

2016 Stormwater Utility Survey

A Black & Veatch Report

Prepared by Black & Veatch Management Consulting, LLC



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Building a **world** of difference.®





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Welcome

WELCOME TO OUR 2016 STORMWATER UTILITY SURVEY

In 1991, we launched our first biennial survey of stormwater utilities to assess and share insights on stormwater management and financing, when the concept of “stormwater utility” was still a nascent phenomenon. Over the last 25 years, the phenomenon has continued to evolve with paradigm shifts in stormwater program planning, best practices, governance, and regulatory requirements. To reflect these changing dynamics, we have continued the tradition of capturing and sharing insights through our biennial stormwater utility surveys.

This report, our eleventh stormwater utility survey, presents information on the key industry priorities and investment drivers, stormwater management and user fee practices, and comparative data on typical residential stormwater user fees.

The responses to issues of increasing regulatory requirements, adequacy of funding, and cost recovery continues to indicate an “alignment gap” among program needs, costs of service, level of fees, and customer buy-in.

Hence, going beyond presenting the survey findings, this report also includes a special feature discussion on “Program-Cost-Fee-Benefit Nexus.” The special feature highlights the compelling need for nexus among four key factors: the level of service (Program), the costs to deliver the level of service (Cost), the approach to recovering the cost of providing service (Fee), and the customer’s understanding of value (Benefit).

If you have any questions regarding the contents of this report and/or Black & Veatch services, please do not hesitate to contact us at: ManagementConsulting@bv.com.

Sincerely,

Ralph Eberts | Executive Vice President

Black & Veatch Management Consulting, LLC

COMPANY OVERVIEW

Black & Veatch Management Consulting, LLC is a wholly owned subsidiary of Black & Veatch Holding Company and provides integrated strategy, business operations, and technology solutions for water, wastewater, stormwater, power, oil and gas, and renewables utility sectors. Our seasoned executives and consultants combine subject expertise, advanced analytics and practical business sense with extensive technology and engineering capabilities to deliver solutions that work best for your program needs, organization, assets and customers.



BLACK & VEATCH HEADQUARTERS
Overland Park, KS

SURVEY DESIGN

This 2016 stormwater utility survey was conducted online, within the United States, during March and April 2016. The results are presented under the following key sections:

Section 1: Organization and Operations

Provides a general profile of the respondents including population, size and characteristics of service area, and utility governance.

Section 2: Planning

Provides insights in to what utility managers perceive to be the most important industry issues and stormwater infrastructure investment drivers. This section also highlights the types of permit requirements that utilities have to comply with and the planning utilities have engaged in to address stormwater management.

Section 3: Finance and Accounting

Reviews stormwater utility revenues, expenditures, sources of funding, and the adequacy of stormwater funding to meet utility obligations.

Section 4: Stormwater Rate Structure and Billing

Presents the types of costs recovered through user fees, the fee methodology used in setting rates, the rate structures, and the average monthly residential rate of each utility that participated in the survey. Information on the billing frequency and types of exemptions and discounts that utilities offer, and insights on legal challenges are also provided. Calculated bills reflect rates in effect as of March 1, 2016.

Section 5: Stormwater Credits and Incentives

Offers insights in to the types of credits, criteria used in offering credits, credits for “green initiatives”, and any innovative credit programs.

Section 6: Public Information/Education

Assesses the level of importance respondents attribute to public information/education and the methods of education and multi-media sources used in educating and in disseminating information.

PRABHA KUMAR

Director

Ms. Kumar leads the stormwater utility consulting practice. She specializes in stormwater utility feasibility studies and utility development, implementation, and utility metering and billing operations optimization. Ms. Kumar's comprehensive utility consulting expertise also includes resource analysis, financial planning, cost of service, and rate design studies, wholesale pricing studies and in providing expert witness services in utility litigation matters. Ms. Kumar has also managed technology projects that involve the entire software development life cycle of needs assessment, system requirements specification, system design, development, implementation and training.



ANNA WHITE

Principal Consultant

Ms. White has served as a Project Manager on projects involving cost of service and rate determination, revenue bond determination and financial reviews of operations for water, wastewater and stormwater utilities in the public sector. Her economics background and experience with computer modeling and software applications have been utilized in developing financial analyses of municipal water and wastewater utilities.



RUPA JHA

Manager

Ms. Jha is experienced in utility rate study, business process optimization and change management for water, wastewater and stormwater utilities. She has participated in a wide range of utility management services including fund review studies, infrastructure asset management, change management, AWWA water audits and financial modeling.



BRIAN MERRITT

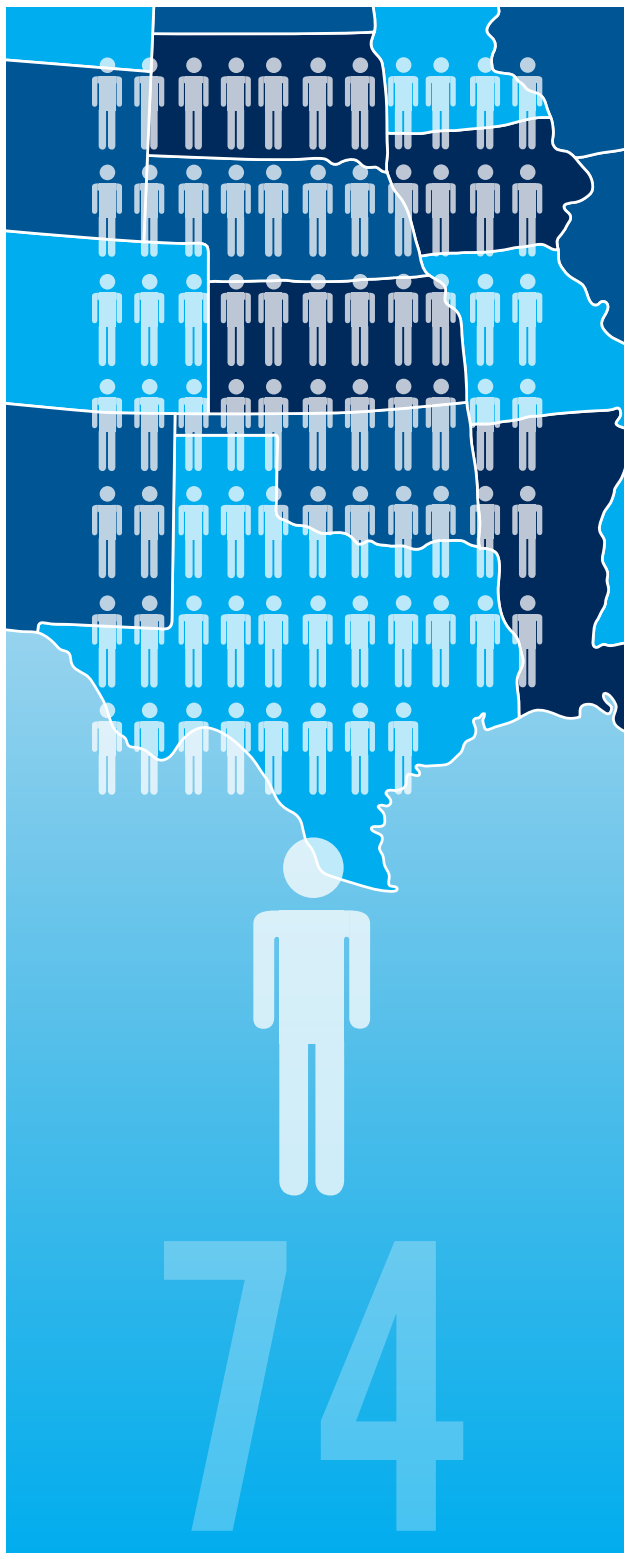
Manager

Mr. Merritt has experience in the engineering and consulting industry specializing in stormwater utility development and implementation. He has extensive experience in engineering design, permitting, compliance, public outreach, program evaluations and planning, and funding strategies. His stormwater related work has included watershed planning, stormwater infrastructure design and construction including green infrastructure, floodplain and water quality management planning, flood protection/resiliency system assessments and evaluations. In addition, Mr. Merritt is skilled in operations management, business development, client management, contract negotiations, employee recruitment, multi-disciplinary staff management and proposal writing.



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Report Highlights



PROFILE OF RESPONDENTS

A total of 74 participants from 24 states completed the online questionnaire.

- All of these participants fund stormwater management in whole or in part through stormwater user fees.
- This year's participants include 16 first time participants and 58 repeat participants.
- Eighty eight percent of the respondents serve a city, rather than a county or a region.
- The population served by the respondents ranges from 86 (Indian Creek Village, FL) to 1.4 million people (San Diego, CA); the areas served varies from 3 to 1,080 square miles.
- Among the utilities that participated in the survey, the median number of stormwater customers is 31,000.
- For those utilities that base charges on gross property area, an Equivalent Residential Unit (ERU) ranged from 2,266 square feet to 20,000 square feet of total parcel area, with a median of 8,000 square feet.
- For those utilities that base charges on impervious area, an ERU ranged from 35 square feet to 5,000 square feet of impervious area, with a median of 2,550 square feet.

PROGRAM-COST-FEE-CUSTOMER NEXUS

The new norm in the utility industry is to proactively plan for and build “resilience.” Resilience is no longer a buzz word but rather a critical necessity for utilities to be agile and effectively manage known and unforeseen challenges and changing environments. Financial and operational resilience can only be achieved when there is a clear nexus between Program, Cost of Service, User Fees, and Customer Benefit.



The nexus addresses the following critical questions:

- What infrastructure, regulatory, operational, and community needs are we trying to address (Program or Level of Service)?
- What does it cost to deliver the desired level of service (Cost of Service)?
- How do we equitably recover the full cost of service (Fee)?
- What benefits do our customers gain and perceive (Customer Benefit)?

Survey Results on User Fee-Cost of Service Nexus

In our stormwater survey, we find a significant range in the magnitude of typical monthly residential stormwater charge, among the participating utilities. This is a continuing trend over the last several surveys. In analyzing the results, we find that the wide range in the charges is largely due to user fees not reflecting the full “cost of service,” and not necessarily due to significant cost of service differences among comparable utilities.

This phenomenon of user fees not reflecting the full cost of service is more pronounced in the stormwater sector than in the water/sewer sector. From a benchmarking perspective, when all the participating utilities do not set their fees to recover the full cost of service, it impacts the ability to truly compare the stormwater charges across utilities, even when the utilities may be comparable in terms of system characteristics and programs.

So, why should utilities strive to recover their full cost of service through user fees rather than recover costs through a combination of “user fees,” and other “non-user fees” such as taxes. Here are a few key reasons:

- **Equity of Cost Recovery.** Stormwater user fees are based typically on the level of imperviousness (commonly referred to as impervious area), which more reasonably correlates to the demand a property places on the stormwater system. However, taxes are based on aspects such as a property’s value or the level of sales, which have no direct correlation to the stormwater contributed to the system. In addition, in the case of tax based cost recovery, many properties that have tax exemptions would not pay anything towards stormwater costs. Hence, recovering the full cost of service through user fees provides for a more equitable recovery of costs among the customers.
- **Customer Perception.** When the fee is designed to reflect the full cost of service, customers can better understand the true costs a utility incurs in providing service. User fees being set to only recover a portion of the stormwater costs can potentially lead to a misperception on the true magnitude of a utility’s costs.
- **Onsite Stormwater Management.** If the user fees are set to fully correlate with cost of service, utilities will have the ability to offer appropriate stormwater fee credits for private stormwater management practices that reduce the stormwater contribution to the system. However, recovering a portion of the stormwater costs through tax revenues would impact a utility’s ability to provide stormwater credits on taxes, as taxes have no correlation to a property’s stormwater contribution.

