of-developmentrights.html#:~:text=Transfer%20of%20Dev elopment%20Rights%20(TDR,called%20% E2%80%9Creceiving%20areas%E2%80%9 D)

Center for Land Use Education, University of Wisconsin TDR Factsheet:

https://www3.uwsp.edu/cnrap/clue/Documents/PlanImplementation/T ransfer_of_Development_Rights.pdf

Stamford CT TDR Ordinance and news article: https://www.stamfordct.gov/home/showp ublisheddocument/2401/6376973444697 30000

> Article discussing new TDR program in Stamford: <u>https://www.stamfordadvocate.com/local/</u> <u>article/Air-rights-Here-s-what-transferable-</u> 16227134.php

Analysis of Madison GA micro-planning using TDR: <u>https://www.madisonga.com/DocumentC</u> <u>enter/View/972/TDR-Program-</u> <u>Summary?bidId=</u>

Avon CT Zoning Regulations for TDR: <u>https://s30428.pcdn.co/wp-</u> <u>content/uploads/sites/2/2019/09/Avon_-</u> <u>Zoning Regulations Excerpt 1.pdf</u>

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<u>https://planningforhazards.org/sites/planningforhazards</u>.com/files/media/PFH-TDRs.pdf

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What Is a Transfer of Development Rights (TDR) Program?, RUTGERS, NEW JERSEY AGRICULTURE EXPERIMENT STATION, https://njaes.rutgers.edu/highlands/transferdevelopment-rights.php

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Photo: Louanne Cooley 2022



Zoning for Municipal Resilience

Connecticut Institute for Resilience and Climate Adaptation Zoning Fact Sheet Series

Overlay Zones for Climate Resilience

Overlay Zones

- Allow for specific targeted regulation in vulnerable areas
- Flexible to accommodate changing needs

Overlay Zones are established to provide additional regulation in a particular area beyond baseline zoning regulations. Overlay zones can be used in many contexts such as historic preservation, pedestrian friendly zoning, or flood overlay zones. As sea level rise and precipitation patterns change, overlay zones can be an important tool to enhance coastal and floodplain resilience. Overlay zones add an additional layer of protective regulation in areas with specific, elevated hazards to require additional building standards or conservation measures. Overlay zoning can also allow for flexibility of standards for example, to accommodate the elevation of buildings in a flood zone. Local governments can use overlay zones to better regulate characteristics like breakaway walls, setbacks, elevation standards, impervious surface requirements or development densities to manage coastal sprawl or limit development in sensitive areas. Overlay zone standards can be implemented by right or permit to provide a targeted layer of protections for vulnerable areas.

In 2021, PA 21-29 revised the zoning enabling act to specifically authorize municipalities to adopt zoning regulations allowing overlay zones, floating zones, planned development districts, and cluster zones. Previously, Connecticut courts have held municipalities had an implicit right to use overlay zones and other flexible zoning techniques under CGS § 8-2 and towns have used overlay zones to delineate aquifer protection areas, protect historic resources, provide transition zones, or allow for specific uses in parts of zones where they would be otherwise prohibited. Now overlay zones can be used for a wider range of purposes, like fostering climate resilience, without concern of legal challenge.

Overlay Zones as a Tool for Municipal Climate Resilience

Overlay zones can be used to meet federal regulatory requirements for flood hazard protection. The National Flood Insurance Program (NFIP, 44 CFR 59 et seq.) requires minimum flood protection regulation to be enforced by participating municipalities in the 100-year flood zone as delineated on FEMA Flood Maps. However, to address the challenging limitations of FEMA's maps, some municipalities have increased the minimum flood protection requirements above the federal and state level standards to proactively decrease future flood vulnerability or extended flood prevention requirements beyond the FEMA delineated 100-year flood boundary. Using best evidence sea level rise modeling to discern a Flood Overlay Zone boundary (inclusive of FEMA 100-year flood zones) would be best practice for a municipality to provide appropriate flood protection zoning regulations in coastal areas.





