

DOEE also developed expanded reporting options for the Stormwater Database to enhance the ability of program administrators to track program implementation. Custom dashboards and queries allow program administrators to view and export data in real time. This allows DOEE to identify process bottlenecks and to assess overall program implementation across the District.

In FY 2017, DOEE added several new Stormwater Database features:

- An electronic plan approval stamp allows DOEE permit reviewers to stamp SWMPs as PDFs rather than requiring physical plans. This helps to streamline DOEE's review process and improve electronic recordkeeping of SWMP approvals.
- DOEE began tracking the RiverSmart Homes program through the Stormwater Database. This module syncs with an ArcGIS collector app that RiverSmart Homes staff use in the field to make BMP recommendations.
- DOEE implemented a Stormwater Database feature to streamline the process for inspectors to upload photo evidence from their inspections.

DOEE also continued to migrate additional BMP data sources. In FY 2017, DOEE migrated its list of voluntary green roof projects into the Stormwater Database. DOEE continued to validate BMP data from historical SWMPs.

As previously stated, DOEE will coordinate with EPA staff to identify the data fields related to the MS4 Permit performance metrics and provide the relevant data upon request.

More information about the Stormwater Database can be found at: <http://doee.dc.gov/swdb>.

FY 2018 Goals: DOEE will continue to migrate historic data into the database and validate historical records. DOEE will expand the database to include new features, to track additional information for DOEE's programs, and to incorporate new programs within the Stormwater Database. Updates about the operation and implementation of the BMP tracking database will be included in future Annual Reports.

4.1.3 Off-Site Mitigation and/or Fee-in-Lieu

The 2013 Stormwater Rule provides regulated sites with flexible options for meeting regulatory requirements. Under the rule, each major regulated project must meet a stormwater retention volume (SWRv) based on either the 0.8 or 1.2 inch storm. A regulated site may meet a portion of its SWRv through Stormwater Retention Credits (SRCs) that are purchased in a private market or through payment of ILF to the District government. Program details are contained in Section 527 and Sections 530 through 534 of the 2013 Stormwater Rule and Chapters 6 and 7 of the 2013 Stormwater Management Guidebook. The regulations and trading program meet the requirements of Section 4.1.3 of the MS4 Permit. For full program information and to view the SRC Registry, visit <http://doee.dc.gov/src>.

SRC Price Lock Program

In FY 2017, DOEE made a significant investment to accelerate GI retrofits in MS4 areas by continuing to develop and establish three new programs: the SRC Price Lock Program, the SRC

Aggregator Startup Grant Program, and the SRC Site Evaluation Program (the FY 2016 annual report described a grant that DOEE issued to the Center for Watershed Protection (CWP) to assist in the development of these programs). Participation in each of these programs is restricted to new, voluntarily-installed green infrastructure in the MS4.

Through the SRC Price Lock Program, participants have the option to sell their SRCs to DOEE at fixed prices, effectively creating a price floor in the SRC market. This provides investors with the confidence necessary to commit funding to SRC-generating projects in the MS4. The initial terms offered by DOEE allow for projects to sell their SRCs to DOEE for the first 12 years of SRC certification. All SRCs purchased through this program will be retired and removed from the market so that they cannot be resold and cannot be used to meet a regulatory obligation. DOEE has made \$11.5 million available solely for SRC purchases. DOEE began accepting applications to participate in the SRC Price Lock Program in early FY 2018.

Projects will apply for the SRC Price Lock Program in the early stages of design. Participants will receive an SRC Purchase Agreement that includes the terms by which the project can sell SRCs to DOEE. After the participating project is built and SRCs are generated (which requires a maintenance inspection and a maintenance contract or plan), the owner of the SRCs will have the option to either sell the SRCs on the market or execute the SRC Purchase Agreement with DOEE. When regulated construction projects purchase SRCs on the market from SRC Price Lock projects, this shifts investment in green infrastructure to areas that drain directly to the District’s waterbodies without treatment, maximizing water quality benefits. This also makes DOEE’s SRC Price Lock funding available to support additional projects. DOEE expects that the SRC Price Lock Program will help to accelerate the restoration of the District’s waterbodies while providing developers with a supply of affordable SRCs from the MS4 that they can use to comply with regulatory obligations.

DOEE is offering prices for the first 6 years of SRC certification that are expected to help recoup project costs. Green infrastructure provides a larger water quality benefit when it is located in areas that drain to small streams and tributaries (which DOEE refers to as the non-tidal MS4). For that reason, DOEE is offering a higher price to projects in the non-tidal MS4 than to projects in areas that drain directly to the main stem of the tidal Anacostia and Potomac Rivers. DOEE is offering a price for years 7 through 12 that is expected to cover the cost of BMP maintenance. Since projects can expect to receive enough revenue to cover maintenance costs, this helps to ensure that the green infrastructure installed through this program is maintained long-term.

DOEE will purchase SRCs according to the terms listed in Table 8.

Table 8 SRC Purchase Terms

Project Location	Price for years 1 through 6	Price for years 7 through 12
Non-Tidal MS4	\$1.95	\$0.40
Tidal MS4	\$1.70	\$0.40
CSS	N/A	N/A

In addition to the \$11.5 million that will be available for SRC purchases, DOEE also prepared two programs to support the design of SRC-generating BMPs for participation in the SRC Price Lock Program. SRC aggregating businesses that want to design and install green infrastructure to generate SRCs from multiple projects can apply for an SRC Aggregator Startup Grant of up to \$75,000. These grants support technical and outreach work to identify green infrastructure opportunities on properties whose owners are interested in a green infrastructure project. Property owners who want direct assistance from DOEE can apply for an SRC Site Evaluation.

SRC Market Activity

The SRC market and Offv programs grew substantially in FY 2017. The SRC market experienced 12 trades for a total of 74,505 SRCs selling at an average price of \$2.07. The total trading activity in FY 2017 exceeded that of all prior FYs combined, both in terms of the number of individual transactions and the total number of SRCs sold.

In FY 2017, DOEE approved 8 applications to certify Stormwater Retention Credits accounting for 1,897,877 SRCs, of which 96,020 SRCs represent new supply in the SRC market. The other 1,801,857 SRCs were generated by SRC owners who have informed DOEE there are no plans to sell the SRCs. The SRCs are being banked with the intention of meeting the SRC owners' Offv obligations on future projects if they arise. As a result, these SRCs do not represent supply on the SRC market and are not expected to impact market equilibrium.

Among the SRCs certified in FY 2017, DOEE approved the first SRCs for a green infrastructure project that was motivated primarily by the opportunity to generate and sell SRCs. The bioretention project was installed by an SRC-aggregating business on a property owners by a religiously-affiliated non-profit in located in Ward 7. DOEE certified 33,495 SRCs for the project in May, 2017 and posted a case study on its website at <http://doee.dc.gov/src>.