To explain the difference between utilities that set user fees to recover the full cost of service and those that recover the cost of service through a mix of “user fees” and “non-user fees,” we present the following examples.

Example: Cost of Service Recovered Fully Through User Fees

Seattle Public Utilities (SPU), Washington which has both combined sewer system and separate storm sewer systems, has defined a cost allocation approach that consistently and fairly allocates all operational and capital costs between the sanitary sewer and drainage business lines. Beginning 2008, through a phased approach, SPU has been allocating a portion of the combined sewer system costs to the stormwater utility, recognizing that a portion of the combined sewer system and combined sewer overflow (“CSO”) structures support the drainage system. SPU has not only done the due diligence of defining the full cost of service but also recovers 97% of the stormwater costs of service through stormwater user fees, and the remaining through grants and other sources. Such an approach enhances the equity of cost recovery as (i) costs are aligned with the service demands (wastewater versus drainage), and (ii) the



stormwater fees are aligned to recover 97% of the drainage costs. While such an approach strengthens the nexus between system needs, cost, and fees, it also results in SPU's charges appearing to be the highest among the survey participants.

Philadelphia Water Department (PWD), Pennsylvania, which also has a mix of combined sewer and separate storm sewer systems, has adopted a very similar due diligence of clearly delineating direct stormwater management costs and allocating a portion of the combined sewer operating and capital costs to the stormwater utility, so as to derive the stormwater utility's annual full cost of service. To meet its Long Term Control Plan (LTCP) consent order agreement ("COA") requirements, PWD is leading with green solutions. To effectively support its COA, PWD offers robust stormwater credits and incentives programs, the costs of which are proportionally funded through both wastewater rates and stormwater rates.

The City of Bellevue, Washington, which only has a separate storm sewer system, also appears to have established a nexus between its stormwater full cost of service and the stormwater user fees, with 93% of its cost of service being recovered by stormwater user fees, and 6% from miscellaneous stormwater fees.

When utilities such as SPU, PWD, and Bellevue delineate full stormwater cost of service and then set user fees to appropriately recover those costs, their fees tend to be higher, but also reflect a more equitable approach to cost recovery.

Example: Cost of Service Recovered Through a Combination of User Fees and Taxes

Partial Cost of Service: The survey also indicates that many utilities do not set rates to adequately recover the full cost of service. **Kansas City, Missouri** has a mix of combined sewer and separate storm sewer systems, and currently has a consent order for CSOs. Kansas City's stormwater user fee only recovers a portion of the cost of service. Based on a 1998 voter referendum on user fees, the stormwater user fee is designed to recover only the stormwater "operating

costs." The stormwater related capital costs are recovered not through user fees but through taxes. Sean Hennessy, the CFO for Kansas City also points out that the "Missouri Supreme court ruled that an impervious surface 'fee' applied to property owners is a tax and not a fee"; therefore all tax exempt entities are exempt from the stormwater user fee.

Similarly, **City of San Diego, California**, recovers approximately 50% of its stormwater revenues from user fees and the remaining stormwater revenues are generated primarily from general taxes (e.g., sales tax, property tax) and parking citation revenue. Further, San Diego has never increased its stormwater user fees since 1996.

Consequently, in the case of these two utilities, the stormwater user fees for a typical residential property are significantly lower when compared with other stormwater utilities such as Seattle, WA or Philadelphia, PA. Establishing user fees to recover only a portion of the stormwater costs can have equity of cost recovery implications, as the magnitude of costs recovered from a user from taxes may not be fully aligned with the level of demand the user places on the system.

In summary, with respect to establishing an effective nexus between program, cost, fees, and customer engagement, stormwater utilities are continuing to evolve very slowly and are yet to reach even the level of maturity that we see in the municipal water and wastewater sectors. While municipalities that have established a user fee funding mechanism are ahead of the curve relative to those that have not, to plan for and build resilience, it is time that municipal leaders and communities transitioned to more collaborative, needs driven, and holistic approaches to policy making, delineating cost of service, and stormwater funding.

We extend our appreciation to the City of Philadelphia, PA; Seattle, WA; Bellevue WA; Kansas City, MO; and City of San Diego, CA for consenting to highlight their stormwater user fee programs as examples.



Organizational Information

Stormwater issues such as surface water quality; habitat degradation; downstream flooding, protection of stormwater as a valuable water resource, and public awareness and support are all universal and do not strictly follow jurisdictional boundaries. Yet municipalities continue to manage stormwater issues only within their geographical jurisdictional authority, without being able to transition to a broader watershed level collaboration, management, and funding.

The survey indicates that individual municipally governed stormwater utilities are more prevalent than regional stormwater authorities. Eighty nine percent of the participants reported serving a city jurisdictional area, with just two participants representing a regional authority. These trends have remained fairly consistent since 2007.

Municipalities that have a mix of combined sewer and separate storm sewer systems have a greater challenge in complying with water quality regulatory requirements. Out of the 9 municipalities that have a combined sewer system and own a wastewater treatment facility, 8 of them indicated having a consent order for Combined Sewer Overflows (CSOs). In contrast, only 2 out of the 74 participants had a consent order for MS4 requirements.

FIGURE 1

FOR MS4 PERMITTING PURPOSES, ARE YOU CLASSIFIED AS: *(Select One)*

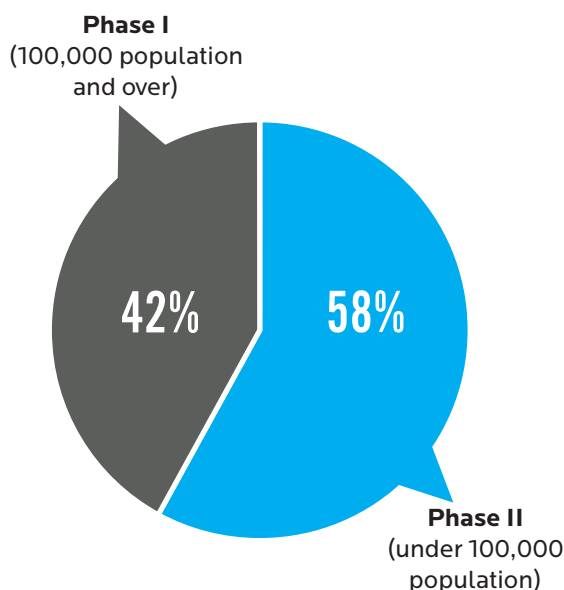


FIGURE 2

WHAT JURISDICTIONAL AREA IS YOUR STORMWATER UTILITY RESPONSIBLE FOR? *(Select One)*

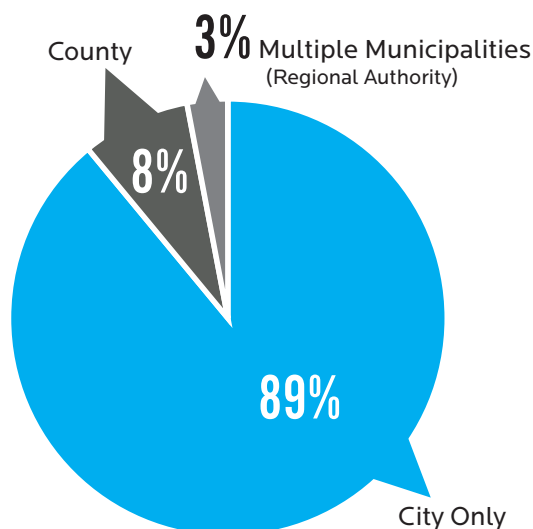


FIGURE 3

WHAT IS THE CHARACTERISTIC OF YOUR SERVICE AREA? *(Select One)*

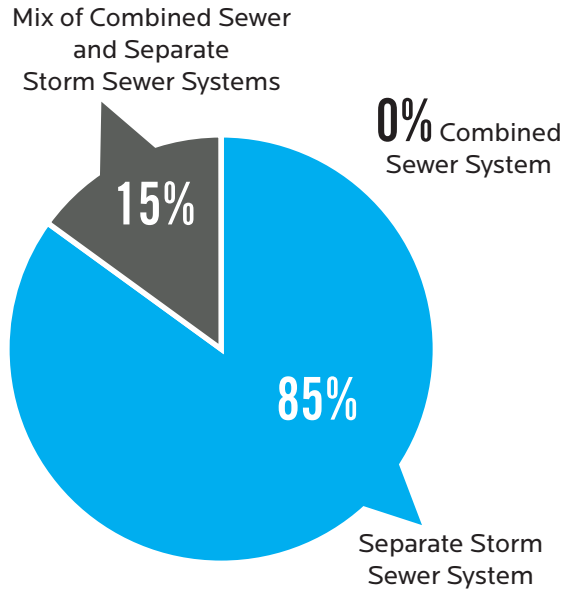
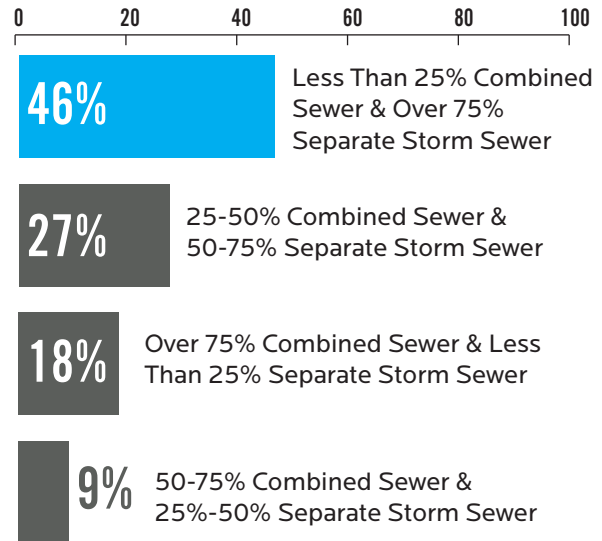


FIGURE 4

IF YOU SELECTED “MIX OF COMBINED SEWER AND SEPARATE STORM SEWER SYSTEMS” IN THE PREVIOUS QUESTION, INDICATE THE PERCENTAGE* OF COMBINED SEWER VERSUS SEPARATE STORM SEWER SERVICE.



**Based on number of utilities that selected “Mix of Combined Sewer and Separate Storm Sewer Systems” in the previous question.*

FIGURE 5

IF YOU SELECTED “MIX OF COMBINED SEWER AND SEPARATE STORM SEWER SYSTEM” OR “COMBINED SEWER SYSTEM” IN QUESTION 3, DOES YOUR UTILITY OWN ITS OWN WASTEWATER TREATMENT FACILITY OR DOES IT CONTRACT OUT FOR THESE SERVICES TO ANOTHER JURISDICTION/ENTITY?

