



Dover, NH

# Stormwater & Flood Resilience Utility Study

July 10, 2023





# Agenda

Foundation of the Study

Stormwater Financial Analysis

Impervious Area Analysis

Fee Structure Recommendation

Credits and Administration





# Foundation of the Study

- ✓ Compliant with State Legislation
- ✓ Include all costs associated with the extensive drainage system in Dover
- ✓ Build upon January 10, 2022 Ad Hoc Committee report and recommendation to pursue a utility
- ✓ CFRING grant
- ✓ Engage, elicit feedback and educate the Community





# Dover Stormwater and Flood Resilience Utility

## Fact Sheet



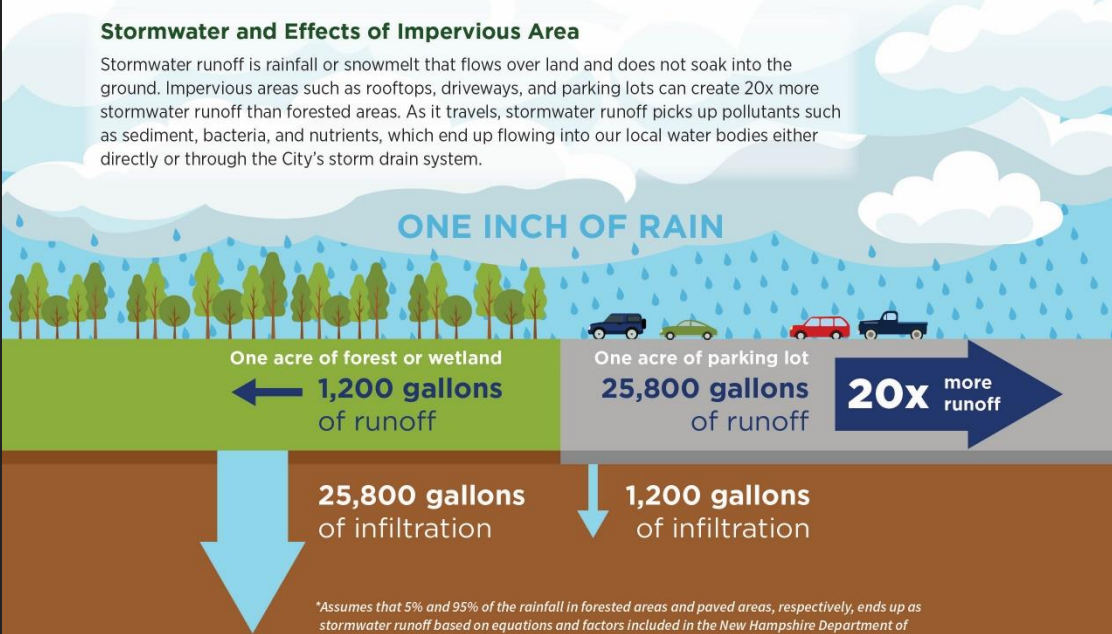
### Growing Demands

As the City has grown and developed over time, the demands to keep up its stormwater infrastructure have also grown much like those of the water and sewer systems. The City now has over 100 miles of storm drainpipes and swales, and over 3,000 catch basins, as well as hundreds of culverts and outfalls. Much of this infrastructure is more than 100 years old and is overwhelmed during extreme rain events, resulting in increased flooding and property damage. At the same time, the City is facing more stringent regulatory requirements to manage stormwater and restore water quality in our adjacent water resources. These growing demands are causing the City's annual stormwater operating and capital improvement budgets to rise at an accelerated pace. Critical drainage and flood mitigation projects totaling more than \$5 million have been deferred due to competing funding priorities. Using property taxes to fund the stormwater budget is not sustainable or equitable, as the property tax portion used to fund the stormwater budget is not tied to a property's usage of the system. Not all properties contribute to the City general fund, such as tax-exempt properties, even though all developed properties generate stormwater.

**As Dover celebrates its 400<sup>th</sup> anniversary, the City seeks to secure a more flood resilient and sustainable future with a stormwater and flood resilience utility.**

### Stormwater and Effects of Impervious Area

Stormwater runoff is rainfall or snowmelt that flows over land and does not soak into the ground. Impervious areas such as rooftops, driveways, and parking lots can create 20x more stormwater runoff than forested areas. As it travels, stormwater runoff picks up pollutants such as sediment, bacteria, and nutrients, which end up flowing into our local water bodies either directly or through the City's storm drain system.



\*Assumes that 5% and 95% of the rainfall in forested areas and paved areas, respectively, ends up as stormwater runoff based on equations and factors included in the New Hampshire Department of Environmental Services Stormwater Manual

# Public Outreach

- Public Meeting May 23, 2023
- Fact Sheet
- Online Storymap
- Question Form
- 2<sup>nd</sup> Public Meeting October 2023



# Title X Chapter 149-1:6-c Criteria for Stormwater Utilities

The stormwater utility shall address flood and erosion control, water quality management, ecological preservation, and annual pollutant load contained in stormwater discharge.

- I. Utilities may collect reasonable fees that are directly related to the cost of providing services.
- II. Properties charged assessments shall have equal opportunity to receive **proportional benefit** from the utility.
- III. The utility shall offer **credits** or fee abatements based on on-site management of water quality impairment or peak runoff storage, or both. The utility shall adopt design standards to determine the amount of abatement.
- IV. In assessing fees, the stormwater utility district shall **forecast the annual cost** of each component in the district's stormwater management program. This forecast shall be the basis for annual assessments distributed equally among the number of fee units within the district.
- V. A minimum assessment may be established for fee units based on single family residences. This **equivalent residential unit (ERU)** can serve as the fee unit basis for all fees. **Government property and non-profit organizations shall be subject to the fee structure.**
- VI. Boundaries of the district are not required to coincide with municipal boundaries.

Source. 2008, 295:5, eff. Aug. 26, 2008.