Of the SRCs approved in FY 2017, 96.9% represent green infrastructure located in the Anacostia River watershed. 2.7% represent green infrastructure located in the Potomac River watershed. 0.4% represent green infrastructure located in the Rock Creek watershed. 99.4% of SRCs represent green infrastructure located in the MS4 and 0.6% represent green infrastructure located in the CSS.

The 12 SRC trades in FY 2017 were driven primarily by projects with Offv obligations that were nearing the end of construction along with two project purchasing SRCs to use for a subsequent year of Offv compliance. DOEE received three ILF payment in FY 2017, totaling \$7,996.26. One project that paid \$780.44 subsequently applied to use SRCs. As a result, DOEE pro-rated the ILF payment and reimbursed the project \$675.67. Projects may use SRCs or pay ILF to achieve Offv compliance in a later fiscal years, which means that some of these trades and payments will achieve Offv compliance in FY 2018.

In FY 2017, DOEE approved 16 permit applications for sites with Offv, bringing the total number of sites with Offv to 47 (these values exclude any site that was originally approved with an Offv but has subsequently been approved for a revision to eliminate the Offv). The increase in the number of plans with Offv is expected to stimulate trades in the market into the future. 16

projects with Offv finished construction in FY 2017, representing new demand for SRCs (or new ILF payments). The increase in the number of approved plans with Offv and the increase in the overall Offv approved is expected to stimulate trades in the market into the future.

In FY 2017, DOEE also updated the publicly-available information about the SRC program in the SRC and Offv Registry, which is available via the Stormwater Database. These updates are intended to increase program transparency and provide more information about program activity. Due to increased trading activity, DOEE began publishing yearly average prices, as well as averages for the most recent 12-month period (which updates daily). This makes it easier for participants to find typical trading prices. Additionally, DOEE updated its lists of “Expected SRCs” and “Expected Offv” to more clearly show the current and future SRC supply and demand. The SRC and Offv Registry is available at <http://doee.dc.gov/src>.

Information about SRC and Offv program activity in FY 2017 is summarized in the below charts and tables.

SRCs Certified

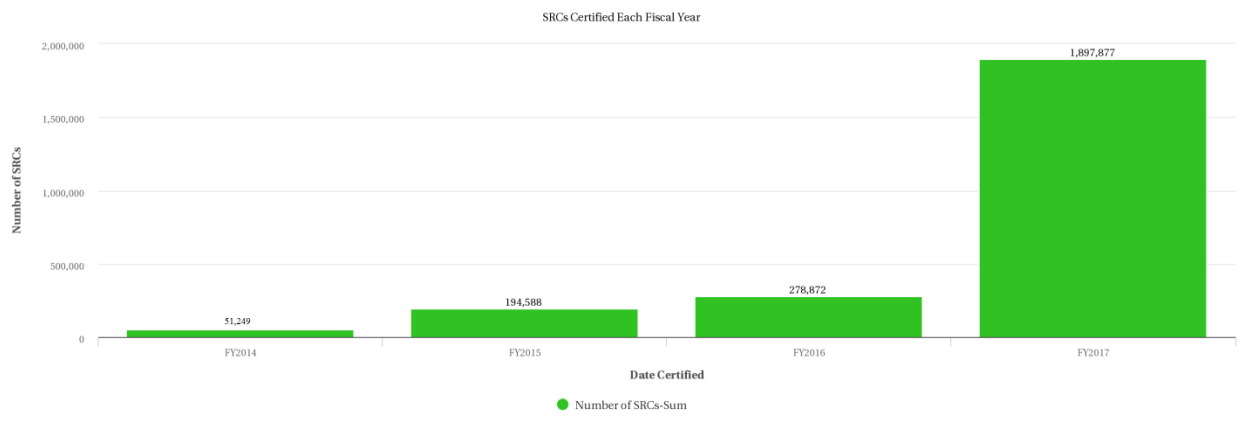


Figure 1 SRCs Certified per Fiscal Year

The SRC program has continued to grow from year to year. Figure 1 shows the SRCs certified in each fiscal year, with 1,897,877 SRCs certified in FY 2017. DOEE certifies up to 3 years’ worth of SRCs on one application, so each fiscal year shown in Figure 1 represents up to 3 years’ worth of SRCs. Some SRC owners generate SRCs to bank for Offv compliance for future projects, if these obligations arise. Table 9 shows how many SRCs certified each year represent supply in the SRC market. This is based on information provided to DOEE by applicants along with decisions by applicants to not list SRCs for sale.

Table 9: SRCs Certified Each Fiscal Year

Fiscal Year	SRCs approved - SRC Sellers	SRCs Approved - Projects Generating but not Selling SRCs	Total
FY 2014	51,249	0	51,249
FY 2015	71,588	123,000	194,588
FY 2016	125,917	152,955	278,872
FY 2017	96,020	1,801,857	1,897,877
Total	344,774	2,077,812	2,422,586

Each SRC has a vintage year that represents the year during which SRCs achieve retention. A vintage year is based on the date DOEE receives a complete application and each anniversary thereafter, for up to 3 years of certification. More information about SRC certification is available in Table 10, including the certification and vintage year for each SRC.

Each application may result in SRC certification for up to 3 years, which is shown in the Vintage Year columns. In most instances, the vintage occurs partially in two fiscal years. For simplicity, this table reports the fiscal year during which the SRC begins to achieve retention. For example, an SRC with a vintage from 5/10/2017 through 5/9/2018 would achieve retention during both FY2017 and FY2018, but would be reported only in the FY2017 column.

DOEE may receive an SRC certification application in one fiscal year and approve it in the next fiscal year. The vintage date for each SRC is based on the date DOEE receives a complete SRC certification application, rather than the date DOEE makes an approval of that application. For this reason, two projects were approved in FY 2017 with a vintage date in FY 2016.

Due to space limitations, this table includes information about all SRCs with vintage years since FY 2016. Information about SRCs with vintage years prior to FY 2016 can be found in prior annual reports.