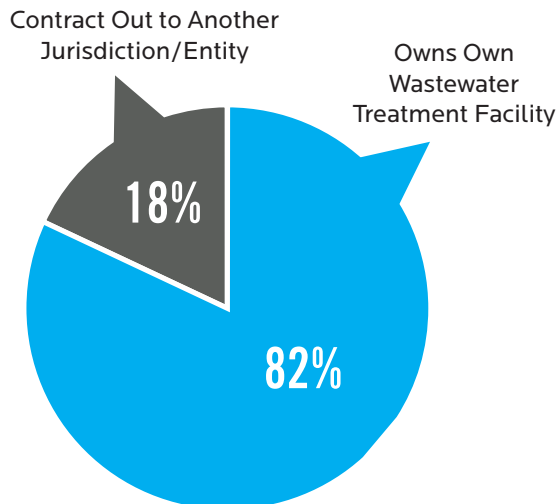


FIGURE 6

IS YOUR UTILITY UNDER CONSENT ORDER FOR COMBINED SEWER OVERFLOW (CSO) ISSUES?

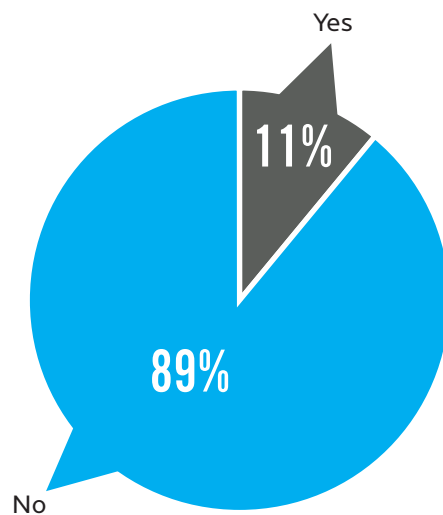


FIGURE 7

IS YOUR UTILITY UNDER CONSENT ORDER FOR MS4 ISSUES?

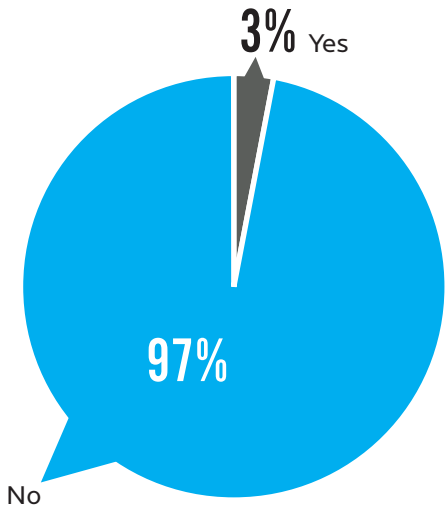
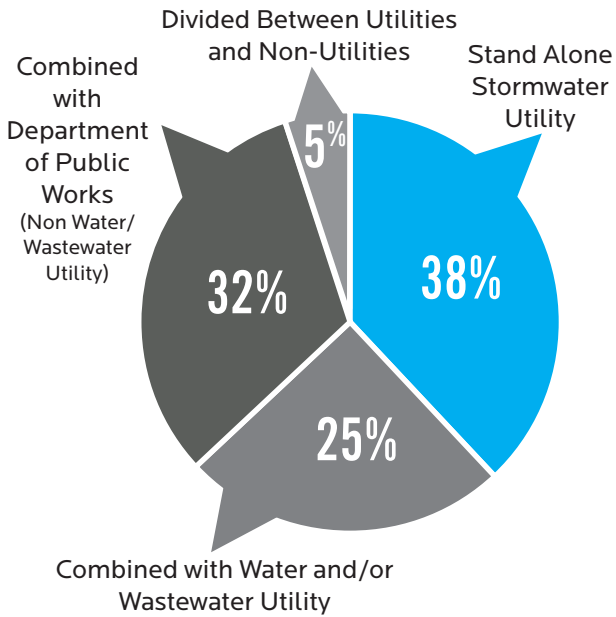


FIGURE 8

PLEASE INDICATE HOW YOUR CURRENT STORMWATER OPERATIONS ARE GOVERNED.

(Select One)



IT SHOULD COME AS NO SURPRISE THAT IN THE WATER AND WASTEWATER UTILITY SECTOR, THE TOP CHALLENGES FOR UTILITY LEADERS CONTINUE TO BE ISSUES RELATING TO:

**ASSET MANAGEMENT
STABLE FUNDING FOR CAPITAL AND OPERATIONAL PROGRAMS
ADEQUACY OF RATES TO RECOVER COST OF SERVICE
GAINING PUBLIC SUPPORT FOR FUNDING**

Stormwater Priorities

While the stormwater sector faces these same challenges, it also faces the significant pressure of expanding water quality regulations. This survey validates this challenge. Utility leaders continue to indicate the following three issues as their top three challenges: (i) availability of adequate funding, (ii) enhancing public awareness and support for stormwater management, and (iii) management of the expanding regulatory requirements.

Water Quality Poses a Greater Challenge

In the 2016 *Strategic Directions: Water Industry Report* that we recently published, water utility leaders cited aging infrastructure as their most important challenge; in stark contrast, in this year's stormwater survey, utility leaders have ranked nutrient/TMDL regulatory requirements as a higher priority issue than even infrastructure management. The water

quality regulatory requirement poses a more acute challenge for those municipalities with combined sewer systems, as evidenced by the fact that of the 11 municipalities that indicated having a combined sewer system, 82% currently are under a consent decree.

Infrastructure Investment Drivers

Consistent with water quality and regulatory requirements being high priority issues, utility leaders also indicate that their infrastructure investments are driven primarily by Regulatory Compliance, followed by Flood Control.

Planning for Resilience

To enhance economic, environmental and social resilience, regardless of their size, municipalities, have to increasingly focus on becoming a smart city with "smart utilities." Smart utilities will require integrated frameworks that involve comprehensive assessment of needs and initiatives, multi-benefit outcomes, consistent technical standards and policies, coordinated governance and execution, public-private partnerships, innovative funding, and enhanced stakeholder engagement.

However, this survey finds that even when utilities have both wastewater and stormwater responsibilities and permit requirements, nearly two-thirds of them continue to adopt a more traditional planning approach of developing individual master plans rather than integrated management plans.

FIGURE 9

WHAT REGULATORY PERMIT REQUIREMENTS DO YOU CURRENTLY HAVE TO COMPLY WITH?
(Select All That Apply)

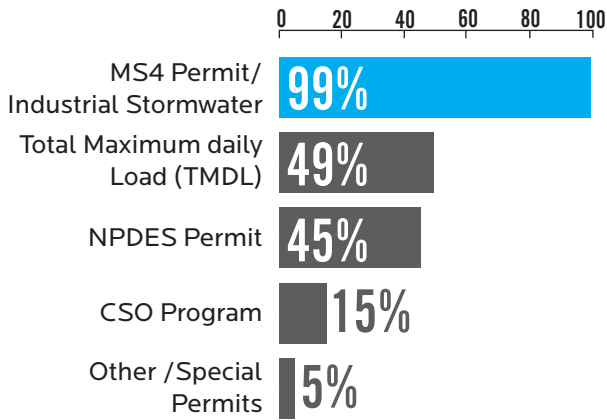
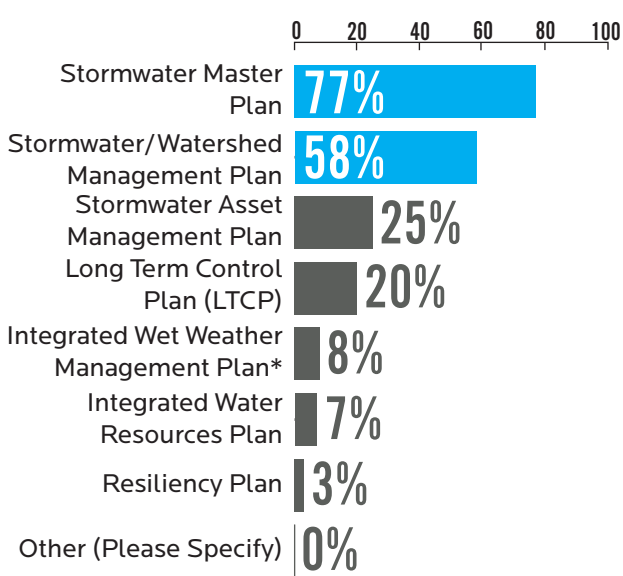


FIGURE 10

WHAT TYPES OF PLANS HAS YOUR UTILITY DEVELOPED? *(Select All That Apply)*



**To Support Wastewater and Stormwater Requirements*

FIGURE 11

PLEASE RANK THE IMPORTANCE OF EACH OF THE ISSUES LISTED BELOW TO THE STORMWATER INDUSTRY. (1 = *Least Important*; 5 = *Most Important*)

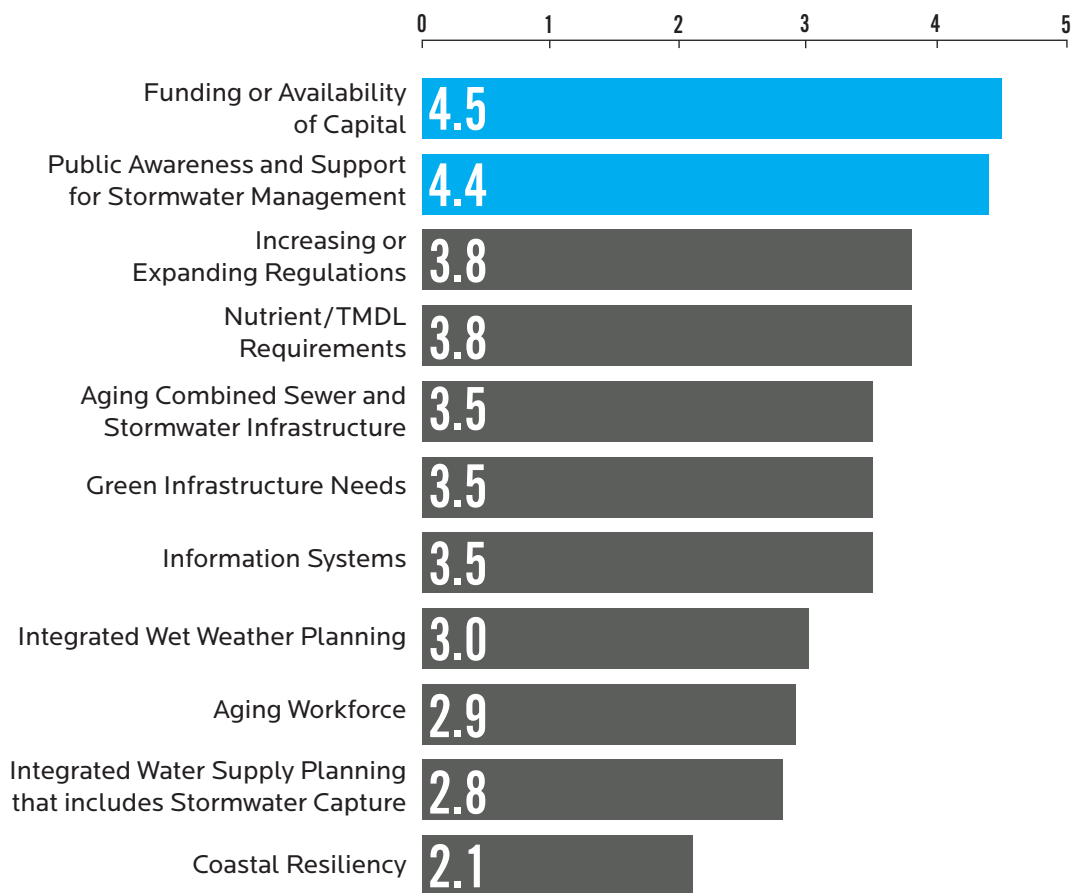


FIGURE 12

PLEASE RANK ON A SCALE OF 1 TO 5, HOW THE FOLLOWING ISSUES DRIVE INFRASTRUCTURE INVESTMENT PLANNING AND DECISIONS WITHIN YOUR STORMWATER UTILITY.