# Agenda

Foundation of the Study

**Stormwater Financial Analysis**

Impervious Area Analysis

Fee Structure Recommendation

Credits and Administration



# Development of Funding Needs

- 1) Existing stormwater department operating expenses
- 2) Additional allocated utility costs associated with:
  - 25% of expenditures within FY24 Budget within Community Services Engineering Division
  - Estimate of staffing needs to manage administrative aspects of a stormwater utility
  - Municipal Alliance Adaptive Management contribution
  - Street Sweeping initial estimate
- 3) Existing debt for prior stormwater capital investments
- 4) Capital project expenditure plan (FY24 - FY 29) + unissued authorized funding
  - Portion of street reconstruction projects
  - 50% of WWTP General Permit Compliance





# Assumptions

CIP escalated at 3% annually  
beginning in FY 2025

Capital plan funded with debt issuance  
4.75% interest rate over 20 years

Baseline - Assume no growth in  
impervious area

FY 2024 set as Test Year for  
development of stormwater fee

Gradually fund reserve over 6 years  
(Target 15% of annual appropriation)





# Stormwater Operating Expenses

	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
<b>Stormwater Operating Budget</b>						
Personnel Services	\$ 529,845	\$ 548,390	\$ 567,583	\$ 587,449	\$ 608,009	\$ 629,290
Supplies	342,424	354,409	366,813	379,652	392,939	406,692
Capital Outlay	2,500	2,588	2,678	2,772	2,869	2,969
Purchased Services	148,186	153,373	158,741	164,296	170,047	175,998
Other Expenses	1,650	1,708	1,768	1,829	1,893	1,960
<b>Subtotal: Operating Budget</b>	<b>\$ 1,024,605</b>	<b>\$ 1,060,466</b>	<b>\$ 1,097,582</b>	<b>\$ 1,135,998</b>	<b>\$ 1,175,758</b>	<b>\$ 1,216,909</b>
<b>Engineering</b>						
Personnel Services	\$ 92,222	\$ 95,449	\$ 98,790	\$ 102,248	\$ 105,826	\$ 109,530
Purchased Services	15,276	15,810	16,363	16,936	17,529	18,143
Capital Supplies	3,552	3,677	3,805	3,938	4,076	4,219
Capital Outlay (transfers out)	82,261	85,140	88,120	91,204	94,396	97,700
<b>Stormwater Utility Staffing</b>						
Personnel Services	200,000	207,000	214,245	221,744	229,505	237,537
<b>Sewer Fund</b>						
Municipal Alliance Adaptive Management Contribution	75,000	77,625	80,342	83,154	86,064	89,076
<b>Streets</b>						
Street Sweeping	100,000	103,500	107,123	110,872	114,752	118,769
<b>Subtotal: Allocated Stormwater Expenses</b>	<b>\$ 568,310</b>	<b>\$ 588,201</b>	<b>\$ 608,788</b>	<b>\$ 630,096</b>	<b>\$ 652,149</b>	<b>\$ 674,974</b>

# Stormwater Capital Improvement Plan

	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
<b>Debt Funded Capital Projects</b>											
Street Reconstruction - Oak/Ham/Boardway	\$ 1,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Street Reconstruction - Richardson Drive	31,693	-	-	-	-	-	-	-	-	-	-
Street Reconstruction - Court/Union/Middle	2,750,000	134,000	-	-	-	-	-	-	-	-	-
Street Reconstruction - Fifth/Grove Streets	1,050,000	50,000	-	-	-	-	-	-	-	-	-
Catch Basin Spoils Facility	292,280	-	-	-	-	-	-	-	-	-	-
Central Avenue Drainage Work	1,100,000	-	-	-	-	-	-	-	-	-	-
Cochecho River Outfall Stormwater Study	1,150,000	1,000,000	-	-	-	-	-	-	-	-	-
Bridge Replacement - Chestnut Street	115,000	44,400	-	-	-	-	-	-	-	-	-
Portland Avenue Retaining Wall	550,000	-	-	-	-	-	-	-	-	-	-
Henry Law Park Stormwater BMP	12,600	-	-	-	-	-	-	-	-	-	-
Sidewalk Replacement - Whittier Street	32,500	-	-	-	-	-	-	-	-	-	-
Cochecho Replace Storm Drain Outfall	500,000	-	-	-	-	-	-	-	-	-	-
Cochecho River Dredge Cell Closure	150,000	-	-	-	-	-	-	-	-	-	-
Cochecho Riverfront Park Development	706,250	-	-	-	-	-	-	-	-	-	-
Culvert Reconstruction - Portland Avenue	-	-	-	1,600,000	400,000	-	-	-	-	-	-
Street Reconstruction - Lower Central Avenue	-	-	925,000	450,000	122,775	750,000	-	-	-	-	-
Street Reconstruction - Oak/Ham/Ela	-	-	-	-	-	500,000	-	-	-	-	-
Flood Resiliency Projects	-	-	-	-	-	-	-	-	-	-	-
<b>Cash Funded Capital Projects</b>											
Drainage System Improvements	250,000	350,000	400,000	450,000	500,000	550,000	600,000	650,000	700,000	750,000	800,000
WWTP General Permit Compliance	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
<b>Subtotal: Capital Expenditures</b>	<b>\$ 9,890,323</b>	<b>\$ 1,778,400</b>	<b>\$ 1,525,000</b>	<b>\$ 2,700,000</b>	<b>\$ 1,222,775</b>	<b>\$ 2,000,000</b>	<b>\$ 800,000</b>	<b>\$ 850,000</b>	<b>\$ 900,000</b>	<b>\$ 950,000</b>	<b>\$ 1,000,000</b>

**Table 2 Notes**

- 1 - Street reconstruction set at 50% for stormwater
- 2 - Assuming full cost of culvert project to stormwater