Table 10 SRCs Certified With Vintages Since FY2016

SRC Certification Date	Watershed	Sewershed	Total SRCs (Vintages since FY 2016)	Vintage Year			
				FY2016	FY2017	FY2018	FY2019
8/15/2017	Rock Creek	CSS	2334		778	778	778
5/10/2017	Anacostia	MS4	33495		11,165	11,165	11,165
5/3/2017	Anacostia	MS4	672		224	224	224
4/21/2017	Potomac	MS4	51249		17,083	17,083	17,083
12/15/2016	Rock Creek	CSS	5891		2,373	1,759	1,759
11/21/2016	Anacostia	MS4	1738665	579,555	579,555	579,555	
11/16/2016	Anacostia	CSS	3051		1,017	1,017	1,017
10/5/2016	Anacostia	MS4	62520	20,840	20,840	20,840	
9/28/2016	Anacostia	MS4	41334	13,778	13,778	13,778	
9/2/2016	Anacostia	MS4	111621	37,207	37,207	37,207	
3/7/2016	Anacostia	MS4	38826	19,413	19,413		
2/19/2016	Anacostia	CSS	12203		12,203		
2/17/2016	Anacostia	CSS	12203	12,203			
10/30/2015	Potomac	CSS	62685	20,895	20,895	20,895	
9/24/2015	Potomac	MS4	82000	41,000	41,000		
7/2/2015	Anacostia	CSS	4366	4,366			
6/12/2015	Potomac	MS4	20330	10,165	10,165		
1/29/2015	Rock Creek	CSS	8632	4,316	4,316		
4/29/2014	Potomac	MS4	17083	17,083			
TOTAL			2,309,160	780,821	792,012	704,301	32,026

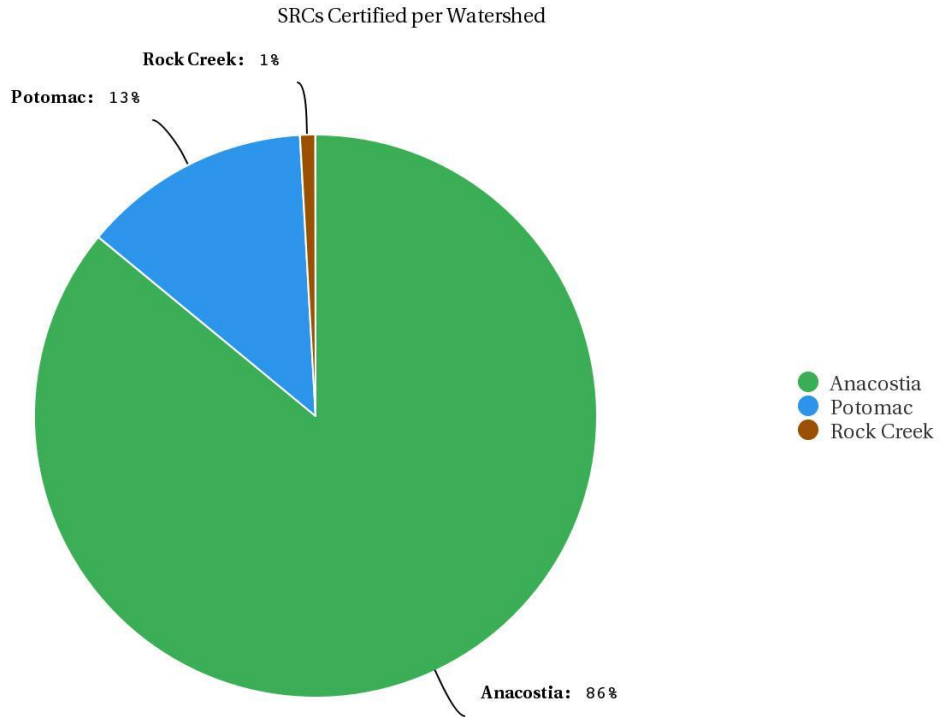


Figure 2 SRCs Certified per Watershed (All SRCs Certified FY2014-FY2017)

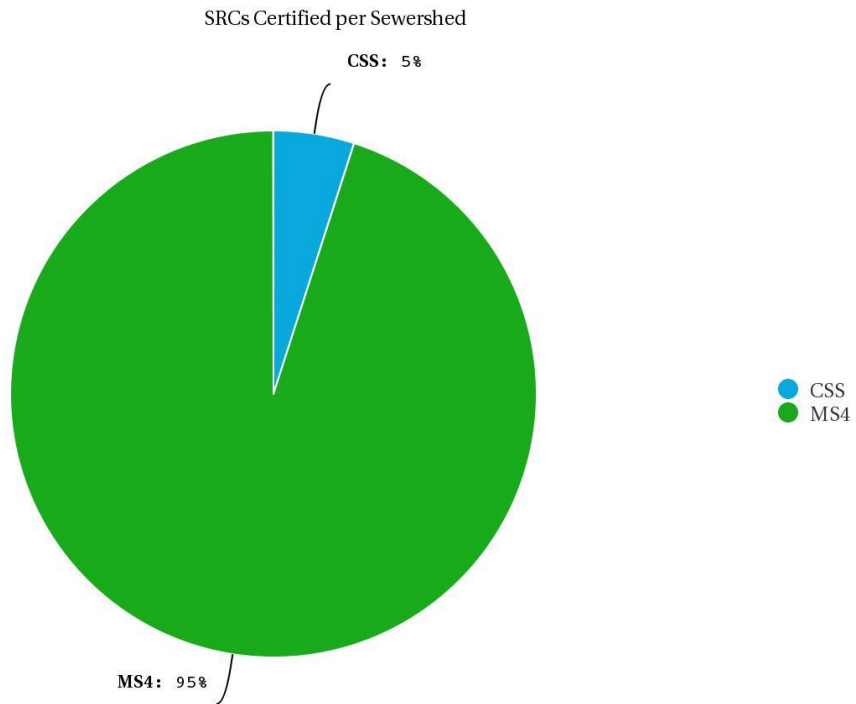


Figure 3 SRCs Certified per Sewershed (All SRCs Certified FY2014-FY2017)

Off-Site Retention Volume

In FY 2017, DOEE approved 16 projects with Offv. Figure 4 shows the number of projects approved with Offv each fiscal year (these values exclude any site that was originally approved with an Offv but has subsequently been approved for a revision to eliminate the Offv). More projects with Offv translate to increased potential demand in the SRC market. This creates additional incentive for more voluntary green infrastructure projects to meet that demand.

