



# Stormwater and Climate Resilience: Next Steps to Create a Municipal Stormwater Authority

In 2021, the Connecticut legislature passed P.A. 21-115 allowing municipalities to create a stormwater authority by enabling an existing commission or board or by establishing a new stormwater authority. Stormwater authorities are recognized throughout the United States and abroad as a tool for communities to finance and manage stormwater infrastructure and increase resilience to climate change impacts. Once a community has conducted a feasibility study and determined how a stormwater authority would provide needed funding to address stormwater management, the next critical steps are to pass an ordinance to enable a stormwater authority, to determine how fees will be assessed, and to establish a separate stormwater enterprise fund. By carefully crafting the ordinances needed for these three steps, the municipality can stay within its statutory and constitutional authority and avoid legal challenges.

## How to Determine the Best Fee Model for Your Community?

In establishing a stormwater authority, an essential decision for a municipality is determining what kind of fee model will best serve the needs of the community. The choice of fee model depends broadly on two ideas: how much will stormwater management cost; and how to fairly distribute the costs to users.

### What are the costs of stormwater management?

Important considerations for determining the cost of stormwater management are assessing how stormwater program costs are currently distributed, what currently unfunded projects must be addressed, and what new costs will a stormwater fee system entail. Stormwater operations and management, capital improvements, and regulatory compliance may be spread among different departments within a government and may need to be consolidated. Backlogs from deferred maintenance and increased infrastructure needs should be evaluated and prioritized. Municipalities should consider funding needed to solve capacity issues related to data collection on impervious cover, establishing billing systems, and addressing appeals. Future maintenance and inspection needs should be included in the stormwater program costs as well as credits for disconnections. These costs all together form the stormwater program cost to be funded by the stormwater fee.

Additional factors in choosing a suitable fee model for a municipality are primary land use, population, development density, and community resources. Once a municipality makes a reasonable assessment of current costs, future needs, and other considerations, then they can make an appropriate choice of fee model to meet requirements and equitably distribute costs to system users. All these costs, however, must be weighed against the cost of failure to meet stormwater regulatory compliance, increasing precipitation loads on the system, and increased flood loss in the community. Even with additional program operation costs, stormwater fees give municipalities' resources to meet the challenges of increased stormwater burdens and increase climate resilience in the community.

### Comparison of fee models

Stormwater fees are seen as more equitable than using tax revenue to pay for stormwater management because all properties, including non-profit, non-taxable properties are subject to the fee. In Connecticut, there are a few exceptions, including limits on the fees collected from certain hospital properties. Farm, forest, and state government lands can be charged fees only on land with impervious cover draining into municipal separate stormwater systems.

Stormwater fees can be calculated in different ways. Broadly, there are three categories of fee models: A fee based on amount of impervious cover on the property; a flat fee charged to all property owners; and a fee based on assessed value of the property. The first model is the most widely in use (62% as of 2021) as it follows the idea that utility fees should be tied to service costs. In this case, reasonable fees are assessed based on how much stormwater runoff a property generates. However, in some circumstances, the latter two models may make the most sense for the conditions found in a community if property size and impervious cover are similar through the municipality (flat fee), or if property value is a close proxy for amount of impervious cover (value based fee).



## Impervious area-based fees

The most common method for calculating stormwater fees is to develop a unit-based approach that allows for comparisons between residential, multifamily, commercial, and industrial properties. First, all impervious area must be mapped and quantified. The Connecticut Environmental Conditions database has mapping data available for impervious cover throughout the state (see Resources for link). Then, an Equivalent Residential Unit (ERU; but also known as a Residential Equivalent Unit REU) is calculated using the average impervious area in single-family residential properties. All single-family residences could be charged 1 ERU, or more equitably, each property could pay a scaled fee based on how many ERU's are on the parcel. The ERU system is easy to explain to the public: the more impervious surface generating stormwater, the higher the fee. However, runoff generated from pervious surfaces isn't captured in this calculation, nor does it account for intensity of development.