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A municipality may choose to divide their 100-year floodplain into defined overlays for more sitespecific regulation. A tiered approach can accommodate finer scale hazard risks and fine-tune regulation with greater site specificity. An example of a tiered zoning structure based on sea level rise is described below:

- **Protection Zone**-areas with critical infrastructure and dense development; reliance on hard armored flood protection infrastructure, but green infrastructure could be encouraged.
- **Accommodation Zone**-Non-critical areas, future sea level rise is considered in future development i.e., setback, elevation, stronger building codes; downzoning appropriate for hazard reduction.
- **Conservation Zone** areas with natural flood protection (marshes) or only non-critical structures at risk; downzoning to discourage development; rebuilding restrictions; overall goal of removing development and replacement with natural protection or open space.



Connecticut's Coastal Overlay Zones

In Connecticut, the Connecticut Coastal Management Act (P.A. 79-535) authorized creation of Coastal Overlay Zones to regulate coastal development and limit the impact of flooding and erosion. While the Act does not specifically refer to climate resilience, the purpose and criteria are consistent with fostering a climate resilient coastal area. For example, following the Coastal Management Act standards, the town of Greenwich's Coastal Overlay Zone has strict criteria for project approvals, requires site plan review and prioritizes protection of the natural environment and coastal resources. Coastal overlay zones could be adapted to address climate resilience more directly by adding resilient design requirements. The CT DEEP Coastal Management Manual from 2000 could be updated to reflect current best practices for coastal resilience congruent with the most recent seal level rise predictions. Using best evidence sea level rise modeling to discern a Flood Overlay Zone boundary (inclusive of FEMA 100-year flood zones) would be best practice for a municipality to provide appropriate flood protection zoning regulations in coastal areas. CIRCA has developed a <u>Sea</u> Level Rise and Storm Surge visualization tool show at risk areas.

Maryland Case Study

Recognizing a unique need to protect coastal areas, Maryland has adopted a tiered zoning structure within the Chesapeake Bay Critical Area (MD. Code Nat. Res. §8-1807). All land within 1000 ft. of the waterline Critical Area is assigned a classification based on land use and development status at the time it was mapped. Land classifications are then used to achieve the goals within the Critical Area Program to ensure proper land management, use and development. Local base zoning applies, and the Critical Area designation adds an overlay of regulation based on land classification to promote the location of new development, provide infill development of similar intensity, and facilitate utilization activity areas. The land classifications that are in use in Maryland are described below:

Intensely Developed Areas (IDAs):

- Concentrated development with little natural habitat, 20 acres or more of adjacent land
- Main focus of area is improving water quality
- No Clearing or Lot Coverage limits
- Cluster development encouraged to reduce impervious surfaces

Limited Development Areas (LDAs):

- Low/Moderate development, contains natural habitat/vegetation, fewer than 20-acre areas
- Quality of runoff has not been impaired; must maintain or improve water quality
- Lot Coverage, natural habitat conservation, permitted development enforced

Resource Conservation Areas (RCAs):

- 80% of Critical Area-Protected natural landscapes and resource-utilization based activities
- Most restrictive land use regulations
- New residential/commercial development not permitted

Maryland is considering how to use zoning tools like Transferable Development Rights (TDRs) to relocate development within a Critical Area to more appropriate areas by assigning overlay zones as sending and receiving zones. This would preserve the development rights of property owners within the Critical Area while relocating development to higher ground to enhance community resiliency



Example Resilience Overlay Districts

South Kingston, Rhode Island - Coastal Resilience Overlay District

<u>South Kingston RI</u> established a coastal resiliency overlay district to specifically address the effects of climate change, to "protect the public health, safety, and general welfare by promoting awareness of future projections of sea level rise and the associated impacts from flooding and storm surge to current and future property owners." This overlay area is susceptible to a one-hundred-year storm surge, in combination with a five-foot sea level rise that lies outside of FEMA Special Flood Hazard Area. Projected sea level rise data from NOAA is recorded by the town planning department and is required to be accessed by future property owners in the overlay area. By educating potential property owners on the risks of climate change to their property, South Kingston hopes to influence property owners to make decisions that are responsive to changing climate and weather patterns.