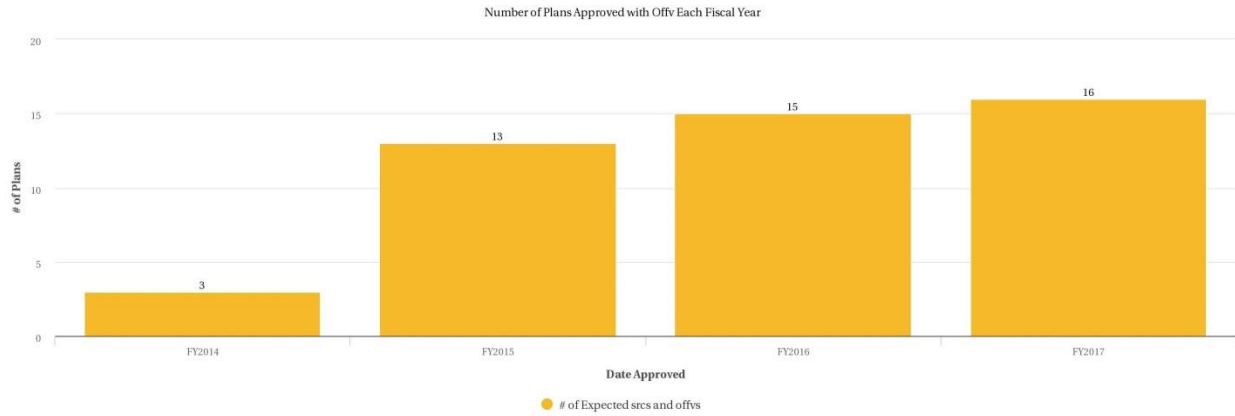


Figure 4 Number of Plans Approved with Offv

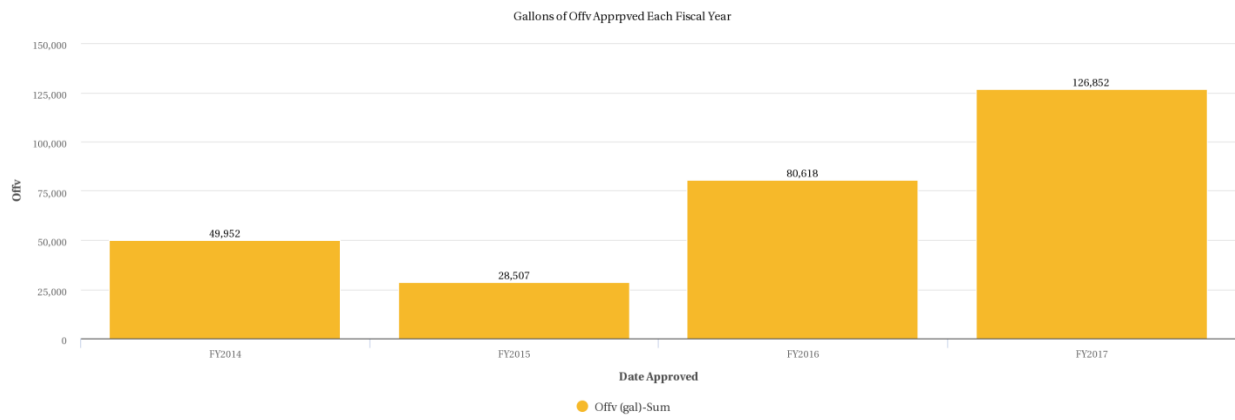


Figure 5 Gallons of Offv Approved Per Year

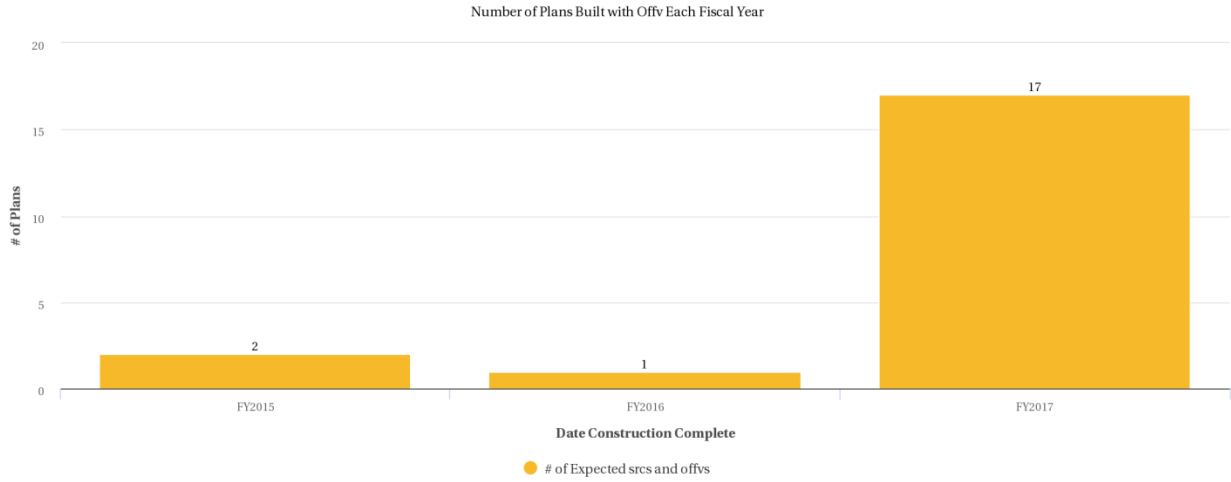


Figure 6 Number of Plans Built with Offv Per Year

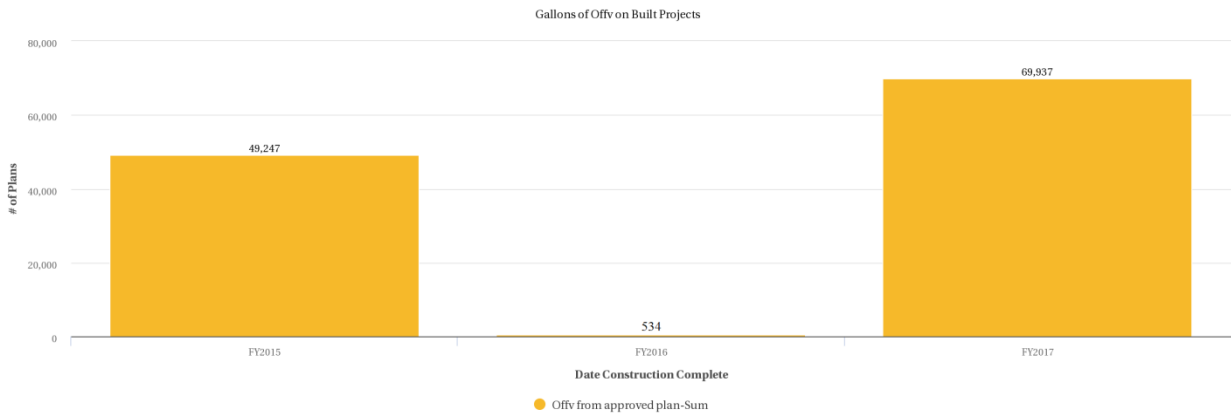


Figure 7 Gallons of Offv on Built Projects Per Year

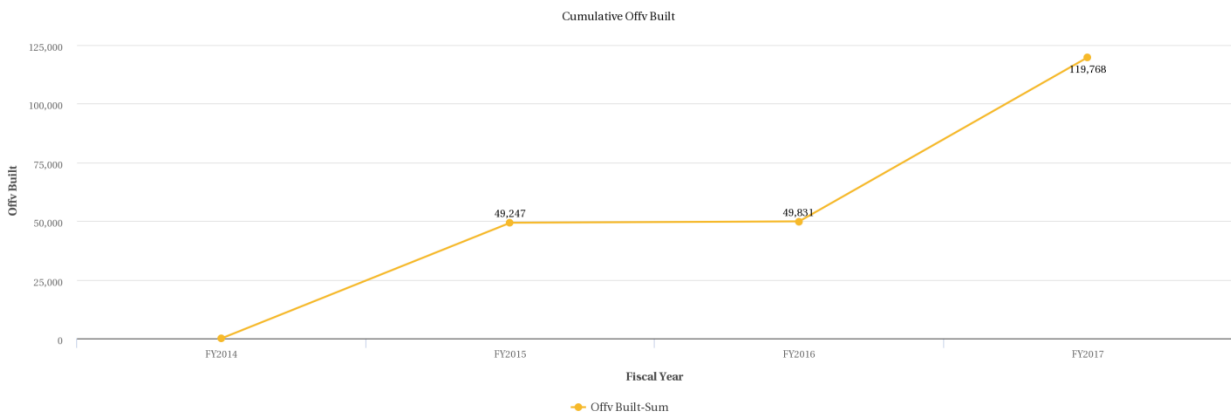


Figure 8 Gallons of Offv on Built Projects (Cumulative)

SRC Trades

The number of SRC trades increased substantially in FY 2017, particularly during the second half of the fiscal year. All trades were driven by projects that were nearing the end of construction or their next Offv compliance date. Table 11 lists the price for each trade, and as each trade represents a different number of SRCs, a weighted average price for all trades is included.

Table 11 FY2017 SRC Trades

Date	Number of SRCs	Purchase Price	Value of Trade
9/20/2017	1,455	\$1.90	\$2,764.50
8/30/2017	903	\$2.00	\$1,806
7/28/2017	584	\$2.00	\$1,168
7/19/2017	4,950	\$2.00	\$9,900
6/13/2017	621	\$1.80	\$1,117.80
6/12/2017	6,403	\$2.50	\$16,007.50
6/9/2017	1,500	\$2.00	\$3,000
5/25/2017	24,505	\$2.00	\$49,010
5/10/2017	669	\$1.85	\$1,237.65
4/5/2017	12,671	\$2.35	\$29,776.85
3/9/2017	9,231	\$1.90	\$17,538.90
10/13/2016	11,013	\$1.90	\$20,924.70
TOTAL/AVERAGE	74,505	\$2.07	\$154,252

Offv Compliance

A regulated site must begin to comply with its Offv as of the date of its Final Construction Inspection and every year thereafter. Projects with Offv must use SRCs and/or pay ILF for each year of Offv compliance. Table 12 shows periods of Offv compliance that began in FY 2017, regardless of when ILF payment was received or when SRCs were certified and traded.

Table 12 Offv Compliance in FY2017

Offv Compliance Start Date	Offv (gallons)	SRCs Used	ILF Payment	Notes
10/4/2016	1622		\$5,806.76	End of Construction
10/8/2016	38234	38324		Renewed Offv Compliance
10/14/2016	534	534		End of Construction
10/31/2016	11013	11013		Renewed Offv Compliance
11/21/2016	705	705		End of Construction
1/9/2017	380		\$1,360.40	End of Construction
2/10/2017	4177	4177		End of Construction
3/17/2017	29*		\$104.77*	End of Construction
3/22/2017	3077	3077		End of Construction