The ERU model can also be used as the basis for a tiered fee model. ERU's are calculated for each parcel, but then tiers are created which include a range of impervious cover values in steps. The tiered ERU model is used in New London, CT and has the advantage of absorbing minor mapping errors so there are fewer area-based appeals, saving time and program resources. When tiers are thoughtfully constructed, this method is seen as fair, easy to explain to the public, and will not be vulnerable to legal challenges.

There are other fee models based on impervious cover that include other metrics to capture a more complete picture of actual runoff. The Intensity Development Factor method adds a land use component to the ERU calculation. In this method, even undeveloped parcels are subject to the stormwater fee. The Equivalent Hydraulic Area method includes both pervious and impervious runoff to generate an individualized site-specific measurement and fee. The Residential Equivalent Factor method is the most complex method incorporating land use, soil type, and average rain fall metrics into the calculation. Although these methods may be more equitable than other simpler measures, they require a greater investment in continually updated parcel mapping, access to more data streams, and are more complex to explain to the public.

## Flat monthly fee and fee based on property assessed value

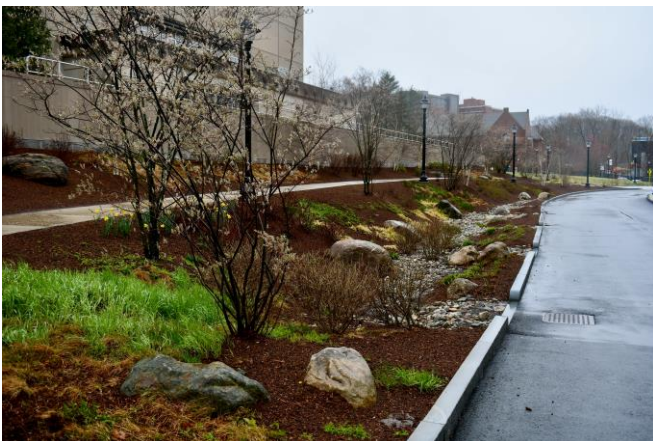
In this model the same fee is charged to all properties in the municipality, regardless of size, property value, or the amount of stormwater generated. The flat fee model is not equitable because the amount of stormwater generated on larger property with more impervious cover is greater, sometimes far greater, than smaller, less developed parcels making this method difficult to market to the public. However, this model may be a reasonable choice in some communities with a large proportion of similar lot sizes and land use and limited capacity to determine the amount of impervious cover per property.

Assessed property value has been used as a proxy for the amount of stormwater generated on a parcel. Like the flat fee, however, this proxy measure can be inequitable but may be useful in communities with limited capacity to use other methods.

## Legal Challenges

Legal challenges to Stormwater authorities tend to revolve around two issues: challenges to legal authority and challenges to the nature of the fee. In Connecticut, the legislature has granted statutory authority to municipalities to enact stormwater authorities. Closely following the statutory provisions will allow municipalities to stay within their legal authority and avoid legal challenges. Under Connecticut law, stormwater authorities have a range of purposes including developing stormwater control programs; creating stormwater districts; construction and maintenance of stormwater control infrastructure; public education; and charging a fee on property that can only be used to carry out the powers of the stormwater district. The fee is statutorily limited on some hospital properties and open spaces, farms, forests, and government property. No more than fifteen percent of stormwater revenue can be generated from hospitals that are parties to a settlement agreement with the state. The fee can only be assessed on farm, forest, open space or state government property containing impervious surfaced that discharge stormwater into a municipal separate storm sewer system. Stormwater authorities in distressed municipalities have some additional authority, to sue, hold and convey property, contract, borrow money, and issue bonds.

Some legal challenges have been brought against stormwater authorities testing the nature of the fee mechanism. These suits are often challenging whether the charge is a user fee or a tax. In the majority of cases, courts have held the assessments to be user fees when there is a nexus between fee charged and service rendered, when there are benefits to those charges (even implied), and when the rate is a tied to the costs of the program. Stormwater fees cannot be structured like taxes, there must be a mechanism for reduction in fees if stormwater mitigation measures are applied, and there must be an appeals process to evaluate fees.



