

To: Ms. Gretchyn Young, PE  
City of Dover, NH

From: Kelly Westover, CFM, PMP  
Stantec Consulting Services Inc.

Project/File: Stormwater and Flood Resilience Utility Study (Stantec Project No. 224802076) Date: June 28, 2023

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**Reference: Stormwater and Flood Resilience Utility Study**

Dear Ms. Young,

Stantec has developed stormwater system funding requirements and fee structure methodology including mitigation credits for the City of Dover to establish a Stormwater and Flood Resilience Utility Fee. This study included a review of the State Legislation in Title X, Chapter 149-I:6-c criteria for stormwater utilities and the January 10, 2022 Ad Hoc Committee report and is consistent with the aforementioned guidance. In preparation for the July 10, 2023 presentation of results to the Dover Utility Commission, the following memorandum provides a preview of the key items for discussion and materials intended to help inform the meeting participants.

**Stormwater System Funding Requirements and Financial Analysis**

The City of Dover maintains an extensive public stormwater system. The annual costs associated with operating, maintaining and enhancing the system have historically been funded within the City's General Fund and therefore are accounted for within various departments within the City. To determine the full costs associated with the operations, maintenance and improvements to the City's stormwater system, the project team worked with City staff to identify and consolidate all the various costs incurred by the City related to stormwater management. These consolidated costs were identified for Fiscal Year 2024 and projected over a ten-year period to provide a forecast of annual stormwater funding requirements. The funding requirements can be considered in two categories outlined below.

- **Operating:** The operating and maintenance costs include the Community Service Stormwater Operating Budget, a portion of the Community Services Engineering Division (assumed to be 25% given staff time and resources related to stormwater management), 50% of the Municipal Alliance Adaptive Management fee, an estimate of staffing to administer the stormwater utility and an initial estimate of current street sweeping expenses. The total operating costs identified for FY 2024 equal \$1.59 million.
- **Capital:** The capital costs associated with the stormwater system include existing debt service associated with prior projects completed by the City, estimated future debt associated with projects that will be completed over the forecast period and cash funded improvements that have been identified by the City (Drainage System Improvements and 50% of the WWTP General Permit Compliance costs). The total capital costs identified for FY 2024 equal \$2.87 million.

The individual line items that make up the FY 2024 total stormwater funding requirements of \$4.47 million are outlined in the attached Table 1. The capital projects that the City anticipates funding with debt issuance are shown in the attached Table 2. The ten-year projections of annual costs are based on

**Reference: Stormwater and Flood Resilience Utility Study**

assumed inflation in operating expenses, the City’s capital improvement plan and the existing debt amortization schedule.

Based on the projection of ten-year stormwater funding requirements, the project team has populated its utility financial model to determine the level of a stormwater fee that would generate sufficient revenues to meet the annual stormwater funding requirements during each year of the forecast period. This analysis includes the development of a reserve within the stormwater utility that would eventually be equivalent to 15% of the annual stormwater funding requirements. This reserve requirement is consistent with City policy within for its other Enterprise Funds (Water and Sewer). The analysis assumes that the requirement is met over a six-year period. Figure 1, in the attached, provides an overview of the long-term stormwater funding analysis. The figure demonstrates that once the fee was established annual inflationary increases in the stormwater fee of 3% will likely be required to keep revenues in line with funding requirements.

**Impervious Area Analysis and Stormwater Fee Structure**

Based on the guidance and recommendations outlined by the Ad Hoc Committee, impervious area will serve as the basis for the determination of the stormwater fee on individual properties. Impervious cover data was collected using NearMap 2022 available dataset for all parcels within the City limits. The analysis identified approximately 102 million square feet of impervious area within the City limits. The impervious area was used to examine the impervious area distribution on the various land uses within the City. This included determination of the median impervious area on single family parcels, which equates to 3,200 square feet. Consistent with industry practice and the State enabling Legislation, the project team recommends using the median impervious area on single family parcels as the billing unit for the stormwater fee. The billing unit is typically defined as an equivalent residential unit (ERU). All property owners would be billed based on the associated number of ERUs of impervious area located on their property. The following table outlines the recommended structure, the associated stormwater fees (shown monthly and annually) and the number of parcels that fall into the various ERUs of impervious area. Under this approach all parcels would be billed in increments of ERUs except for parcels with less than half an ERU. These parcels would be provided a credit of 50% and charged for 0.5 ERUs given the limited amount of impervious area located on their property.