Boston, Massachusetts-Coastal Flood Resilience Overlay District

In October of 2021, the City of Boston adopted Article 25A to the zoning code creating a <u>Coastal</u> <u>Flood Resilience Overlay District (CFROD)</u> to provide protection from sea level rise and storm surge. The CFROD codifies resilient planning and design guidelines in the district and creates a procedural process for project approval and review. The design principles for the CFROD include resilience measures based on sea level rise projections based on the Boston Harbor Flood Risk Model, but also includes measures with co-benefits like pedestrian friendly and sustainable design practices. The nearby town of Salem, Massachusetts is currently developing a flood hazard overlay district which will incorporate resilient design standards to address projected sea level rise.



In May 2021, New York City Council adopted Zoning for Coastal Flood Resiliency which updated and made permanent emergency rules adopted following Hurricane Sandy that apply in the 1% and 0.2%-annual chance floodplain. After the devastating event, these temporary zoning changes allowed property owners to rebuild and recover more rapidly, incorporating resilient design principles to reduce risk from future flood and storm events. One interesting change is the abandonment of "base flood elevation' in favor of "flood-resistant construction elevation" to remove incentives for construction of basements and retain zoning flexibility is related to height and floor areas are dependent on requiring flood resistant construction standards.

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Zoning for Municipal Resilience

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Minimum Lot Size Reduction

- Reducing minimum lot size allows for denser, more affordable development and reduces negative environmental impacts due to sprawl.
- Structuring zoning to lower minimum lot sizes near transportation hubs encourages transportationoriented development.

Minimum Lot Size zoning codes require developable land parcels to be a minimum size per home in residential areas. In Connecticut, a study by Desegregate CT found that 81% of residential zoned land required minimum lot sizes of one-acre or larger. Larger minimum lot sizes allow fewer homes to be built within an area, resulting in constrained housing supply, housing cost inflation, urban sprawl, and fragmentation of forests. Larger lot sizes lead to auto-centric communities, contributing to high emissions of greenhouse gas from transportation, making statewide emission reduction goals harder to achieve. Large lot zoning spreads development over a larger area, increasing road, sewer, and utility costs.

Minimum Lot Size as a Tool for Municipal Climate Resilience

Municipalities with smaller minimum lot sized zones in appropriate areas can be more resilient to climate impacts and are more equitable than those with only large lot zoning.

By reducing minimum lot sizes, development of forest and agricultural land can be reduced, and municipalities can increase housing without sacrificing natural resources. Smaller lot sizes can form clusters of moderate density development and when paired with open space or watershed/riparian corridor protections, preserving ecosystem services, and increasing climate resilience. For example, open space can be used for controlled flooding in areas prone to increased flooding, or it can be used to increase tree canopy growth in areas prone to excessive heat. Open space can create additional community recreational space, increase wildlife habitat and allow for nature-based solutions to climate impacts.

Smaller minimum lot size zones near transportation hubs allow more residents to use multimodal transportation options, reducing the need for cars, and thus reducing greenhouse gas emissions. Desegregate CT's Issue Brief on small lot zoning found average households in the 68 towns in Connecticut with the largest minimum lot sizes had 36.1% higher annual transportation related carbon emissions than average households in the other 101 towns in the state with small minimum lot sizes. Adopting smaller minimum lot sizes and compact residential and mixed-use development zones would allow for more variety in housing type, fewer transportation related GHG emissions, and could foster 'social resilience', an important component of community cohesivity.







Funding for this project is provided by the U.S. Department of Housing and Urban Development through the Community Block Grant National Disaster Recovery Program, as administered by the Connecticut Department of Housing.