4/4/2017	24505	24505		End of Construction
4/11/2017	8229	8229		End of Construction
5/5/2017	218*	218*		Renewed Offv Compliance
6/5/2017	12671	12671		End of Construction
6/15/2017	6403	6403		End of Construction
6/27/2017	651	651		End of Construction
7/11/2017	2142	2142		End of Construction
7/25/2017	223	223		End of Construction
8/11/2017	2324	2324		End of Construction
8/24/2017	584	584		Renewed Offv Compliance
9/7/2017	1455	1455		End of Construction
9/21/2017	621	621		End of Construction
TOTAL	119,797	117,856	\$7,947.60	

*This project made a \$780.44 In-Lieu Fee payment to satisfy its Offv obligation effective 3/17/2017. It subsequently applied to use 218 SRCs and started a new, full year of Offv compliance effective 5/5/2017. DOEE pro-rated and reimbursed \$675.67 of the ILF payment. For this reason, 29 gallons of Offv were satisfied by ILF payment prior to 218 gallons of Offv satisfied with SRC use. The also accounts for a total Offv achieved of 119,797 instead of 119,768.

SRCs Used in FY 2017 – Spatial Distribution

An SRC certified in one location in the District can be used to comply with an Offv requirement in another sewershed or watershed. As shown in Figure 9, 49.66% of the SRCs that were used in FY 2017 were generated by green infrastructure practices located in the MS4 and were used by projects to comply with Offv requirements in the CSS. 33.58% of the SRCs that were used in FY 2017 were both generated and used in the MS4. 16.76% of the SRCs used in FY 2017 were both generated and used in the CSS.

45% of the SRCs that were used in FY2017 were generated by GI located in the Potomac River watershed and were used in the Anacostia River watershed. 26% of SRCs used in FY 2017 were generated in the Anacostia River watershed and used in the Potomac River watershed. 11% of SRCs used in FY 2017 were both generated and used within the Anacostia River watershed. 11% of SRCs used in FY 2017 were both generated and used within the Potomac River watershed. 6% of SRCs used in FY 2017 were generated in the Rock Creek watershed and used in the Anacostia River watershed. 1% of SRCs used in FY 2017 were generated in the Potomac River watershed and used in the Rock Creek watershed.