<b>Recommended Fee Structure</b>					
<b>Impervious Area</b>	<b>ERUs</b>	<b>Stormwater Fees</b>		<b>ERUs</b>	<b>Parcels</b>
		<b>Monthly</b>	<b>Annual</b>		
<b>400 - 1,600</b>	<b>0.5</b>	<b>\$ 6.66</b>	<b>\$ 79.94</b>	291	582
<b>1,601 - 4,800</b>	<b>1.0</b>	<b>\$ 13.32</b>	<b>\$ 159.89</b>	5,281	5,281
<b>4,801 - 8,000</b>	<b>2.0</b>	<b>\$ 26.65</b>	<b>\$ 319.77</b>	2,674	1,337
<b>8,001 - 11,200</b>	<b>3.0</b>	<b>\$ 39.97</b>	<b>\$ 479.66</b>	1,020	340
<b>Over 11,200 per 3,200 sq ft*</b>		<b>\$ 13.32</b>	<b>\$ 159.89</b>	22,740	698

*\*rounded to up nearest whole ERU*

**Stormwater Fee Credits**

Consistent with the State Legislation, options for a mitigation credit program were developed based industry best practice as well as local practices including the New Hampshire Department of Environmental Service Soak up the Rain techniques. The project team recommends offering credits for all property types located within the City. Additionally, we recommend that a specific credit program be adopted for single-family properties, focused on stormwater management practices typical to these types of properties and a separate credit program be adopted for non-single family properties to focus on techniques and practices for stormwater management on non-residential properties. The initial credit program recommendations are

**Reference: Stormwater and Flood Resilience Utility Study**

outlined in the following tables and encompass a wide breadth of techniques that can encourage property owners to proactively manage their stormwater impact on the City's system.

**City of Dover - Single Family Residential Credit Program**

Credit Type	Description	Minimum Requirements	Credit Amount
<b>Dripline Infiltration Trench</b>	A stone-filled trench under the roof dripline to collect water from a roof allowing it to soak into the ground.	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
<b>Driveway Infiltration Trench</b>	A stone-filled trench on the edge of a driveway to collect water from the driveway, allowing it to soak into the ground.	Driveway infiltration trench that manages runoff from at least 50% of driveway and designed in accordance with NHDES	Up to 25% credit for impervious area managed
<b>Dry Well</b>	A stone-filled hole in the ground that collects runoff from gutter downspouts, roof valleys, and other areas where water concentrates and flows.	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
<b>Porous Pavement, Patio, Walkway</b>	Pavement, walkway and patios areas engineered with a stone-filled reservoir underneath designed to store and infiltrate water.	Removal of at least 400 sq. ft. of existing impervious area with replacement of engineered porous pavement, patio of	Up to 25% credit for impervious area managed
<b>Rain Garden</b>	An excavated depression with a flat-bottomed garden that uses soil and plants to capture, absorb and infiltrate stormwater.	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
<b>Public Participation</b>	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	Must be City organized or sanctioned event. One credit per household for year during event.	10% credit
<b>Intensity of Development</b>	Credit for parcels with high ratio of pervious to impervious area	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
<b>Nitrogen Pledge</b>	Credit for homeowners who pledge to not use lawn fertilizer.	Pledge to not use fertilizer during year	5% credit during year of pledge
<b>Social / Equity??</b>	Credits for need based seniors, low income and disabled	Based on meeting qualifications such as age, income, disability status, etc.	50% credit
<i>*Outlined in NHDES guidance "Soak Up the Rain"</i>			
<b>Eligibility</b>	All parcels with 1,600 sq. ft. or greater of impervious area		
<b>Maximum Credit</b>	50% maximum credit		