# Stormwater Expenditure Forecast

	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
<b>Operating Expenses</b>						
Operating Budget	\$ 1,024,605	\$ 1,060,466	\$ 1,097,582	\$ 1,135,998	\$ 1,175,758	\$ 1,216,909
Allocated Stormwater Expenses	568,310	588,201	608,788	630,096	652,149	674,974
<b>Capital Expenses</b>						
Cash Funded Capital	450,000	550,000	600,000	650,000	700,000	750,000
Existing Debt	1,567,283	1,275,302	1,240,536	1,195,884	1,165,083	1,131,534
Future Debt	857,074	857,074	857,074	1,053,947	1,234,374	1,280,834
<b>Total Annual Expenditures</b>	<b>\$ 4,467,272</b>	<b>\$ 4,331,043</b>	<b>\$ 4,403,981</b>	<b>\$ 4,665,925</b>	<b>\$ 4,927,364</b>	<b>\$ 5,054,252</b>

# Long-Term Financial Planning



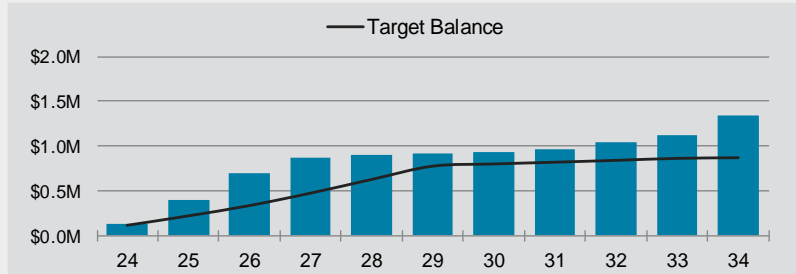
## CITY OF DOVER - STORMWATER FUNDING ANALYSIS



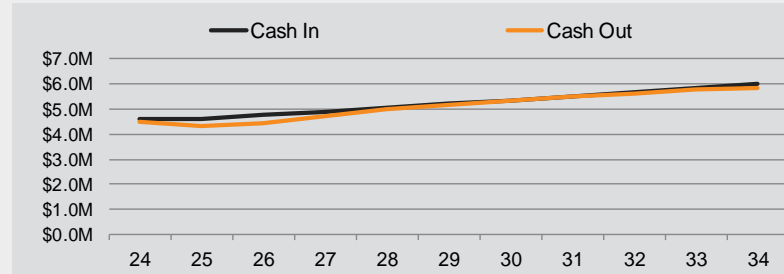
CALC SAVE CTRL LAST OVR

	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	Cumulative	
Stormwater Rate Plan	0.00%	0.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	12.51%	30.44%
Reserve (% of Appropriation)	2.5%	5.0%	7.5%	10.0%	12.5%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	Scenario Manager	
Monthly Stormwater Fee per ERU	\$13.32	\$13.32	\$13.72	\$14.13	\$14.55	\$14.99	\$15.44	\$15.90	\$16.38	\$16.87	\$17.38	Credits	10.00%

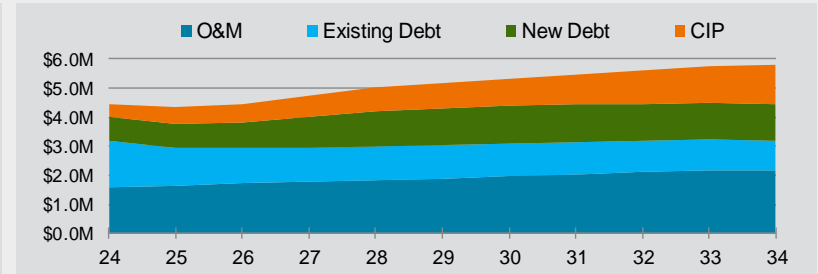
Reserve Balance



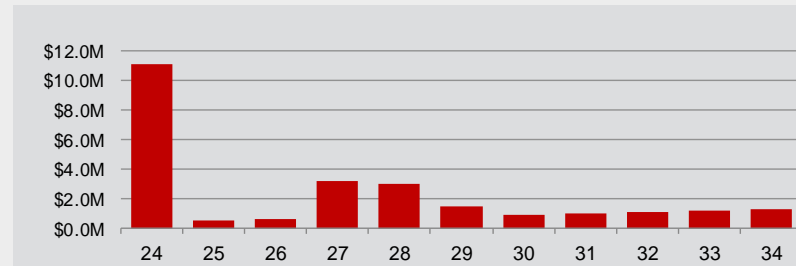
Revenues vs. Expenses



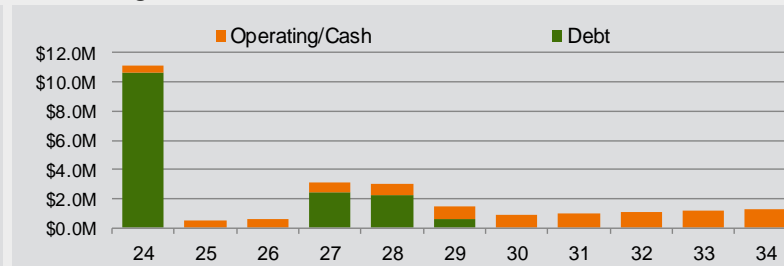
Expenses by Type



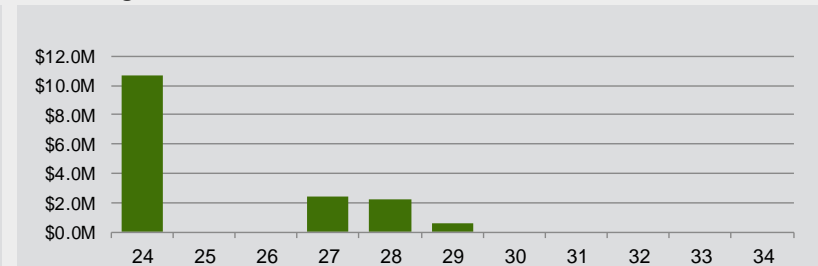
CIP Spending



CIP Funding



Borrowing







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**Impervious Area Analysis**

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# Impervious Cover Data Collection