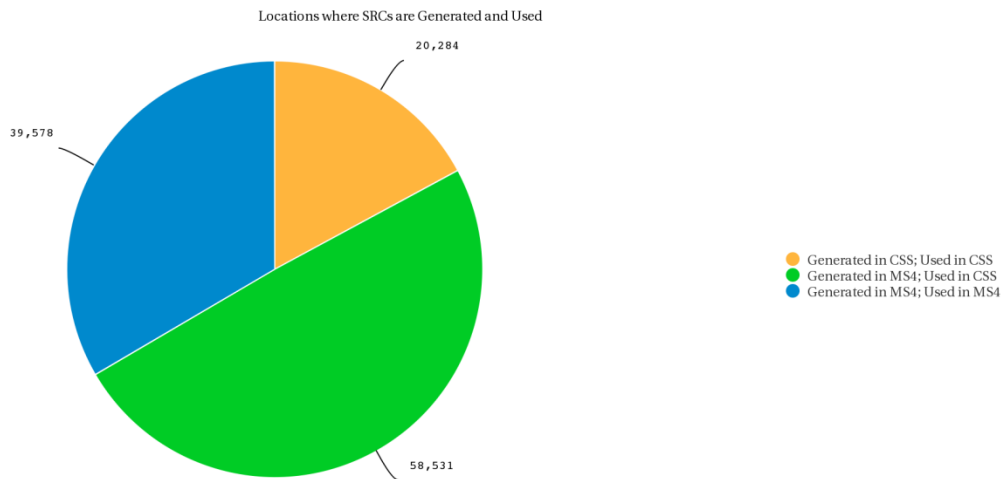


Figure 9 SRCs Used in FY2017 - Spatial Distribution by Sewershed

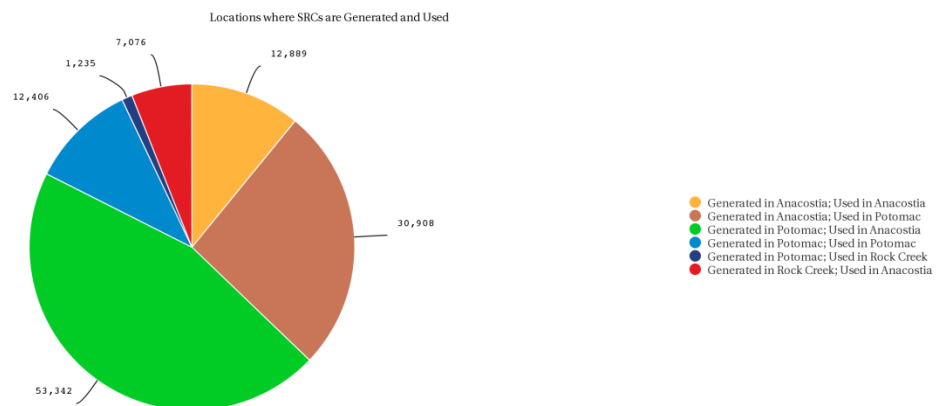


Figure 10 SRCs Used in FY2017 - Spatial Distribution by Watershed

SRCs Used in FY 2017 – Temporal Distribution

DOEE certifies up to three years' worth of SRCs at a time and SRCs may be banked indefinitely. DOEE tracks SRC vintage, which is the year for which an SRC represents a gallon of retention. The first SRC vintage year begins the date DOEE receives a complete SRC Certification application. Subsequent years of vintage begin on the anniversary of this date.

Offv compliance is also tracked on an annual basis. A regulated site with an Offv must begin to comply with its Offv as of the date of its final construction inspections.

Figure 11 Temporal Distribution of SRCs Used in FY2017 Figure 11 through Figure 14 report on, for SRCs used in FY 2017, the extent to which the SRC vintage year overlaps with the regulated sites' Offv compliance. The SRC vintage year in green and the Offv compliance in blue. The number of SRCs represented by each pair of bars is shown on the left size of the vertical axis. For example, the chart shows that 38,234 SRCs had a vintage from 9/24/2016 through 9/23/2017 and were used for Offv from 10/8/2016 through 10/7/2017.

Figure 14 summarizes this information and shows that 56.6% of the SRCs used in FY 2017 had a vintage year that overlaps with the Offv for which the SRCs were used. 42.6% of the SRCs used in FY 2017 had a vintage year that did not overlap with the Offv for which they were used, but were within one year of overlapping. 0.8% of the SRCs used in in FY 2017 had a vintage year that was within two years of overlapping the Offv compliance period. It is worth noting that the vintage year for these SRCs occurred before the year of Offv compliance for which they were used, meaning that the environmental performance of the green infrastructure represented by these SRCs occurred in full prior to beginning the period for which it was needed.