**City of Dover - Non-Single Family Residential Credit Program**

Credit Type	Description	Minimum Requirements	Credit Amount
<b>Stormwater BMP</b>	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 with BMPs that meet local stormwater regulations and design standards	Up to 50% credit for impervious area managed
<b>Offsite Stormwater Management</b>	Constructed, maintained and approved stormwater control system or best management practices consistent with design standards outlined in the NHDES Stormwater Manual.	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
<b>Stormwater BMP Volume</b>	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.	Exceed local stormwater regulations with a minimum reduction of volume of 20% following development or redevelopment	Up to 20% credit for impervious area managed
<b>Education</b>	Educational and non-profits that provide and teach stormwater educational curriculum to K-12	Valid public education curriculum	25% credit
<b>Intensity of Development</b>	Credit for parcels with high ratio of pervious to impervious area	Minimum parcel size of 2 acres with impervious area making up no more than 10% of total parcel area and impervious area must be disconnected from	25% credit
<b>Eligibility</b>	All parcels with 1,600 sq. ft. or greater of impervious area		
<b>Maximum Credit</b>	Maximum credit of 100% for Stormwater BMP and Offsite Stormwater Management		

June 28, 2023  
Ms. Gretchyn Young, PE  
Page 4 of 4

**Reference: Stormwater and Flood Resilience Utility Study**

Respectfully,

**STANTEC CONSULTING SERVICES INC.**



**Kelly Westover** PMP, CFM, MBA  
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Attachment: Tables 1, 2 and Figure 1

**Table 1: Stormwater Forecasted Expenditures**

Stormwater Activity	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
<b>Stormwater Operating Budget</b>											
Personnel Services	\$ 529,845	\$ 548,390	\$ 567,583	\$ 587,449	\$ 608,009	\$ 629,290	\$ 651,315	\$ 674,111	\$ 697,705	\$ 722,124	\$ 722,124
Supplies	342,424	354,409	366,813	379,652	392,939	406,692	420,927	435,659	450,907	466,689	466,689
Capital Outlay	2,500	2,588	2,678	2,772	2,869	2,969	3,073	3,181	3,292	3,407	3,407
Purchased Services	148,186	153,373	158,741	164,296	170,047	175,998	182,158	188,534	195,133	201,962	201,962
Other Expenses	1,650	1,708	1,768	1,829	1,893	1,960	2,028	2,099	2,173	2,249	2,249
<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>\$ 1,259,501</b>	<b>\$ 1,303,584</b>	<b>\$ 1,349,209</b>	<b>\$ 1,396,431</b>	<b>\$ 1,396,431</b>
<b>Engineering<sup>1</sup></b>											
Personnel Services	\$ 92,222	\$ 95,449	\$ 98,790	\$ 102,248	\$ 105,826	\$ 109,530	\$ 113,364	\$ 117,332	\$ 121,438	\$ 125,688	\$ 125,688
Purchased Services	15,276	15,810	16,363	16,936	17,529	18,143	18,777	19,435	20,115	20,819	20,819
Capital Supplies	3,552	3,677	3,805	3,938	4,076	4,219	4,367	4,519	4,678	4,841	4,841
Capital Outlay (transfers out)	82,261	85,140	88,120	91,204	94,396	97,700	101,120	104,659	108,322	112,113	112,113
<b>Stormwater Utility Staffing<sup>2</sup></b>											
Personnel Services	200,000	207,000	214,245	221,744	229,505	237,537	245,851	254,456	263,362	272,579	272,579
<b>Sewer Fund<sup>3</sup></b>											
Municipal Alliance Adaptive Management Contribution	75,000	77,625	80,342	83,154	86,064	89,076	92,194	95,421	98,761	102,217	102,217
<b>Streets<sup>4</sup></b>											
Street Sweeping	100,000	103,500	107,123	110,872	114,752	118,769	122,926	127,228	131,681	136,290	136,290
<b>Subtotal: Non-Budgeted Items</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>	<b>\$ 698,598</b>	<b>\$ 723,049</b>	<b>\$ 748,356</b>	<b>\$ 774,549</b>	<b>\$ 774,549</b>
<b>Total Operating Costs</b>	<b>\$ 1,592,915</b>	<b>\$ 1,648,667</b>	<b>\$ 1,706,371</b>	<b>\$ 1,766,094</b>	<b>\$ 1,827,907</b>	<b>\$ 1,891,884</b>	<b>\$ 1,958,100</b>	<b>\$ 2,026,633</b>	<b>\$ 2,097,565</b>	<b>\$ 2,170,980</b>	<b>\$ 2,170,980</b>
<b>Cash Funded Capital Expenditures</b>											
<b>Community Services - Public Works</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
<b>Community Services - Sewer Fund</b>											
WWTP General Permit Compliance <sup>5</sup>	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000
<b>Subtotal: Cash Funded Capital Expenditures</b>	<b>\$ 450,000</b>	<b>\$ 550,000</b>	<b>\$ 600,000</b>	<b>\$ 650,000</b>	<b>\$ 700,000</b>	<b>\$ 750,000</b>	<b>\$ 800,000</b>	<b>\$ 850,000</b>	<b>\$ 900,000</b>	<b>\$ 950,000</b>	<b>\$ 1,000,000</b>
<b>Debt Service</b>											
Existing Debt	\$ 1,567,283	\$ 1,275,302	\$ 1,240,536	\$ 1,195,884	\$ 1,165,083	\$ 1,131,534	\$ 1,146,049	\$ 1,118,993	\$ 1,091,937	\$ 1,066,212	\$ 1,013,966
Future Debt	857,074	857,074	857,074	1,053,947	1,234,374	1,280,834	1,280,834	1,280,834	1,280,834	1,280,834	1,277,886
<b>Subtotal: Debt</b>	<b>\$ 2,424,357</b>	<b>\$ 2,132,376</b>	<b>\$ 2,097,610</b>	<b>\$ 2,249,831</b>	<b>\$ 2,399,457</b>	<b>\$ 2,412,369</b>	<b>\$ 2,426,883</b>	<b>\$ 2,399,827</b>	<b>\$ 2,372,772</b>	<b>\$ 2,347,047</b>	<b>\$ 2,291,853</b>
<b>Total Capital Costs</b>	<b>\$ 2,874,357</b>	<b>\$ 2,682,376</b>	<b>\$ 2,697,610</b>	<b>\$ 2,899,831</b>	<b>\$ 3,099,457</b>	<b>\$ 3,162,369</b>	<b>\$ 3,226,883</b>	<b>\$ 3,249,827</b>	<b>\$ 3,272,772</b>	<b>\$ 3,297,047</b>	<b>\$ 3,291,853</b>
<b>TOTAL</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>	<b>\$ 5,184,983</b>	<b>\$ 5,276,461</b>	<b>\$ 5,370,337</b>	<b>\$ 5,468,027</b>	<b>\$ 5,462,833</b>