(1 = Very Weak; 5 = Very Strong)



Finance & Accounting

A user fee funded stormwater program has a greater potential to build fiscal and operational resilience through revenue stability, dedicated funding stream, and a stronger nexus between stormwater management costs and user fees. However, for user fee funding to be effective and equitable, timely level of service assessments, financial planning and rate adjustments are necessary.

Funding Adequacy

Consistent with the last survey, only 32% of the participants indicate funding is adequate for meeting most needs. However, the survey also indicates that user fee funding framework is providing some level of funding as the percentage of participants that still do not have funds to meet even their most urgent needs, has decreased from 17% (in the 2014 survey) to 8%.

Capital Program Financing

For capital financing, utilities continue to rely heavily on cash financing than debt financing. Based on our last three stormwater surveys, we find that reliance on debt financing seems to be declining. The decrease in debt financing could be due to multiple reasons including municipalities being over leveraged, lack of long range capital planning and capital financing policies, and stormwater utilities operating with a lower level of fiscal planning maturity relative to water/sewer utilities.



FIGURE 13

PLEASE PROVIDE THE APPROXIMATE PERCENTAGE OF REVENUE THAT YOUR UTILITY RECEIVED FROM EACH SOURCE LISTED.

	OVER 75%	50%-75%	25%-50%	LESS THAN 25%
Stormwater User Fees	88%	9%	3%	0%
Impact Fees	0%	0%	0%	100%
Miscellaneous Stormwater Fees	0%	0%	0%	100%
Taxes	14%	14%	29%	43%
Grants	0%	0%	18%	82%
Other	0%	7%	7%	86%

FIGURE 14

PLEASE INDICATE THE PERCENTAGE OF YOUR STORMWATER BUDGET THAT IS ATTRIBUTABLE TO COMBINED SEWER OVERFLOW (CSO) MITIGATION ISSUES. (Select One)

	0%	1% - 10%	11% - 20%	21% - 30%	31% - 50%	OVER 50%
Percentage of budget that is attributable to Combined Sewer Overflow (CSO) mitigation issues	27%	27%	9%	9%	9%	19%

FIGURE 15

WHAT IS THE ESTIMATED 2016 ANNUAL STORMWATER CAPITAL IMPROVEMENT PROGRAM BUDGET?

Minimum	\$60,000
Maximum	\$59,700,000
Average	\$4,461,801

FIGURE 16

PLEASE PROVIDE AN APPROXIMATE PERCENTAGE OF FUNDING FROM EACH SOURCE.

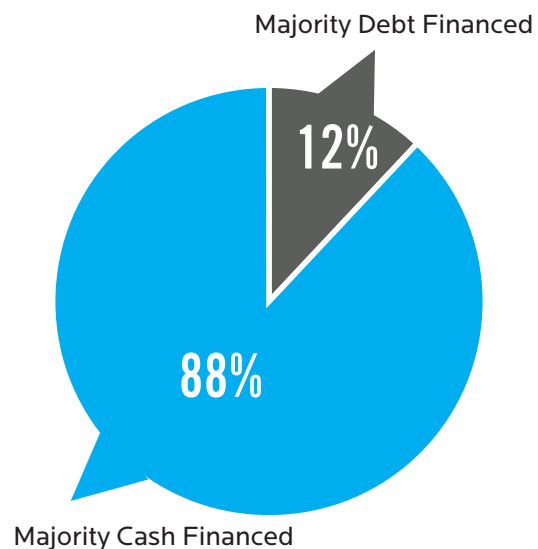


FIGURE 17

PLEASE PROVIDE AN APPROXIMATE PERCENTAGE OF FUNDING FROM ONE OR MORE OF THE FOLLOWING SOURCES THAT ARE USED TO FINANCE YOUR UTILITY'S STORMWATER CAPITAL IMPROVEMENT PROGRAM (CIP).

DEBIT FINANCED	12%	CASH FINANCED	88%
General Obligation (tax) Bonds	8%	Stormwater User Fees	89%
Stormwater Revenue Bonds	12%	Ad Valorem Taxes	5%
Sales Tax Bonds	0%	Permitting and Other Taxes	5%
Combined Stormwater/Other Bonds	4%	Sales Taxes	3%
Benefit District Bonds	0%	Special Tax Districts	4%
Other Debt	5%	New Development Impact Fees	8%
		Grants	24%
		Other Cash	5%

FIGURE 18

CASH VERSUS DEBT FINANCING 2012-2016

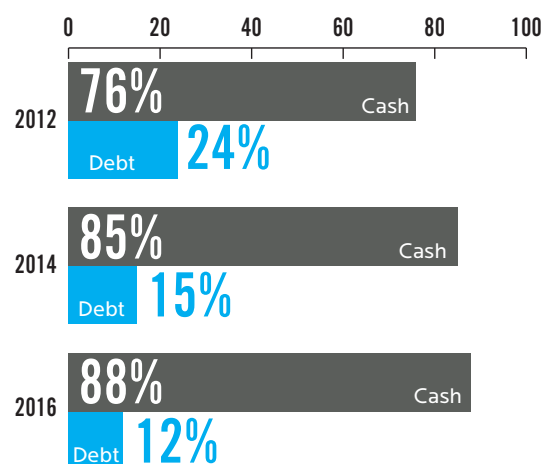


FIGURE 19

PLEASE INDICATE THE LEVEL OF ADEQUACY OF AVAILABLE STORMWATER FUNDING. (Select One)

	2016	2014	2012	2010
Adequate to Meet All Needs	12%	6%	18%	7%
Adequate to Meet Most Needs	32%	32%	31%	36%
Adequate to Meet Most Urgent Needs	48%	45%	40%	47%
Not Adequate to Meet Urgent Needs	8%	17%	11%	10%

FIGURE 20

DOES YOUR STATE HAVE ENABLING LEGISLATION THAT AUTHORIZES MUNICIPALITIES TO CHARGE A STORMWATER USER FEE?

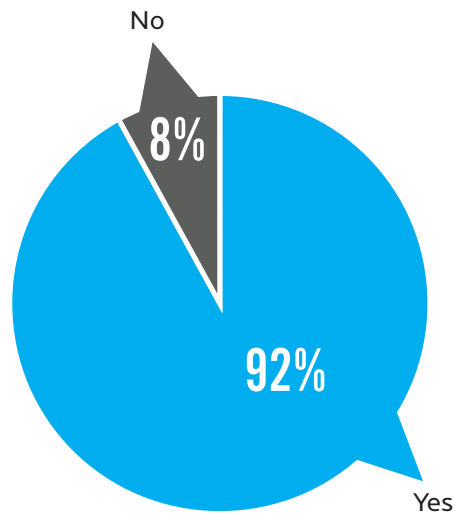


FIGURE 21

DOES YOUR STATE HAVE ENABLING LEGISLATION THAT AUTHORIZES INDEPENDENT PUBLIC UTILITIES SUCH AS AUTHORITIES, BOARDS, AND COMMISSIONS, TO CHARGE A STORMWATER USER FEE?

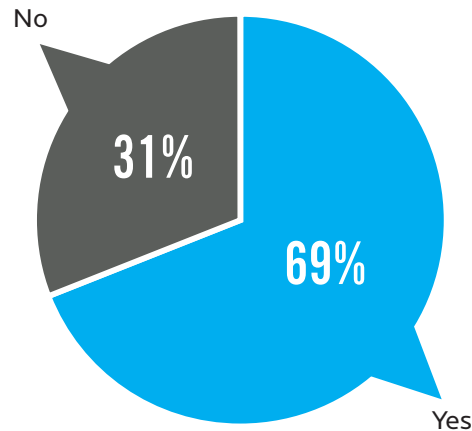
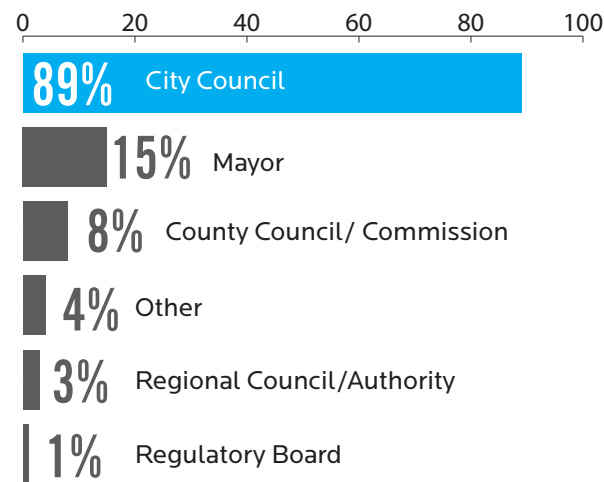


FIGURE 22

WHAT IS THE GOVERNING AUTHORITY THAT APPROVES YOUR RATES?



User Fee Basis

A user fee needs to reflect a reasonable nexus between the costs incurred in providing services and the magnitude of charges that are defined for the rate payer. As it is not practical to measure stormwater runoff, an estimate of a property's level of imperviousness (that restricts infiltration) continues to provide a defensible basis for determining the runoff contribution. This survey validates this approach as 89 of the participants indicate that they use actual and/or effective impervious area as the basis of charges.

Parcel Data Management

Parcel attributes such as impervious area can be fairly dynamic as changes can occur due to development and redevelopment, consolidation and subdivision of parcels, and other such factors. Yet, 59% of the participants indicate that they do not update their parcel data on any defined frequency. To affirm billing accuracy and effective generation of revenues, it would be prudent for utilities to establish the best practice of at least an annual review and update of parcel impervious area data.

Fiscal Planning

This survey continues to indicate that lack of timely rate adjustments could be one of the contributing factors to a funding gap. While costs and utility needs for service levels and regulatory requirements continue to increase, 26% of the participants indicate that they have not adjusted the stormwater rates in over 10 years. Establishing a best practice of consistent and timely rate adjustments along with the implementation of customer assistance programs to help with affordability will provide an effective path to financial resiliency.

FIGURE 23

PLEASE INDICATE THE YEAR WHEN YOUR UTILITY'S CURRENT STORMWATER USER RATE SCHEDULE BECAME EFFECTIVE.