### How Can UConn Help?

- Grants for stormwater authority feasibility studies
- Public workshops, webinars, and technical assistance, including data and maps
- Model ordinance for stormwater authority implementation

**Example ordinance from NEW LONDON**  
**(with comments on how municipalities can tailor the ordinance to their needs)**

**Administration.**

This article shall be administered by the **Water and Water Pollution Control Authority of the city (hereinafter WWPCA)** in accordance with the charter of the city and all ordinances of the city effecting the **WWPCA** and all policies statements of the city council relative to the **WWPCA**.  
 (Ord. No. 06-18-18-2, § 1)

In New London, an existing Water and Water Pollution Control Authority acts as the Stormwater Authority. This section of the ordinance can be tailored to appoint any existing municipal authority, board, or commission to act as the Stormwater Authority. Substitute *italicized* and **bolded** text for the name of the existing board the town designates. If a new Stormwater Authority will be enabled, see Model Stormwater Authority Enabling Ordinance in CIRCA's *Stormwater and Climate Resilience*.

**Sec. 21-178. - Service fees.**

(a)  
 There is hereby established a municipal storm water fund.

The stormwater fund is a municipal enterprise fund which can only be used for purposes under the stormwater authority purview.

(b)  
**WWPCA**, acting for the city, shall collect a storm water service fee from owners of each property and each condominium and each homeowners' association and each service connections for water and sewer not included above, located within the city.

Substitute WWPCA for the municipal designated Stormwater Authority.

(c)  
 Initially a flat fee shall be imposed in the amounts set forth on Schedule A attached to Ord. No. 06-18-18-2 and made a part hereof. The initial fund shall be used to: map the entire subsurface drain pipes and all outfalls; implement a public outreach program to educate the citizens of New London on impacts of storm water runoff and steps that can be taken to reduce it; implement and enforce an ordinance to prohibit unauthorized non-storm water discharges; assess and rank catch basins based on criteria to be developed into categories for the city to determine problem areas; outfall screening requirements and regular testing; develop short and long term maintenance plans with schedules to ensure performance; to retain and hire experts to advise the city in the administration of the storm water management plan; and to prepare reports for the state and federal governments.

In this section, New London imposes an initial flat fee with the intention of using revenue to conduct the baseline work needed to assess the needs for stormwater management, before a more fairly structured fee can be imposed.



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

**Example ordinance from NEW LONDON (continued)**  
**(with comments on how municipalities can tailor the ordinance to their needs)**

(d)  
 Thereafter, subject to the approval of the city council, fees may be based upon any of the following criteria: (1) impervious area existing on the property as of March 1 of the year in which the fee is imposed, (2) zoning classification of the property, or (3) continuing with a flat rate and/or including undeveloped property.

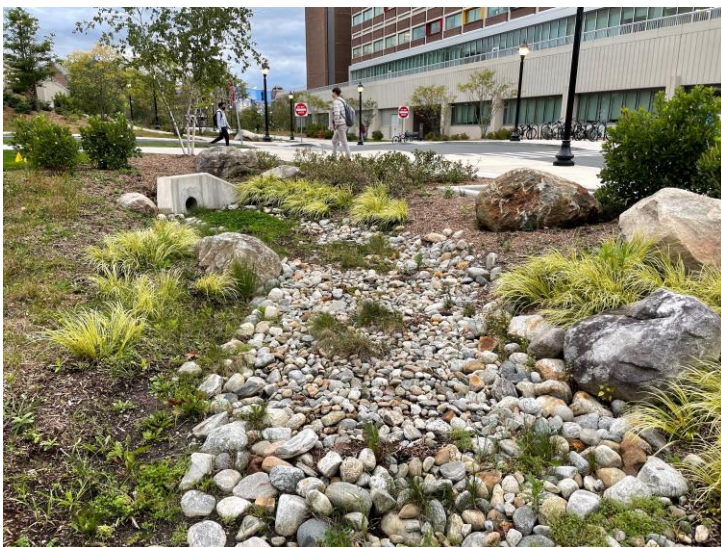
This section describes methods that may be used to assess the stormwater fee. Note that three different mechanisms are described allowing for flexibility to accurately capture the fee for service.