Reduced Minimum Lot Size & Housing

Larger lot size minimums can create barriers to home ownership due to increased land costs. By reducing minimum lot sizes in some zones, municipalities can see an overlap in the goals of housing affordability and climate resilience. With smaller lot sizes, owning or renting property becomes more affordable and addresses historic racial and economic injustice. When small lot zoning is encouraged near transportation corridors, residents are less reliant on individual vehicles. Small lot zoning can also be appropriate for diverse 'missing middle' housing types in addition to single-family homes like duplexes, triplexes, townhouses or small apartment style housing as infill. Clustering small lots into 'cottage communities' with shared common spaces also promotes neighborhood cohesion- an important component in overall community climate resilience.



Ariel view of Hartford CT neighborhood with pre-existing small lot development, not currently allowed in much of the state. Google Maps, 2024.

Smaller Lot Size and Environmental Preservation

Reducing Minimum Floor Size Area

Reducing minimum floor size area is another way to increase density without increasing use of land. While building codes control the minimum size of a home or multi family unit, zoning codes can also regulate minimum floor areas, often setting minimums larger than allowed by building code. This can be an equity issue forcing building of larger, more expensive homes and exclude people from modest means from living in an area. Reducing floor size area can increase climate resilience by allowing greater diversity of housing and greater density in low climate risk areas. Allowing "tiny homes" on smaller lots can be a way of expanding affordable housing options while increasing future climate resilience.

Smaller lot sized zones in appropriate areas can allow municipalities to encourage the development of housing without sacrificing land preservation. While parts of Connecticut remain heavily forested, particularly the northwest and northeast, with large lot zoning, core forested areas are unprotected except by the high cost of land purchase and development. By designating areas for smaller lot sizes, intact core forest can be identified for future preservation either by municipal acquisition for open space or though conservation easements.

Connecticut has defined Core Forests as unfragmented forest land 300 feet or more from the boundary non-forest land. Core forests are crucial wildlife habitats that protect biodiversity and natural resources and provide recreational opportunities. Core forests have suffered fragmentation from urban sprawl and road network expansions influenced by large lot zoning. Poor water quality and heavier runoff can result from the loss of core forests. By reducing minimum lot sizes and encouraging reforestation, core forests can provide environmental benefits and influence natural climate resilience by carbon sequestration and absorption of stormwater, while protecting wildlife populations dependent on these resources.

California

The state of California passed two zoning reform bills in 2021. <u>SB9</u> permits homeowners to subdivide their lot into two parcels and develop duplexes on single-family lots, reducing minimum lot size to 1,200 sq.ft., though localities can adopt smaller lot sizes with approval. <u>SB 10</u> permits local governments to rezone land parcels within transit or urban districts to up to ten housing units, allowing for increased density in specific areas and by-passing minimum lot size regulation. These bills create more affordable housing in areas that encourage walkability an reduce car use. SB10 does not apply to high fire risk areas or impact publicly owned open-space land ensuring the increased housing density does not increase climate related risk.

Massachusetts

Providing more housing in locations close to public transit, or creating Transit-Oriented Communities (TOC), can stimulate the local economy, inspire affordable housing, and most importantly reduce greenhouse gas emissions by lessening reliance on cars. The state of Massachusetts has adopted the Housing Choice Bill, which "would require communities served by the MBTA to designate one reasonably sized district near a T station in which multi-family building is allowed by right (Schoenberg, 2021)." This Bill will make housing development less challenging and create increased housing density in suitable areas.

Connecticut

In 2024, HB 5390 was introduced in the Connecticut General Assembly. Among other provisions, the bill called for the creation of guidelines for Transit-Oriented Communities, including smaller lot sizes. The bill passed the House but was not brought up for a vote in the Senate during the short legislative session, though housing advocates have indicated they will try again. Most municipalities in Connecticut have large lot zoning in the majority of the town. This bill would be a compromise applying only to those areas within reasonable access to transportation hubs.

Context Specific!