NearMap 2022 impervious cover data has greater resolution than the GRANIT data in most instances, improving data estimates City-wide

Two data sources:

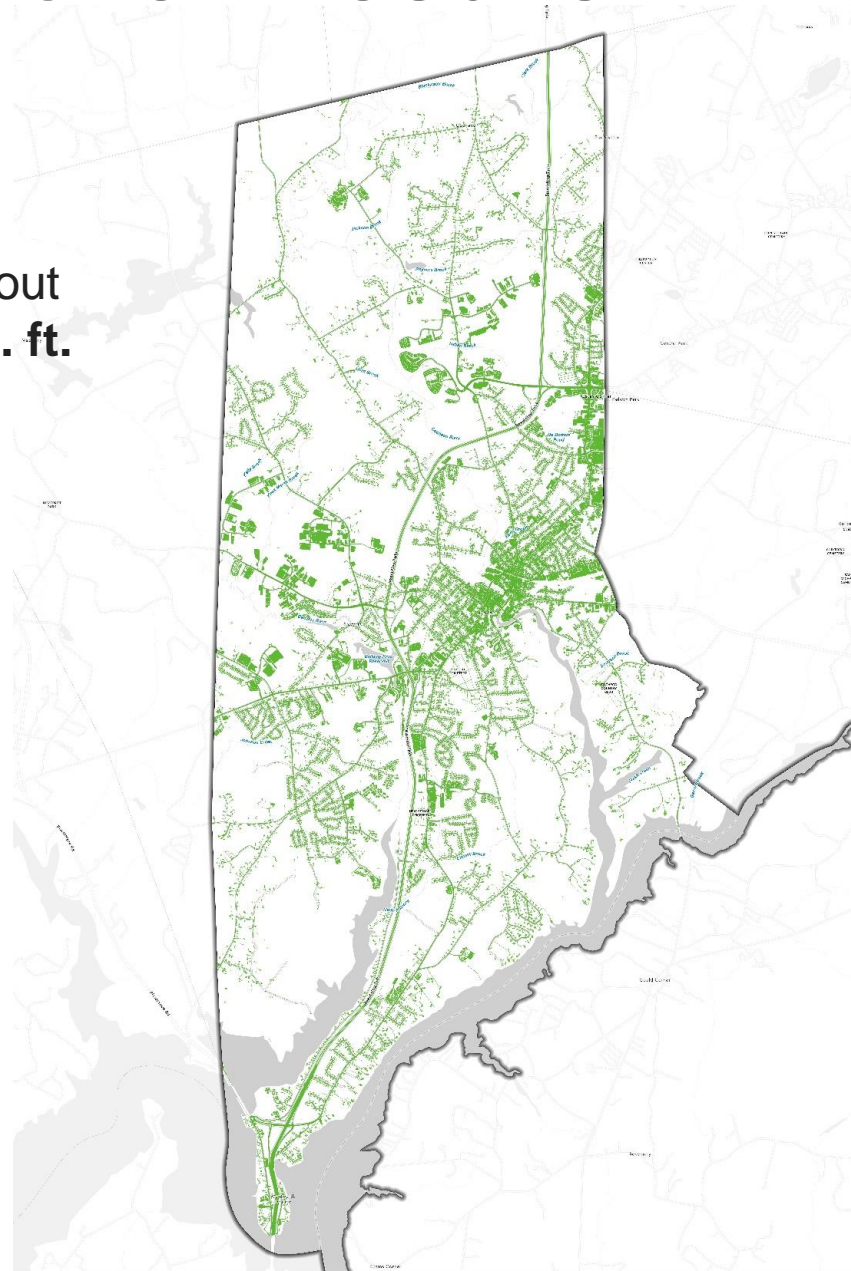
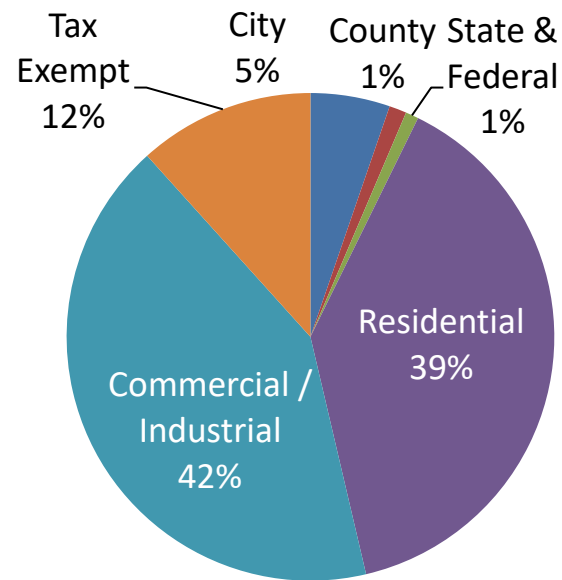
- Light green = GRANIT 2021 data
- Dark green = NearMap 2022 data



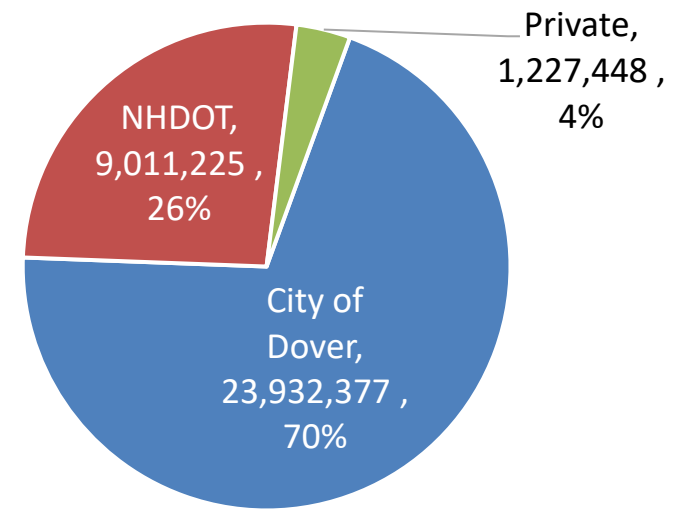


# Impervious Cover Results

Total impervious area without right-of-way: **67,415,262 sq. ft.**



Right-of-Way: **34,171,051 sq. ft.**





# Measured Impervious Area on Parcels

Land Use Type	IC Area (sq. Ft )	% Total
Commercial/Industrial/Utility	28,306,333	42%
SFH Residential	26,328,739	39%
Non-Govt. Tax Exempt	7,873,490	12%
City-Owned	3,552,041	5%
County	772,623	1%
State & Federal	582,037	1%
<b>Parcel Total (no ROW)</b>	<b>67,415,262</b>	<b>100%</b>
Right of Way	34,171,051	
<b>Total (with ROW)</b>	<b>101,586,313</b>	