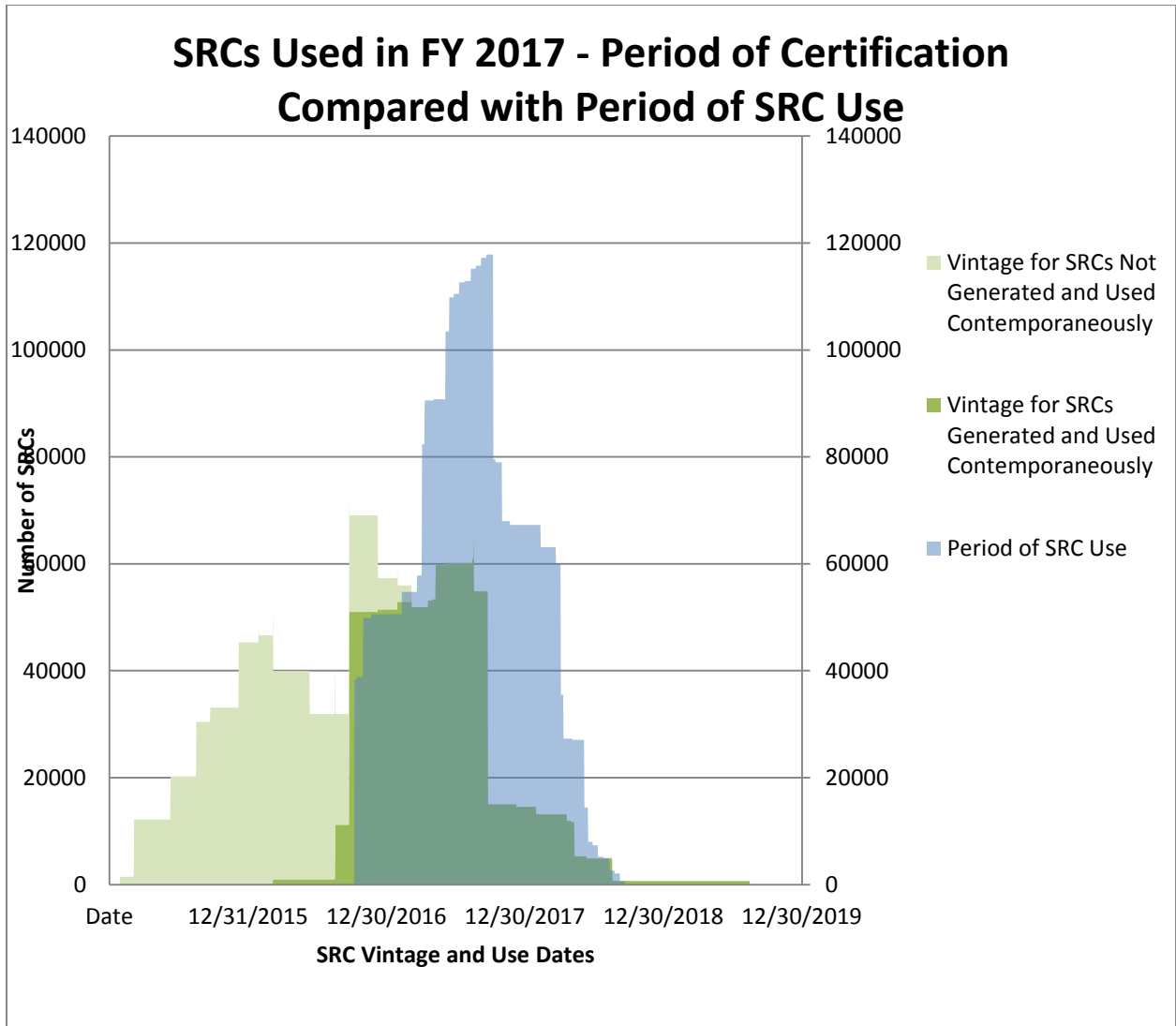


Figure 11 Temporal Distribution of SRCs Used in FY2017

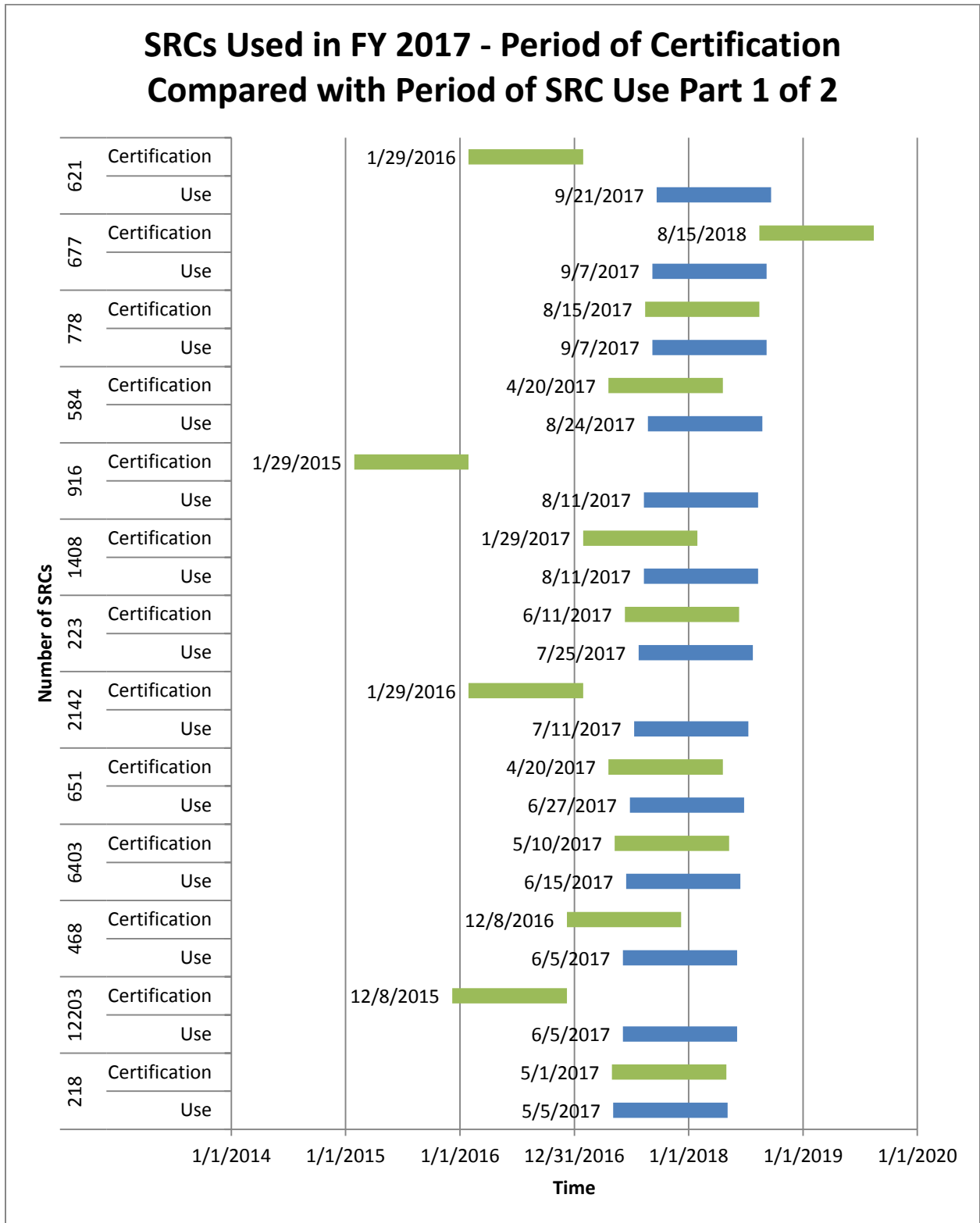


Figure 12 Temporal Distribution of SRCs Used in FY2017

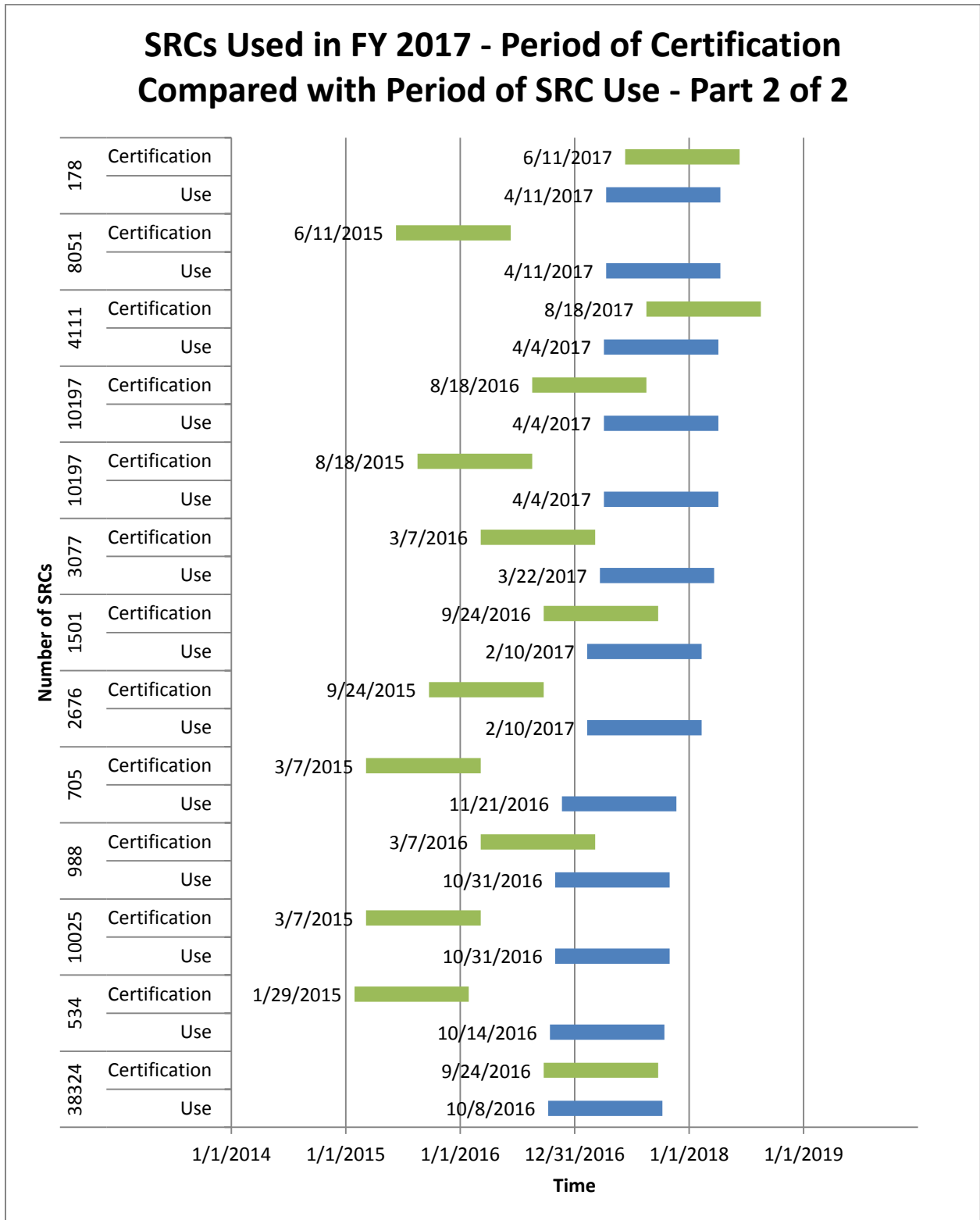


Figure 13 Temporal Distribution of SRCs Used in FY2017

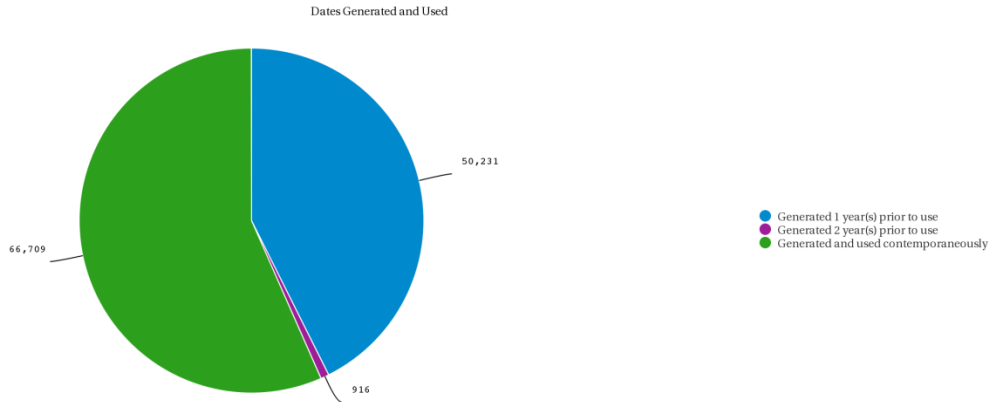


Figure 14 Summary of Temporal Distribution of SRCs Used in FY2017

To provide further information, the Table 13 also includes the sewershed and watershed where the SRCs were certified and the sewershed and watershed where the SRCs were used.

Table 13 SRCs Used in FY 2017

Number of SRCs	Vintage Date	Certification Watershed	Certification Sewershed	Use Date	Use Watershed	Use Sewershed
38,324	9/24/2016	Potomac	MS4	10/8/2016	Anacostia	CSS
534	1/29/2015	Rock Creek	CSS	10/14/2016	Anacostia	CSS
10,025	3/7/2015	Potomac	MS4	10/31/2016	Anacostia	CSS
988	3/7/2016	Potomac	MS4	10/31/2016	Anacostia	CSS
705	3/7/2015	Potomac	MS4	11/21/2016	Anacostia	CSS
2,676	9/24/2015	Potomac	MS4	2/10/2017	Potomac	CSS