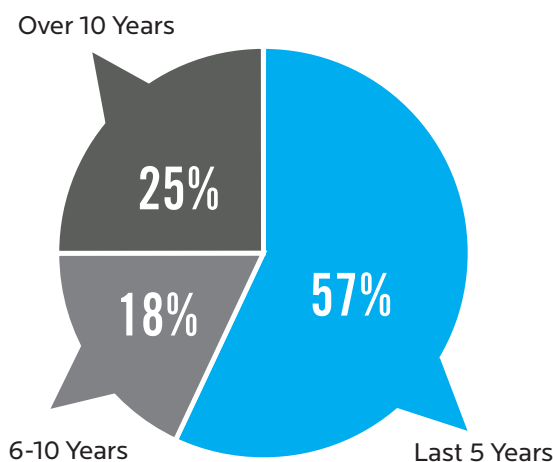


FIGURE 24

WHAT WAS THE MAGNITUDE OF THE LAST CHANGE IN FEES? *(Select One)*

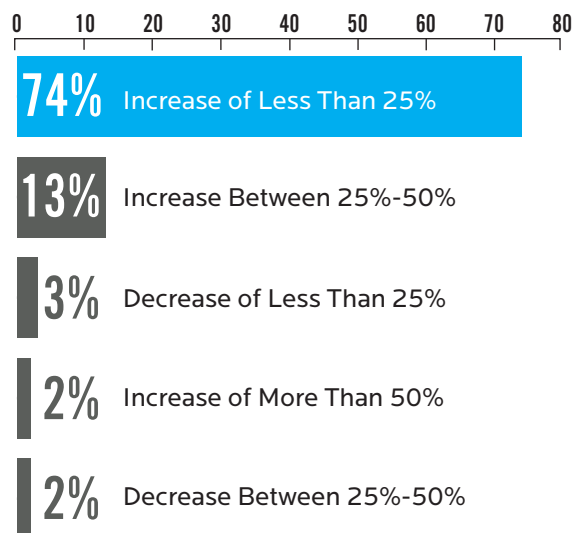


FIGURE 25

DOES YOUR UTILITY TYPICALLY ADOPT NEW STORMWATER FEES ANNUALLY OR FOR MULTIPLE YEARS? IF FOR MULTIPLE YEARS, HOW LONG IS YOUR TYPICAL RATE PERIOD?

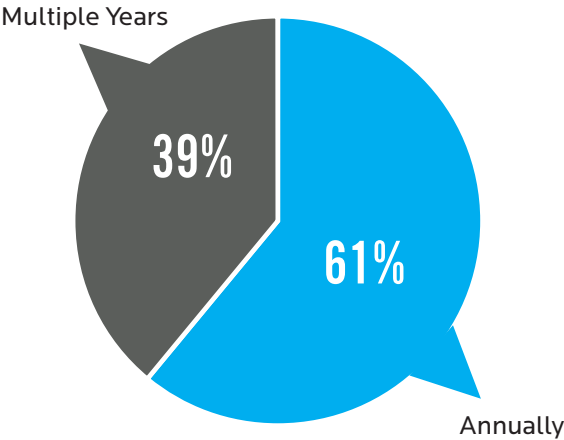


FIGURE 26

IS YOUR STORMWATER USER FEE BASED ON SOME FORM OF PARCEL AREA SUCH AS GROSS AND/OR IMPERVIOUS AREA?

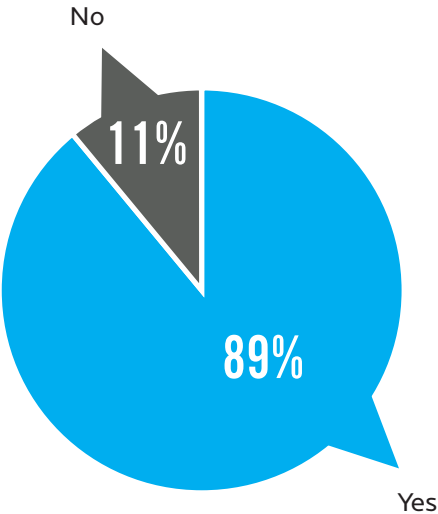


FIGURE 27

WHAT IS THE BASIS FOR CALCULATING YOUR PARCEL AREA BASED STORMWATER USER FEES? IF A COMBINATION OF METHODS IS USED, PLEASE CHECK ALL APPLICABLE METHODS.
(Select All That Apply)

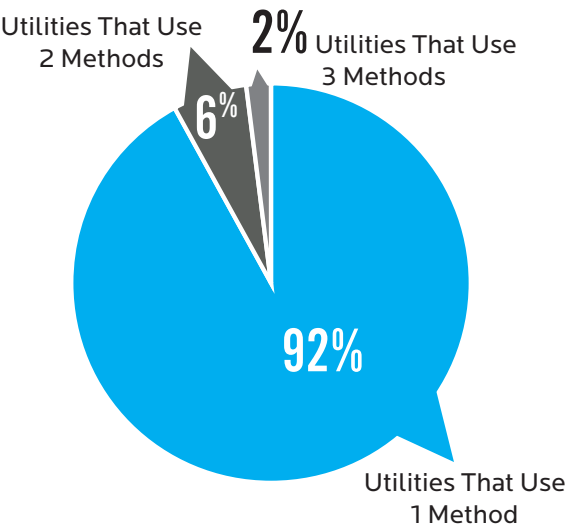
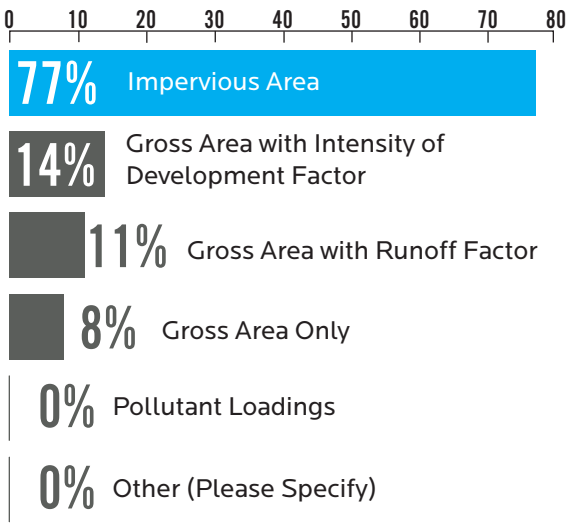


FIGURE 28

WHAT IS YOUR UTILITY’S AVERAGE SINGLE FAMILY RESIDENTIAL PARCEL SQUARE FOOTAGE?
(Include attached residential up to four dwelling units)

AVERAGE GROSS AREA	SQUARE FEET	AVERAGE IMPERVIOUS AREA	SQUARE FEET
Minimum	2,266	Minimum	35
Maximum	20,000	Maximum	5,000
Median	8,000	Median	2,550

FIGURE 29

WHAT TYPE OF RATE STRUCTURE DOES YOUR UTILITY HAVE FOR THE SINGLE FAMILY RESIDENTIAL PARCELS? PLEASE ALSO PROVIDE THE AVERAGE MONTHLY RATE FOR EACH RATE STRUCTURE YOU SELECT.
(Complete All That Apply)

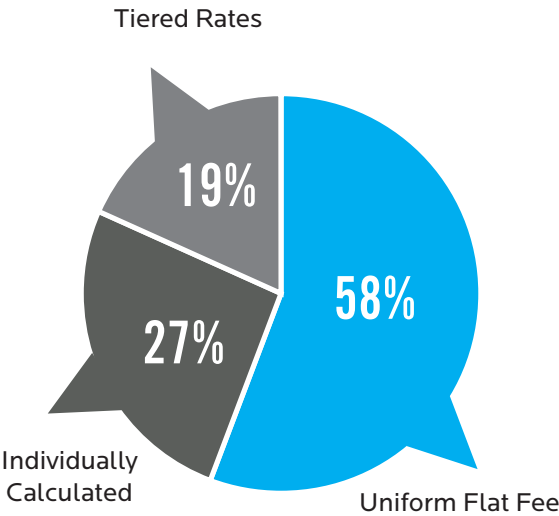


FIGURE 30

AVERAGE MONTHLY SINGLE-FAMILY RATE

CITY/COUNTY	STATE	2016 AVERAGE MONTHLY RESIDENTIAL CHARGE	CITY/COUNTY	STATE	2016 AVERAGE MONTHLY RESIDENTIAL CHARGE
Seattle	WA	32.50	Jupiter	FL	4.55
Bellevue	WA	22.00	Haines City	FL	4.52
Everett	WA	17.44	Mesquite	TX	4.50
Lubbock	TX	16.23	Arvada	CO	4.50
Fort Collins	CO	14.26	Great Falls	MT	4.27
Philadelphia*	PA	14.12	Topeka	KS	4.25
Palo Alto	CA	12.63	Doral	FL	4.00
Bremerton	WA	11.54	Miami Gardens	FL	4.00
Loveland	CO	10.93	Lawrence	KS	4.00
Gresham	OR	10.00	Indian Creek Village	FL	4.00
Orlando	FL	9.99	Irving	TX	4.00
Charlotte	NC	9.95	Lynchburg	VA	4.00
Pierce County	WA	9.67	Raleigh	NC	4.00
Gainesville	FL	9.00	Ellicott City	MD	4.00
Satellite Beach	FL	8.67	Stuart	FL	3.95
Cocoa Beach	FL	8.00	Fayetteville	NC	3.75
Thurston County	WA	7.58	Richmond	VA	3.75
Meadville	PA	7.50	Billings	MT	3.62
Oakland Park	FL	7.50	Charlottesville	VA	3.60
Southeast Metro SW Authority	CO	7.38	Wichita Falls	TX	3.55
Wilmington	DE	7.00	Cincinnati	OH	3.54
Brighton	CO	6.91	Frisco	TX	3.45
Duluth	MN	6.75	Murfreesboro	TN	3.25
Tulsa	OK	6.45	Kansas City	MO	3.00
Bloomington	MN	6.37	McKinney	TX	3.00
Woodbury	MN	6.10	Melbourne Beach	FL	3.00
Roseburg	OR	6.05	Contra Costa County	CA	2.92
Killeen	TX	6.00	Modesto	CA	2.73
Lakeland	FL	6.00	Littleton	CO	2.58
Charleston	SC	6.00	West Miami	FL	2.50
Olathe	KS	5.66	Wichita	KS	2.00
Fort Worth	TX	5.40	Moline	IL	1.94
Northern Kentucky Sanitation District No. 1	KY	5.04	Santa Clarita	CA	1.92
Cedar Rapids	IA	5.02	Spokane Valley	WA	1.75
Mount Pleasant	SC	5.00	Shelby County	TN	1.50
Wilton Manors	FL	4.82	Columbia	MO	1.44
Griffin	GA	4.79	San Diego	CA	0.95
			Omaha	NE	0.71

*Philadelphia did not participate in this year's stormwater survey but has provided its residential stormwater charge for inclusion in this report.