# Summary of Tax-Exempt Parcels

Ownership	IC Area (sq ft,)	% Total
Municipal	3,552,041	28%
State	525,036	4%
County	772,623	6%
Private Schools	613,670	5%
Wentworth Douglas Hospital	635,927	5%
Faith Based Organizations	755,005	6%
Housing Authority	615,784	5%
Charitable & Fraternal	177,471	1%
Common Lands (HOA.s & Condos)	5,016,640	39%
<b>Total</b>	<b>12,780,191</b>	<b>100%</b>



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# Stormwater Fee Structure

NH RSA Chapter 149-I, Section 149-I:6-c outlines.....

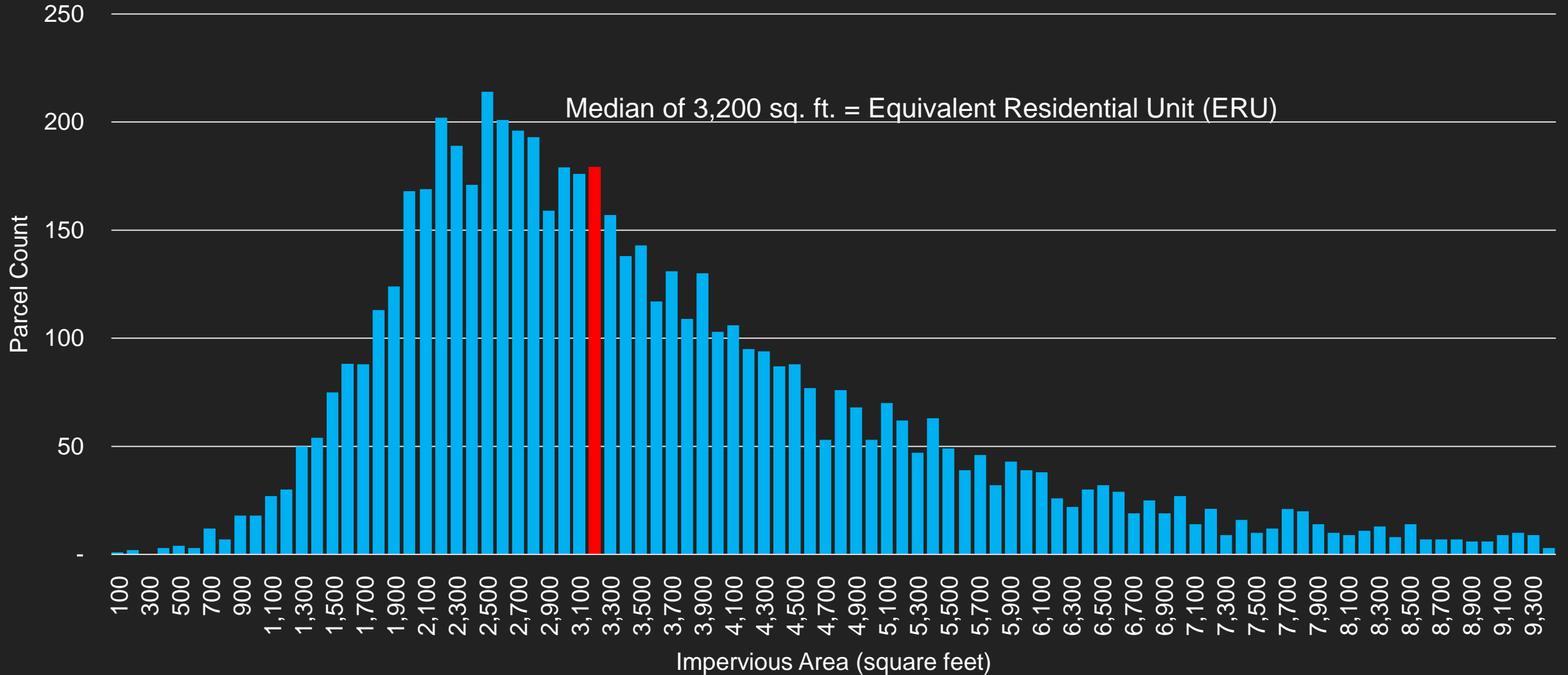
*“V. A minimum assessment may be established for fee units based on single family residences. This equivalent residential unit (ERU) can serve as the fee unit basis for all fees. Government property and non-profit organizations shall be subject to the fee structure.”*

Recommendation:

- Use of minimum fee unit based on median impervious area on single family residences in Dover = equivalent residential unit (ERU)
- Property owners billed stormwater fee based on number of ERUs associated with their property
- All parcels be subject to the stormwater fee