(e)  
 The fees stated above shall be collected in the same manner as other fees collected by the **WWPCA** and shall have the same priority, rights and bear the same interest and penalties, and be enforced in the same manner as, such other fees. Any unpaid fee or portion thereof shall be a lien upon the real property for which it is imposed and shall have the same priority as a lien imposed for non-payment of real estate taxes.

Because New London has a utility fee billing and collection system in place, they have adopted this simple provision allowing stormwater fee collection to piggyback on the existing billing, collection, and enforcement systems. Municipalities who do not have such systems in place should designate in the ordinance collection and enforcement protocols.

To comply with the existing statute, other provisions will need to be included clarifying any properties with limits or exemptions to the fees, appeal procedures, and mechanisms for lowering fees based on mitigation measures or disconnection from the stormwater system.

Distressed municipalities may add provisions adopting powers specific to their communities described in statute.



## Resources

Connecticut Environmental Conditions Online, Database for Natural Resource Information and Imagery for Planning, Management, Education and Research. Includes impervious cover mapping data for CT towns.  
<https://cteco.uconn.edu/index.htm>

Stormwater Fees: Overview of Municipal Stormwater Fee Programs Pennsylvania Environmental Council  
[https://pecpa.org/wp-content/uploads/StormwaterUtilityFee\\_Update\\_20190730.pdf](https://pecpa.org/wp-content/uploads/StormwaterUtilityFee_Update_20190730.pdf)

Funding Stormwater Programs EPA <https://www.epa.gov/sites/default/files/2015-10/documents/fundingstormwater.pdf>

Legal Considerations for Enacting Implementing & Funding Stormwater Programs NACWA  
[https://www.nacwa.org/docs/default-source/default-document-library/2016-12-08stormwaterwhitepaper.pdf?sfvrsn=e2f6e961\\_0](https://www.nacwa.org/docs/default-source/default-document-library/2016-12-08stormwaterwhitepaper.pdf?sfvrsn=e2f6e961_0)

A Model Stormwater Utility for the State of Maine  
<https://www.portlandmaine.gov/DocumentCenter/View/5381/Report--Model-Stormwater-Utility-for-the-State-of-Maine>

2021 Western Kentucky Stormwater Utility Survey with analysis of fair fee structures.  
[https://digitalcommons.wku.edu/cgi/viewcontent.cgi?article=1003&context=seas\\_faculty\\_pubs](https://digitalcommons.wku.edu/cgi/viewcontent.cgi?article=1003&context=seas_faculty_pubs)

Black and Veatch 2021 Stormwater Utility Survey Report  
<https://www.bv.com/sites/default/files/2021-03/2021%20Stormwater%20Utility%20Report%20WEB%20FINAL.pdf>

## Additional Resources

[PA 21-115, An Act Concerning Climate Change Adaptation CT MS4 program](#)

[Resilient Cities Rainwater to Revenue webinar](#)

[UConn CLEAR Stormwater Utilities in CT webinar 2019](#)

[UConn CLEAR Stormwater Collaboratives and Utilities webinar 2020](#)

[GZA stormwater finance blog](#)

[Example ordinance New London, Connecticut](#)

[Central Massachusetts Regional Stormwater Coalition](#)

[DIMS example Portland, Maine](#)

[Example model ordinance with explanation, State of Maine](#)

[Western Kentucky University Stormwater Survey](#)

## Contact

To learn more about CIRCA visit [circa.uconn.edu](http://circa.uconn.edu) and the Resilient Connecticut project for more climate resilience planning tools: [resilientconnecticut.uconn.edu](http://resilientconnecticut.uconn.edu)

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