All zoning practices are context specific and may or may not be beneficial in each area within a community. Understanding the interplay of climate related risk, need for affordable housing, transportation corridors, and environmental preservation is necessary to determine the best use of zoning tools in a community.

Thinking ahead...

Connecticut has some of the largest lot size requirements in the nation. Our neighbor Massachusetts has adopted smaller lot sizes in areas close to public transit to better influence Transit-Oriented Communities and create better housing opportunities. This may be a prospect for CT to consider when also thinking about carbon emission goals and complying with climate incentives. To learn more, click the Massachusetts Housing Choice Act.



Scituate, MA - January 8: MBTA commuter rail train (Staff Photo By Stuart Cahill/Boston Herald)

More information

Learn more about Desegregate Connecticut and the difficulty of current zoning practices, the environmental, equity and economic benefits of Minimum Lot Size reform and a proposal for lot size reform:

Issue Brief: Small Lots in Smart Places: A Right Sized Solution for CT

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Zoning for Municipal Resilience

Connecticut Institute for Resilience and Climate Adaptation Zoning Fact Sheet Series



Maximum Lot Coverage

 Regulating maximum lot coverage to reduce impervious cover can reduce climate impacts of stormwater flooding, erosion and excessive heat.

Maximum Lot Coverage is a regulatory tool to limit the maximum area of a lot allowed to be covered by impervious surfaces, where water cannot effectively infiltrate the underlying soil. Impervious surfaces include buildings, driveways, parking areas, and other surfaces like patios, pools, sheds, roof overhangs and decks that block water from passing through to the soil below.

The increase of impervious surfaces throughout natural landscapes creates negative environmental impacts. Water cannot naturally soak into impervious surfaces; therefore, it accumulates, collects pollutants, and then flows into waterways causing harm to ecosystems and increasing flood risks. Urban and coastal watershed development has led to the replacement of natural landscapes by water resistant surfaces. As impervious surface area increases, stormwater runoff, flooding, erosion, urban heat, and water quality impacts also rise. Limiting the maximum area of impervious surface allowable on a developable lot can be a tool for climate resilience to reduce these impacts in vulnerable areas.



Credit: U.S. Environmental Protection Agency





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Maximum Lot Coverage as a Tool for Municipal Climate Resilience

In areas experiencing development pressure, regulating the allowable maximum lot coverage per parcel combines climate resilience with effective stormwater management and may increase open space that can be used to control flooding, space for public recreation, or tree canopy growth and preservation. Maximum lot coverage can be tiered by zone to encourage developmental density in areas less vulnerable to climate change, and on transit corridors to help meet affordable housing and climate resiliency goals. Maximum lot coverage could be used in a watershed approach using overlay zones to regulate coverage limits within impacted watersheds and lessen flood risk. Maximum lot coverage ordinances can be tools to promote the use of permeable pavement, inclusion of greenspace, or stormwater mitigation features.

Stormwater Authorities/Utilities

Under state legislation passed in 2021, any CT municipality may now establish a Stormwater Authority to collect user fees for managing municipal stormwater runoff based on the amount of impervious surface area. While the fees for individual homeowners are usually modest, they can be reduced by adoption of mitigation to reduce impervious surface area or process stormwater onsite through use of pervious pavement, bioswales or other techniques. In tandem with maximum lot coverage regulation, establishing a stormwater authority provides funding to address stormwater flooding and incentivizes low impact development, permeable pavement, and modern onsite stormwater management. See CIRCA fact sheet on *Stormwater Authorities* for more information.

Determining Maximum Lot Coverage

Maximum lot coverage can be calculated by the square footage of impervious surface divided by the total lot area. This percentage can be limited by municipal regulation on allowable impervious cover per lot. Municipalities can decrease this percentage to lessen impervious cover and its role in flooding and urban heat. This can be important in watersheds that see increased precipitation and in densely developed areas with heat island effects as climate change impacts increase.