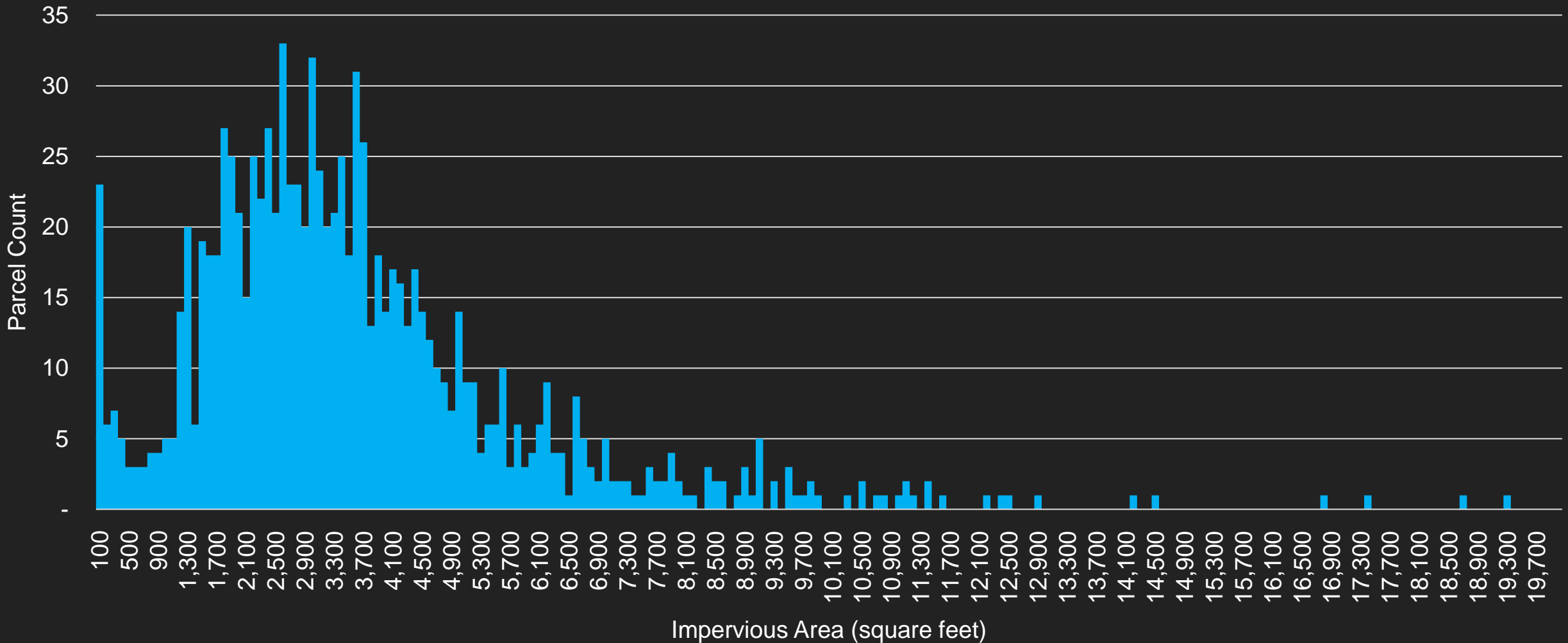
# Single-Family Residential Equivalent Residential Unit





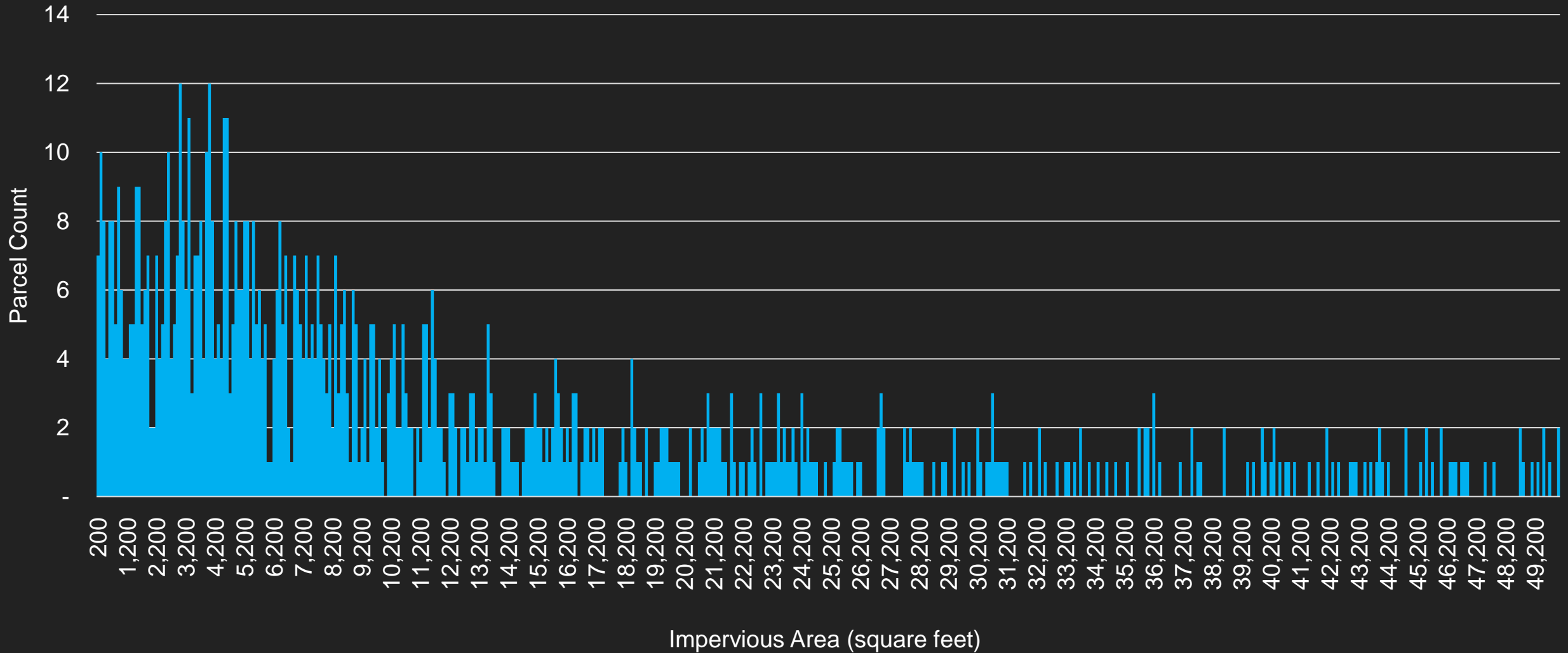


# Impervious Distribution – Non-Single Family Residential





# Impervious Distribution – Non-Residential







# Recommended Stormwater Fee Structure

Impervious Area (Sq. Ft.)	ERUs	Monthly Fee	Annual Fee	Total ERUs	Total Parcels
400 - 1,600	0.5	\$6.66	\$79.97	291	582
1,601 - 4,800	1.0	\$13.32	\$159.89	5,281	5,281
4,801 - 8,000	2.0	\$26.65	\$319.77	2,674	1,337
8,000 - 11,200	3.0	\$39.97	\$479.66	1,020	340
Over 11,200	Per 3,200 sq. ft.*	\$13.32	\$159.89	22,740	698

*\*Rounded up to nearest whole ERU*



# Example Single Family Properties



Impervious Area (sq. ft.)