**Table 1 Notes**

- 1 - Assuming 25% of expenditures within FY24 Budget within Community Services Engineering Division
- 2 - Estimate of staffing needs to manage administrative aspects of stormwater utility
- 3 - \$150k identified in FY22, but not budgeted for in FY24
- 4 - Initial estimate for street sweeping, not identified specifically in Community Services Streets budget
- 5 - Assuming 50% of WWTP GP Compliance to stormwater

**Table 2: Capital Improvement Plan**

Debt Funded Capital Projects	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
Street Reconstruction - Oak/Ham/Boardway	\$ 1,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Street Reconstruction - Richardson Drive	31,693	-	-	-	-	-	-	-	-	-	-
Street Reconstruction - Court/Union/Middle	2,884,000	-	-	-	-	-	-	-	-	-	-
Street Reconstruction - Fifth/Grove Streets	1,100,000	-	-	-	-	-	-	-	-	-	-
Catch Basin Spoils Facility	292,280	-	-	-	-	-	-	-	-	-	-
Central Avenue Drainage Work	1,100,000	-	-	-	-	-	-	-	-	-	-
Cochecho River Outfall Stormwater Study	2,150,000	-	-	-	-	-	-	-	-	-	-
Bridge Replacement - Chestnut Street	159,400	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	2,000,000	-	-	-	-	-	-
Street Reconstruction - Lower Central Avenue	-	-	-	2,247,775	-	-	-	-	-	-	-
Street Reconstruction - Oak/Ham/Ela	-	-	-	-	-	500,000	-	-	-	-	-
Flood Resiliency Projects	-	-	-	-	-	-	-	-	-	-	-
<b>Subtotal: Capital Expenditures</b>	<b>\$ 10,668,723</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 2,247,775</b>	<b>\$ 2,000,000</b>	<b>\$ 500,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>