Maximum Lot Coverages can be calculated by considering a range of different structures or surfaces depending on how impervious cover is defined. A restrictive approach tends to include only permanent structures, a moderate approach includes driveways and patios, and the most inclusive approach considers pools. Depending on current and anticipated impacts, a municipality can determine which structures and surfaces are considered impervious and what approach will enhance stormwater management and the resiliency to other climate impacts.

Maximum Lot Coverage & Affordable Housing

While maximum lot coverage ordinances can be tools to promote the use of permeable pavement, inclusion of greenspace, or stormwater mitigation features, these ordinances have also been used to limit multifamily or affordable housing development, or to retain "low density character." When considering ways to encourage use of resilient design, towns should be aware of other impacts of zoning ordinances and avoid limits, like maximum lot coverage, in areas that disproportionally and negatively impact vulnerable communities or create barriers to equitable use without significant benefits that cannot be accomplished in other ways. Land use law seeks to balance interests, including increased affordable housing options and managed environmental concerns by reducing impervious pavement, flooding, and sprawl.

Mitigation Strategies for Impervious Surfaces

Municipal zoning codes should include mitigation strategies for lessening the impact of impervious surfaces. Site and landscape design standards are a way to incorporate climate resilient features that can reduce flooding, slow stormwater, and allow for shading to reduce surface temperatures. Stormwater management regulations also apply and could be met with the following mitigation strategies to reduce impervious surfaces and the associated climate impacts.

Low Impact Design features

Low Impact development uses a nature centric lens, where structures are designed to take advantage of site-specific characteristics to reduce energy use and avoid negative impacts to water and soil. Incorporating mitigation features into design like green roofs and bioswales assists with onsite stormwater infiltration and processing. Low impact design features can reduce impermeable surface area and lower maximum lot coverage calculations.



Permeable Pavement

Permeable pavement with a porous surface, or spaces between blocks for infiltration, is an alternative for better stormwater management. These surfaces allow for water to run through it as opposed to settling on top and can include an underlying stone reservoir. This reservoir allows for the water to slowly infiltrate into the soil and acts as a filter to reduce pollutants. Although not as strong or cost effective as traditional pavements, eco-friendly pavement can be used for driveways, sidewalks, and lower traffic areas, to assist with water drainage.



Vegetative Buffers

Regulating the inclusion of vegetative buffers in highly impervious areas can reduce flooding as well as intercept heavy rainfall, allowing stormwater runoff to infiltrate onsite. Increasing tree canopy cover can also offer urban heat relief and reduce cooling costs. For densely populated urban areas, the *New York Model Local Laws* suggest that property owners should plant one tree for every 200 sq ft of impervious surface to lessen negative effects.



Maximum Lot Coverage Calculations in Example

The following examples highlight how coverage can be calculated differently depending on what is included under the term *"impervious cover."*

Ridgefield, Connecticut

Ridgefield, Connecticut explicitly ties lot coverage to stormwater and drainage requirements in new construction and redevelopment in regulation adopted in <u>2020</u>. Maximum impervious coverage thresholds by lot area trigger stormwater management actions including use of low impact development and site design best management practices. However, previously adopted maximum lot coverage regulations apply only to buildings and do not include other impervious surfaces like driveways, pools, decks, or patios. This could lead to confusion about maximum lot coverage allowed. See Lot Coverage Calculation Worksheet <u>here.</u>

Universal City, Texas

Universal City, Texas has a Lot Design Standards Table, pairing residential and commercial districts with applicable maximum lot coverage and impervious coverage. Maximum impervious cover varies between 30%-55% depending on the zoning district and uses the most restrictive approach including swimming pools and impervious decks in impervious cover calculations. See Lot Coverage Calculation Worksheet <u>here</u>.

Bradenton Beach, Florida

Some communities vary the amount of impervious cover allowed by use type. Bradenton Beach, Florida allows 40% impervious cover on residential lots and 70% impervious cover on commercial lots. This moderate approach does not count open swimming pools as impervious cover. See Lot Coverage Calculation Worksheet <u>here</u>.

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