1,332

ERUs

0.5

Monthly Stormwater Fee

\$6.66



4,140

1.0

\$13.32



11,996

4.0

\$53.28



# Example Commercial Properties



Impervious Area (sq. ft.)	10,658	19,689	70,200
ERUs	3	7	22
Monthly Stormwater Fee	\$39.97	\$93.24	\$293.04





# Example Industrial Properties



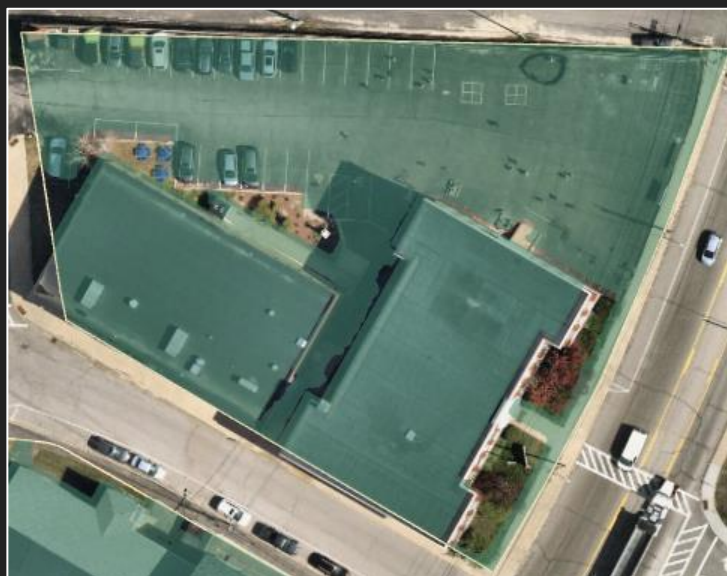
Impervious Area (sq. ft.)	111,390
ERUs	35
Monthly Stormwater Fee	\$466.20



Impervious Area (sq. ft.)	120,038
ERUs	38
Monthly Stormwater Fee	\$506.16



# Example Institutional Properties



Impervious Area (sq. ft.)	37,510
ERUs	12
Monthly Stormwater Fee	\$159.84

150,290
47
\$626.04



# Property Tax vs. Stormwater Fee: Generate \$4.5M

Single Family Property	Property Assessment	Funded with Property Taxes	Funded With Stormwater Fee (\$13.32 per month)
Property A	\$300,000	\$196	\$160
<b>Property B*</b>	<b>\$420,000</b>	<b>\$274</b>	<b>\$160</b>
Property C	\$600,000	\$392	\$160

*\*Average residential property assessment is \$418,706*





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Impervious Area Analysis

Fee Structure Analysis with Options

**Credits and Administration**



# Stormwater Fee Credits

- Stormwater fee credit is an ongoing reduction in the fee charged to a qualifying property in return for qualifying stormwater management
- Credit is recognition that onsite/offsite stormwater management reduces the City's stormwater expenditures
- Credits encourage property owners to proactively manage their stormwater impact
- Build on established practices within the community







# Credit Program Considerations

## Eligibility

- Who is eligible to receive credits?
- All property types? Only non-single-family?

## Qualifying Activities

- What stormwater management BMPs qualify (basins, onsite storage, green infrastructure)
- **Threshold for qualification:** Meet existing historical development requirements or exceed
- Activities such as public education qualify?

## Administration

- Credit manual
- Application
- Renewal Process

## Level

- Define level of credit associated with each activity (X% to Y%)
- Determine maximum available credit

**Credit programs typically evolve over time**





# Credit Eligibility

NH RSA Chapter 149-I, Section 149-I:6-c outlines requirement for offering credits...

*“III. The utility shall offer credits or fee abatements based on on-site management of water quality impairment or peak runoff storage, or both. The utility shall adopt design standards to determine the amount of abatement.”*

- Recommend that credits be offered to all parcels with impervious area of 1,600 sq. ft. or more
- Property owners with less than 1,600 sq. ft. of impervious receive an automatic 50% credit, paying for only 0.5 ERUs

# Structure of Credits - Single Family

Qualifying Activity	Requirements	Credit Amount*
Dripline Infiltration Trench	Dripline infiltration trench that manages runoff from at least 50% of roof and designed in accordance with NHDES standards**	Up to 25% credit for impervious area managed
Driveway Infiltration Trench	Driveway infiltration trench that manages runoff from at least 50% of driveway and designed in accordance with NHDES standards**	Up to 25% credit for impervious area managed
Dry Well	Dry well system in good working order with minimum volume to infiltrate 1 inch or greater of stormwater runoff and designed in accordance with NHDES standards**	Up to 25% credit for impervious area managed
Rain Garden	Construction of rain garden with minimum size of 100 sq. ft. and designed in accordance with NHDES standards**	Up to 25% credit for impervious area managed
Porous pavement, patio, walkway	Removal of at least 400 sq. ft. of existing impervious area with replacement of engineered porous pavement, patio or walkway and designed in accordance with NHDES standards**	Up to 25% credit
Public Participation	Homeowners that participate in a public project within the City specifically targeted at improving water quality, such as trash clean-up, tree planting or other water quality related events.	10% credit
Intensity of Development	Minimum parcel size of 2 acres with impervious area making up no more than 10% of total parcel area, with impervious area disconnected from stormwater system	25% credit
Nitrogen Pledge	Credit for homeowners who pledge to not use lawn fertilizer	5% credit during year of pledge
Social / Equity??	Credits for need based seniors, low-income, disabled	50% credit