FIGURE 31

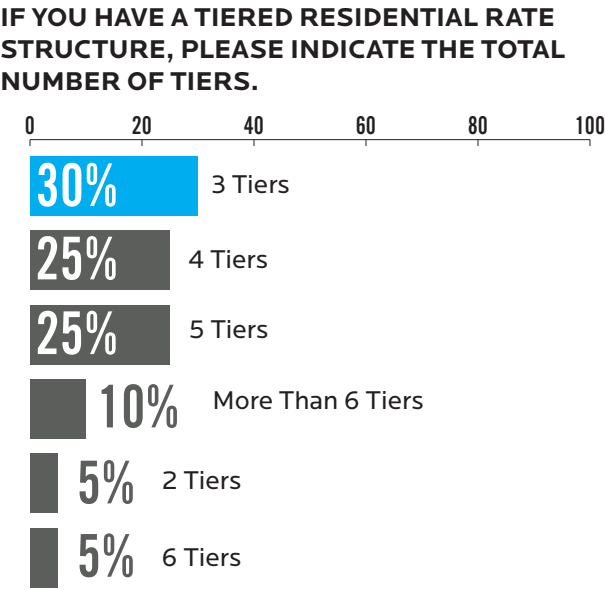


FIGURE 32

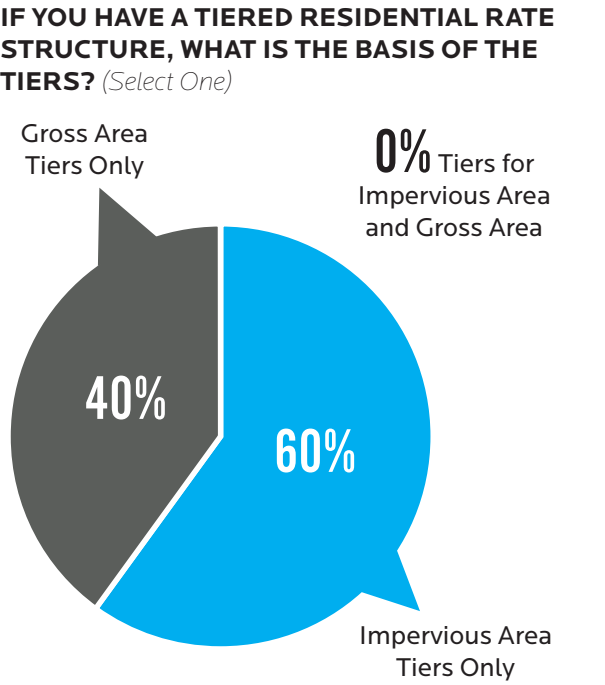


FIGURE 33

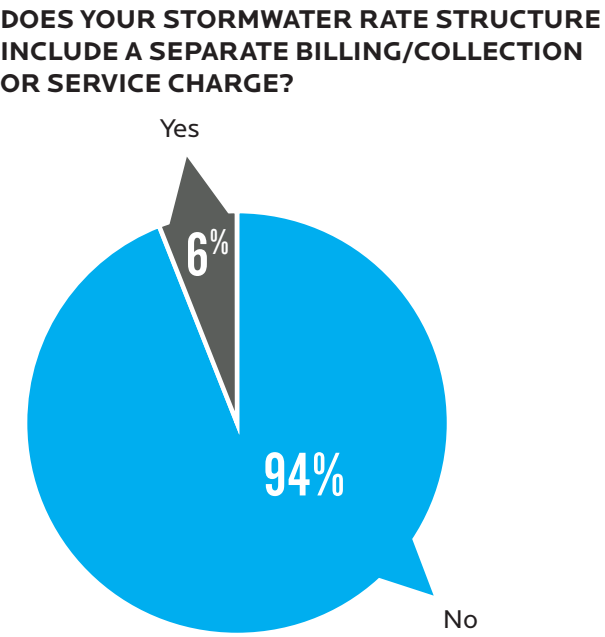


FIGURE 34

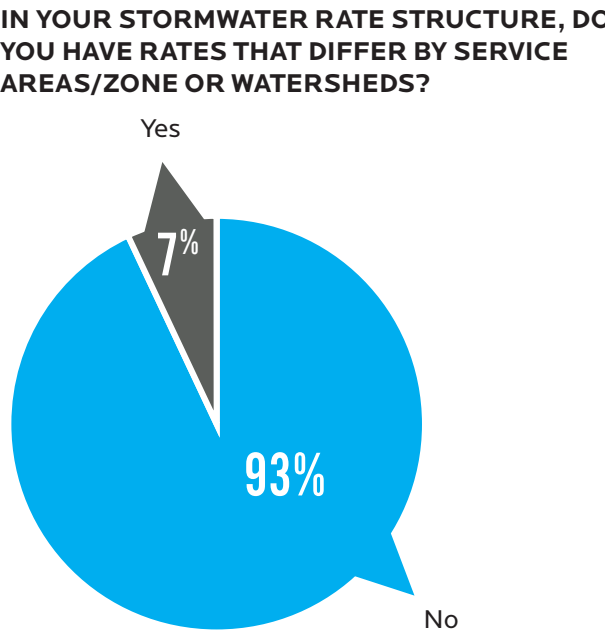


FIGURE 35

ARE ONE-TIME IMPACT/CAPITAL RECOVERY FEES APPLIED TO NEW STORMWATER UTILITY CUSTOMERS OR NEW DEVELOPMENT?

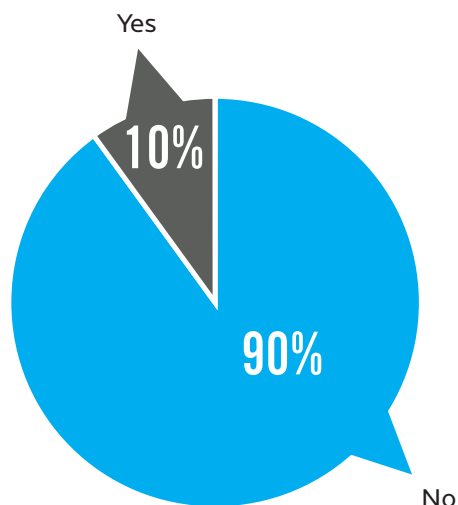


FIGURE 36

HOW FREQUENTLY DOES YOUR UTILITY UPDATE CUSTOMER PARCEL INFORMATION, SUCH AS CUSTOMER CLASSES AND GROSS AND IMPERVIOUS AREAS SPECIFIC TO STORMWATER BILLING? *(Select One)*

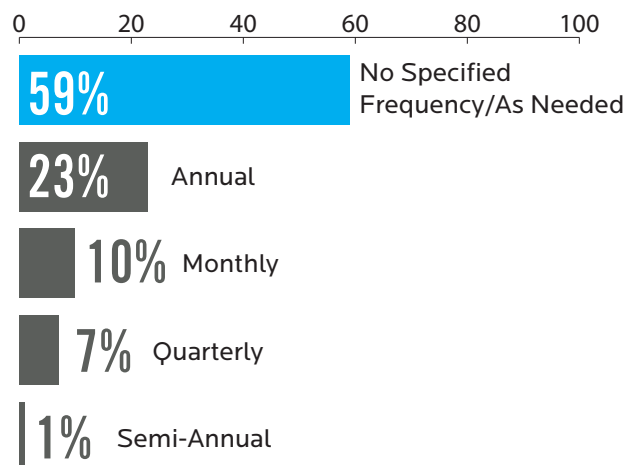


FIGURE 37

HOW ARE THE STORMWATER USER FEES BILLED? *(Select One)*

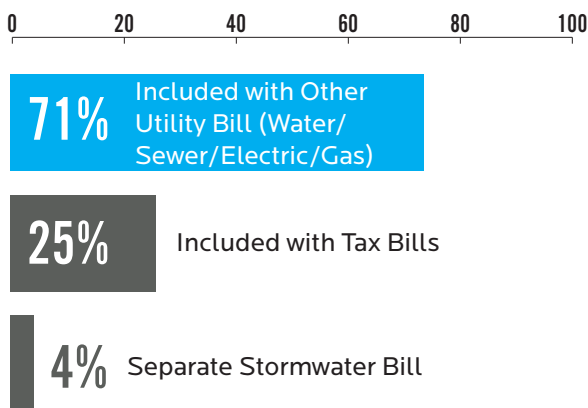


FIGURE 38

DOES YOUR UTILITY OFFER ANY OF THE FOLLOWING STORMWATER DISCOUNTS? STORMWATER DISCOUNTS ARE NOT THE SAME AS STORMWATER CREDITS, INCENTIVES, OR EXEMPTIONS. *(Select All That Apply)*

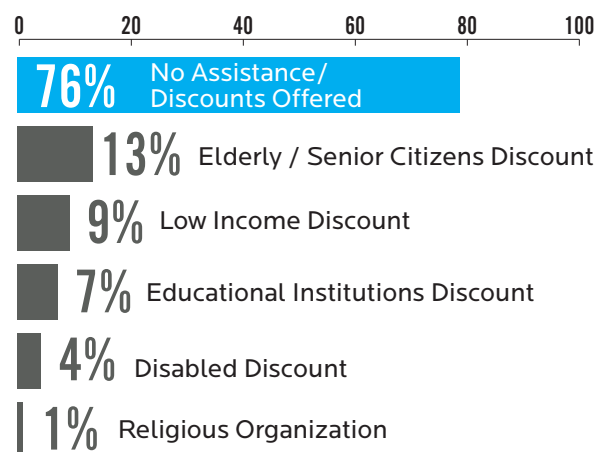


FIGURE 39

HOW DO YOU FUND CUSTOMER ASSISTANCE PROGRAMS (DISCOUNTS OR OTHER ASSISTANCE)?

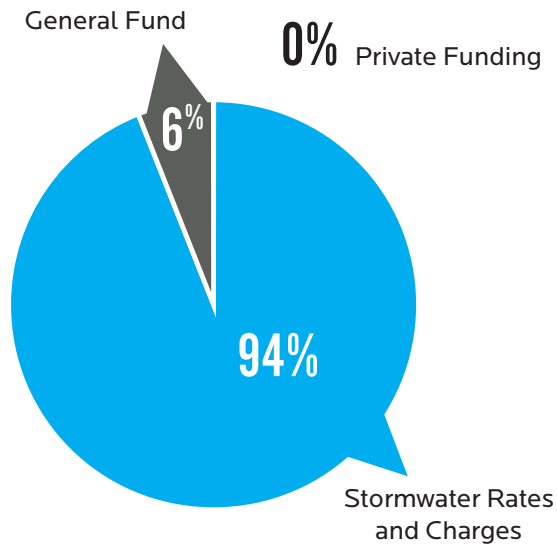


FIGURE 41

WHO IS RESPONSIBLE FOR PAYMENT OF THE STORMWATER USER FEES? (Select One)

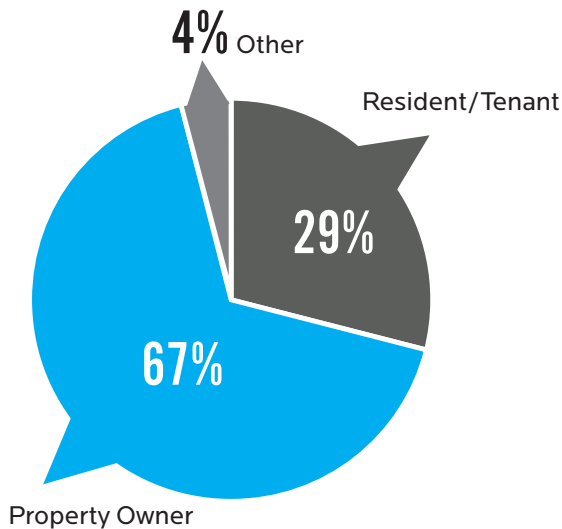


FIGURE 40

WHAT OF THE FOLLOWING CLASSES OF PROPERTIES ARE CURRENTLY EXEMPT FROM STORMWATER USER FEES? (Select All That Apply)