**Table 2 Notes**

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

Figure 1: Long-Term Stormwater Funding Analysis



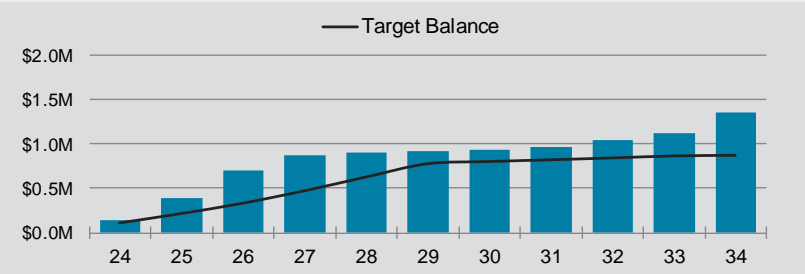
# CITY OF DOVER - STORMWATER FUNDING ANALYSIS



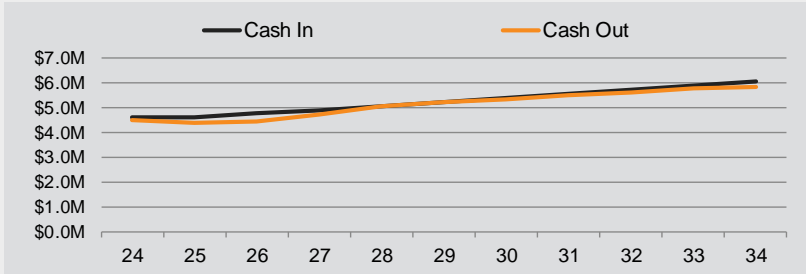
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	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	Cumulative	
Stormwater Rate Plan	0.00%	0.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	12.51%	30.44%
Reserve (% of Appropriation)	2.5%	5.0%	7.5%	10.0%	12.5%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	Credits	10.00%
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		

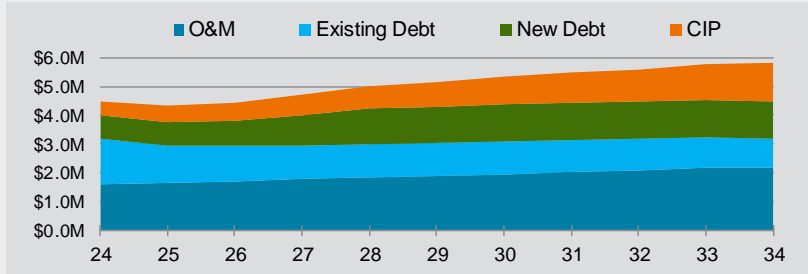
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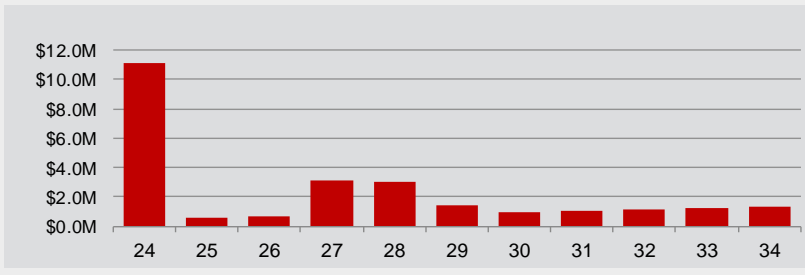
Revenues vs. Expenses



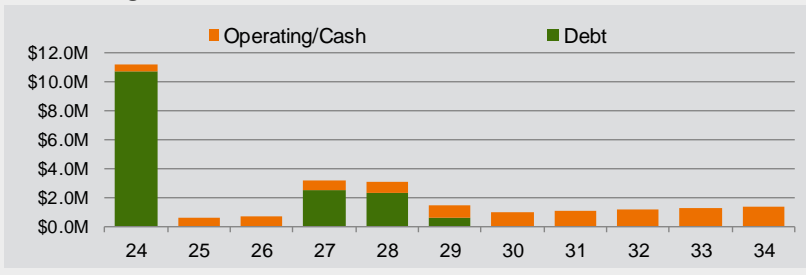
Expenses by Type



CIP Spending



CIP Funding



Borrowing