\*Maximum combined credit of 50%

\*\*NHDES "Soak up the Rain" and City design standards



# Structure of Credits - Non-Single Family

Qualifying Activity	Requirements	Credit Amount*
Stormwater BMP	Constructed, maintained and approved stormwater control system or best management practices consistent with design standards outlined in the NHDES Stormwater Manual. Manage at least 1,600 sq. ft. of impervious area.	Up to 50% credit for impervious area managed
Offsite Stormwater Management	Management of offsite stormwater with BMPs that meet local stormwater regulations and design standards.	Up to 50% credit for management of offsite impervious area equivalent to or exceeding onsite impervious area
Stormwater Volume	Constructed, approved and maintained stormwater control system or best management practices that exceed local regulations consistent with design standards outlined in the NHDES Stormwater Manual. Minimum reduction in volume of 20% following development or redevelopment.	Up to 20% for impervious area managed
Education	Educational and non-profits that provide and teach approved stormwater education curriculum to K-12.	25% credit
Intensity of Development	Minimum parcel size of 2 acres with impervious area making up no more than 10% of total parcel area, with impervious area disconnected from stormwater system.	25% credit

*\*Maximum credit of 100% for stormwater BMP and offsite stormwater management*





# Credit Administration

## Credit Application

- Require application for all credits
- Online form
- Non-Single Family: Application fee and inspections prior to approval

## Renewal / Management

- Renewal required every 3 to 5 years
- Non-Single Family: Periodic reporting



# Administration - Adjustments / Appeals

1. Define what qualifies for an adjustment / appeal
  - Fixing incorrect stormwater fee determination
    - Impervious area misclassification
    - Wrong property
    - Incorrect billing
  - Permanent changes to property attributes (i.e., removal of impervious area)
2. Online form to allow for intake / management
3. Develop workflow to manage appeals and adjustments (intake, review, billing modifications, response)



# Administration - Billing

## Stormwater Fee Billing Approach

- Recommend stormwater fee billing on the **utility bill**
- Will require a linkage between property and utility accounts
- Potential for separate bills for properties without existing utility service

## Multi-Family Billing

- Recommend billing consistent with existing utility billing approach
- Stormwater fee based on total measured impervious area and billed to master-meter or sub-divided and billed per unit if sub-metered for utility billing





# Additional Policy Considerations

## Vacant parcel (no impervious area)

- Exclude undeveloped parcels with no impervious area

## Minimal impervious area

- Exclude parcels with less than 400 square feet of impervious
- To be refined based on final impervious area analysis

## Rounding of impervious area measurements

- Round impervious area down to the nearest 100 square feet for billing determinations

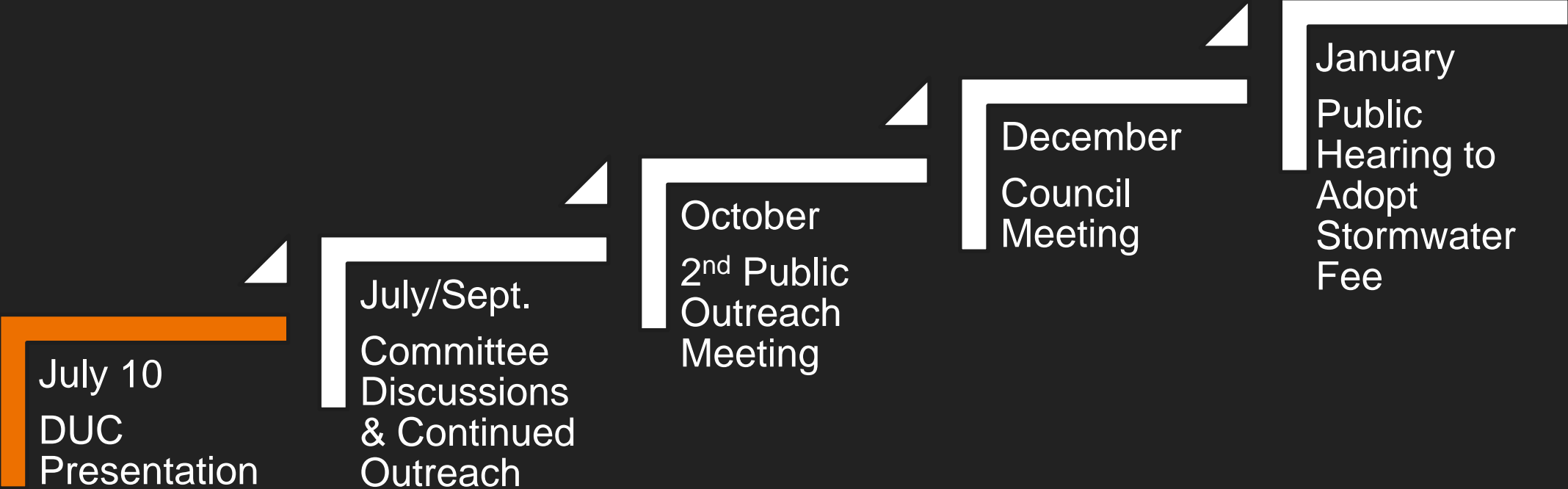


# Summary of Findings

- Proposed fee structure is consistent with Legislation
- Includes all costs for stormwater program to fully fund operations, existing and anticipated debt, cash-funded capital and reserve
- Fee structure based on Equivalent Residential Unit at \$13.32 per ERU
- Generate approximately \$4.5 Million annually
- No exempt property types
- Credits offered to all developed property



# Timeline







# Questions/Discussion

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