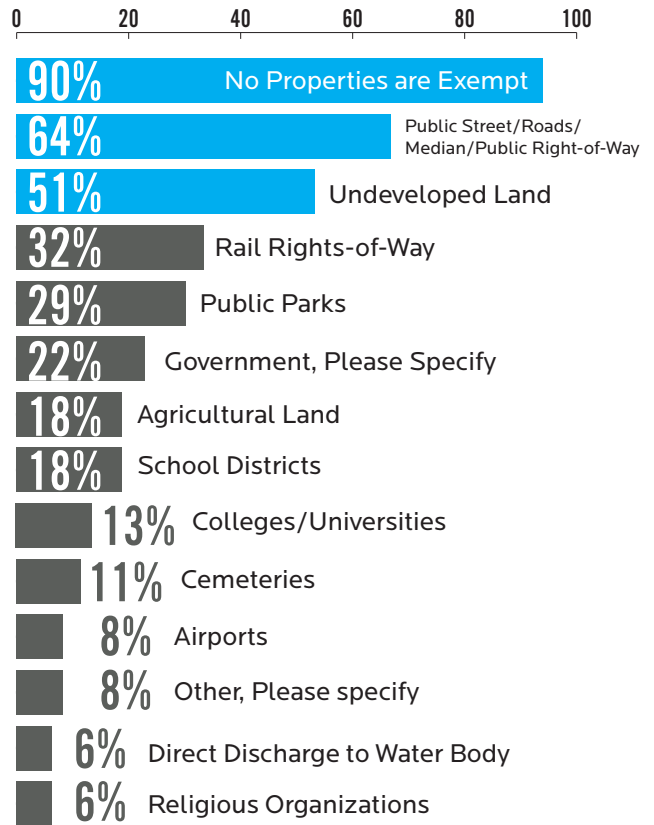


FIGURE 42

HOW IS PAYMENT ENFORCED? *(Select All That Apply)*

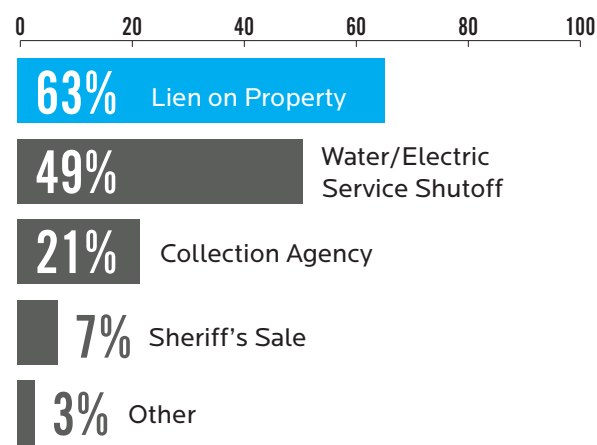


FIGURE 44

PLEASE INDICATE THE CUSTOMER/CLASS THAT CHALLENGED YOUR STORMWATER USER FEE. *(Select All That Apply)*



FIGURE 43

HAS YOUR UTILITY'S STORMWATER USER FEES EVER FACED A LEGAL CHALLENGE? *(Select All That Apply)*

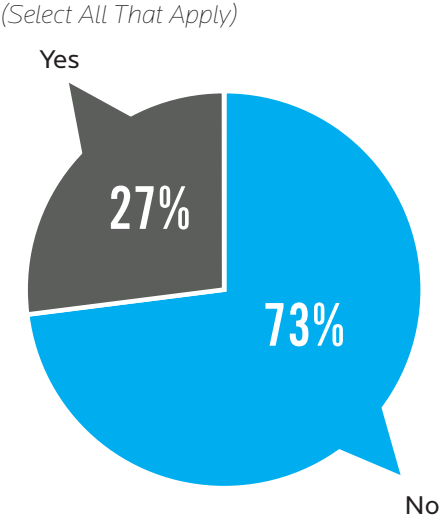
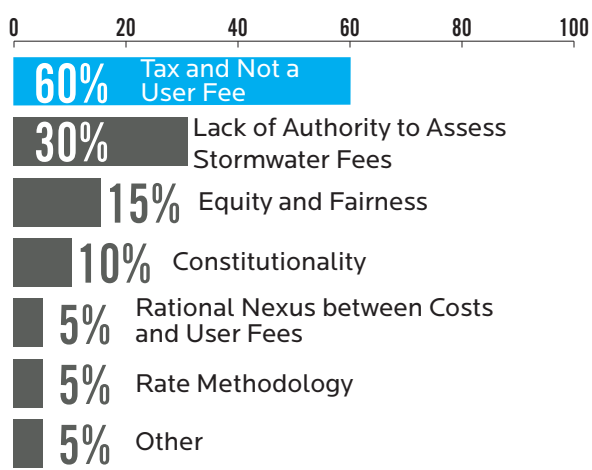


FIGURE 45

WHAT WAS THE BASIS OF THE CHALLENGE? *(Select All That Apply)*



9 Stormwater Credits & Incentives

Stormwater incentives are one-time monetary or other non-monetary assistance that municipalities offer to property owners and/or other entities such as developers primarily to foster private onsite stormwater management. Incentives can provide an effective mechanism to leverage public-private partnerships in stormwater management and thereby enhance green solutions beyond the traditional public Right-of-Way.

Stormwater credits are ongoing reductions in stormwater charges that properties can achieve for reducing demand on the stormwater system and/or reducing the utility's cost of service through onsite stormwater Best Management Practices (BMPs). Stormwater credits also offer the added benefit of enhancing the validity of "user fees" by providing customers the opportunity for voluntary control of their fees.

Adoption of Stormwater Credits and Incentives

The trend with respect to offering stormwater credits on user fees is increasing, but at a slower pace. Incentives are less common than stormwater credits as only 25% of the survey participants indicated offering some type of incentives to encourage private stormwater management. The challenge of recovering the potential revenue loss due to credits and the funding adequacy issue that utilities face are factors that likely contribute to the lower adoption of stormwater credits and incentives programs, among municipalities that have a stormwater user fee.

FIGURE 46

DOES YOUR UTILITY HAVE A STORMWATER CREDIT PROGRAM?

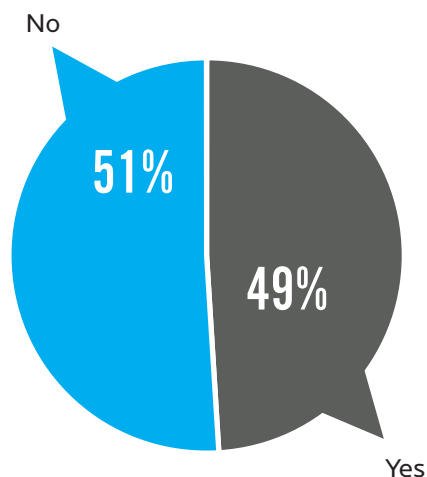


FIGURE 47

PLEASE INDICATE THE CLASSES OF PARCELS THAT ARE OFFERED STORMWATER CREDITS?
(Select One)

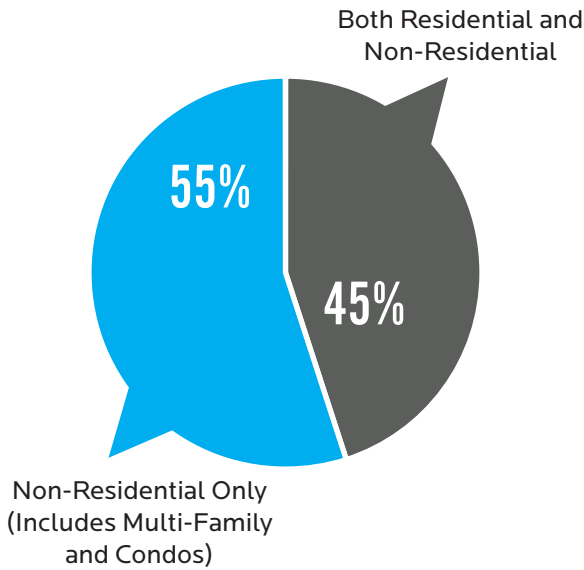


FIGURE 48

DO YOU OFFER CREDITS FOR ANY OF THE FOLLOWING STORMWATER MANAGEMENT ACTIONS?

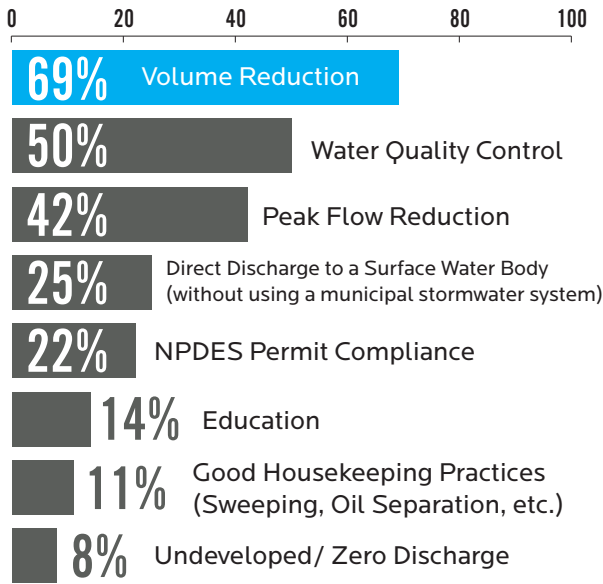


FIGURE 49

PLEASE INDICATE THE MAXIMUM ALLOWABLE CREDIT FOR EACH ACTION SELECTED.
(Select All That Apply)

MAXIMUM ALLOWANCE CREDIT	OVER 75%	50% - 75%	25% - 50%	LESS THAN 25%
Volume Reduction	24%	28%	32%	16%
Peak Flow Reduction	33%	7%	33%	27%
Water Quality Control	6%	28%	33%	33%
NPDES Permit Compliance	0%	0%	38%	62%
Education	0%	40%	20%	40%
Direct Discharge to a Surface Water Body (without using a municipal stormwater system)	67%	0%	11%	22%
Good Housekeeping Practices (Sweeping, Oil Separation, etc)	0%	0%	50%	50%
Undeveloped/Zero Discharge	0%	0%	67%	33%

FIGURE 50

IS THERE A CAP FOR THE TOTAL AMOUNT OF CREDITS THAT ARE OFFERED?

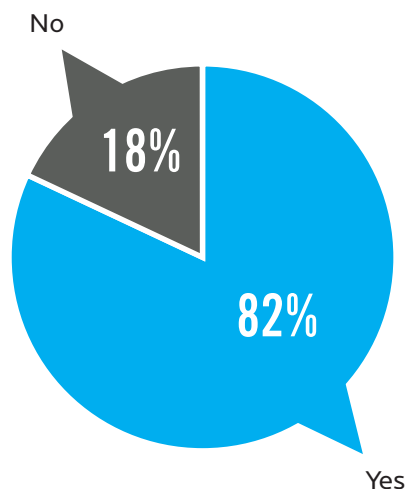


FIGURE 51

IF YES, WHAT IS THE MAXIMUM STORMWATER FEE REDUCTION?

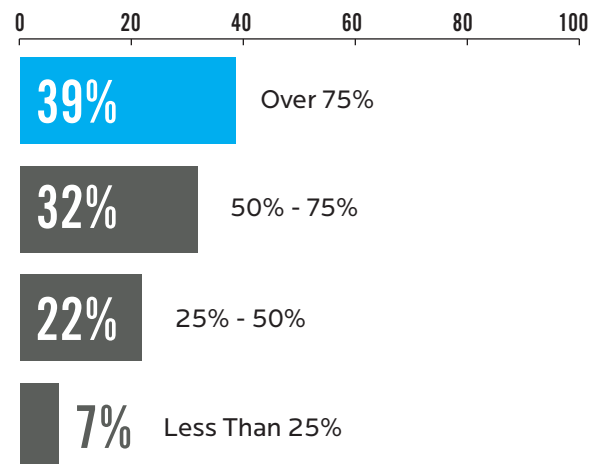


FIGURE 52

DO YOU OFFER CREDITS FOR ANY OF THE FOLLOWING TO ENCOURAGE “GREEN” OR LOW IMPACT DEVELOPMENT (LID) STORMWATER MANAGEMENT PRACTICES? *(Select All That Apply)*

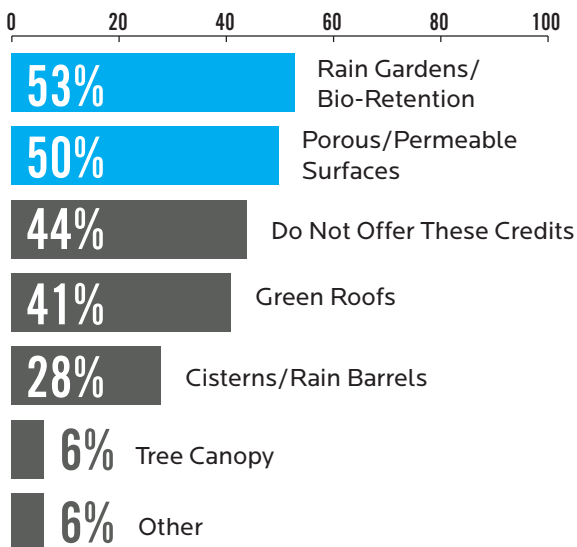


FIGURE 53

DO YOU OFFER CREDITS FOR RUNOFF MANAGEMENT FROM PERVIOUS AREA?

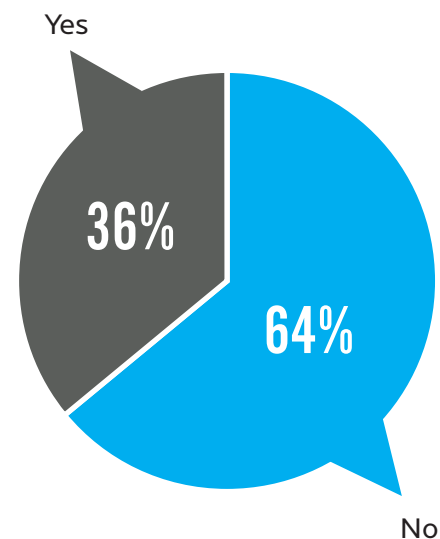


FIGURE 54

DO YOU CURRENTLY OFFER ANY TYPE OF STORMWATER CREDITS 'TRADING / BANKING' PROGRAM? *(Select One)*

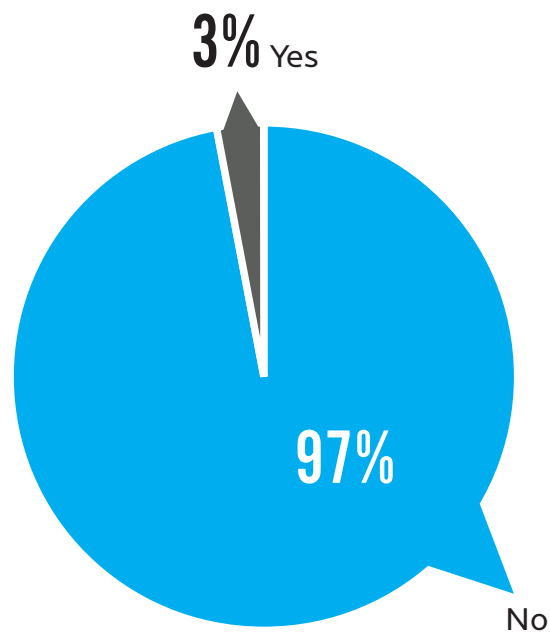
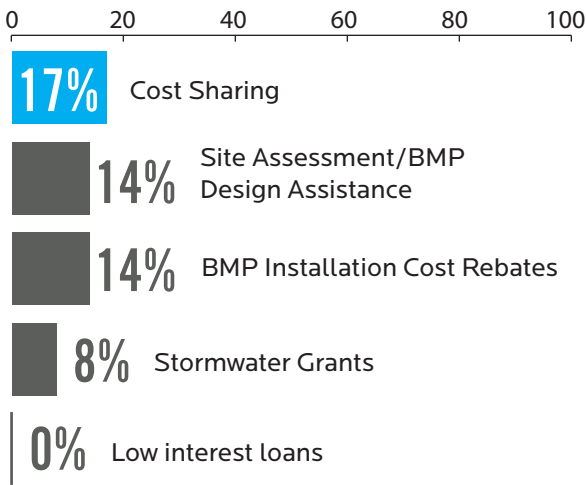


FIGURE 55

DO YOU OFFER ANY OF THE FOLLOWING INCENTIVE PROGRAMS? *(Select All That Apply)*



10

Public Information/ Education

The water/sewer sector has finally realized that national dialogue and focused campaigns are necessary to educate the public and the decision/policy makers on the value of water. This realization has helped launch initiatives such as the “Value of Water Coalition.” Similarly, in the stormwater sector, public education and outreach cannot be an afterthought but rather an integral best practice in stormwater management.

While public education and outreach is one of the MS4 permit requirements that utilities have to comply with, it is intriguing that only 51% of the survey participants deem organized public education as “essential.” Even municipalities that have successfully established user fees, need to engage in continuous public education to build financial and operational resilience in stormwater management.

In terms of the effectiveness of public education forums, consistent with the previous survey, direct interface with customers through community events/presentations continues to rank the highest. However, this year, utility managers have also rated utility websites and workshops for elected officials/boards as highly important in ensuring effective public education.

FIGURE 56

HOW IMPORTANT IS AN ORGANIZED ONGOING PUBLIC INFORMATION/EDUCATION EFFORT TO THE CONTINUING SUCCESS OF A USER FEE FUNDED STORMWATER UTILITY? *(Select One)*

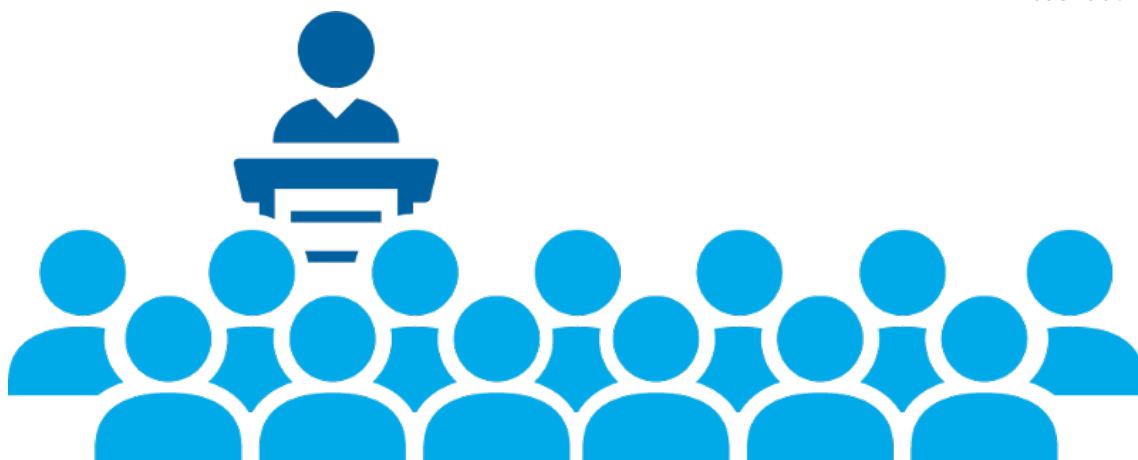
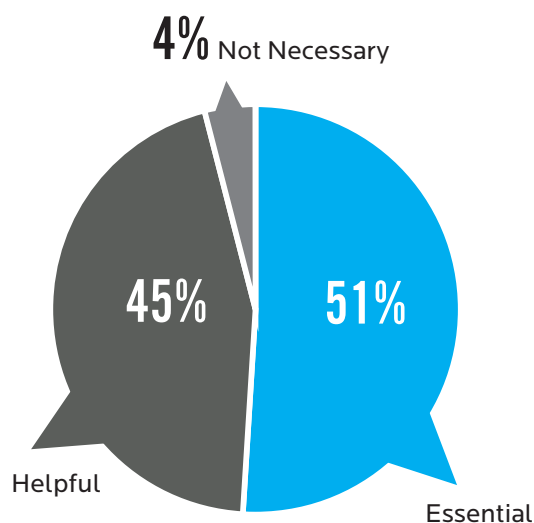
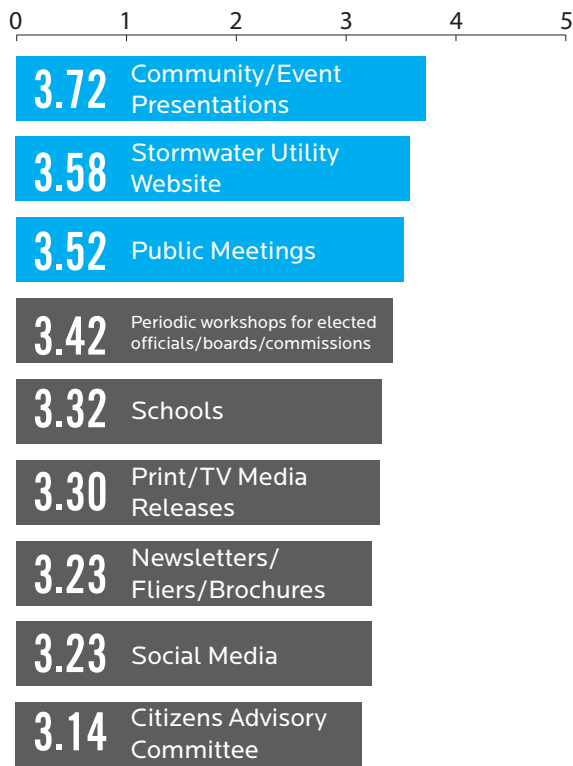


FIGURE 57

PLEASE RANK THE EFFECTIVENESS OF THE SPECIFIC ACTIVITIES YOU HAVE UNDERTAKEN TO SECURE STAKEHOLDER APPROVAL AND SUPPORT FOR STORMWATER USER FEES. PLEASE RATE ONLY THE ACTIVITIES YOU HAVE UNDERTAKEN. (1 = Least Effective; 5 = Most Effective)



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