1,501	9/24/2016	Potomac	MS4	2/10/2017	Potomac	CSS
3,077	3/7/2016	Potomac	MS4	3/22/2017	Anacostia	CSS
10,197	8/18/2015	Anacostia	MS4	4/4/2017	Potomac	MS4
10,197	8/18/2016	Anacostia	MS4	4/4/2017	Potomac	MS4
4,111	8/18/2017	Anacostia	MS4	4/4/2017	Potomac	MS4
8,051	6/11/2015	Potomac	MS4	4/11/2017	Potomac	MS4
178	6/11/2017	Potomac	MS4	4/11/2017	Potomac	MS4
218	5/1/2017	Anacostia	CSS	5/5/2017	Anacostia	MS4
12,203	12/8/2015	Anacostia	CSS	6/5/2017	Anacostia	CSS
468	12/8/2016	Anacostia	CSS	6/5/2017	Anacostia	CSS
6,403	5/10/2017	Anacostia	MS4	6/15/2017	Potomac	MS4
651	4/20/2017	Potomac	MS4	6/27/2017	Rock Creek	CSS
2,142	1/29/2016	Rock Creek	CSS	7/11/2017	Anacostia	CSS

Number of SRCs	Vintage Date	Certification Watershed	Certification Sewershed	Use Date	Use Watershed	Use Sewershed
223	6/11/2017	Potomac	MS4	7/25/2017	Anacostia	MS4
1,408	1/29/2017	Rock Creek	CSS	8/11/2017	Anacostia	CSS
916	1/29/2015	Rock Creek	CSS	8/11/2017	Anacostia	CSS
584	4/20/2017	Potomac	MS4	8/24/2017	Rock Creek	CSS
778	8/15/2017	Rock Creek	CSS	9/7/2017	Anacostia	CSS
677	8/15/2018	Rock Creek	CSS	9/7/2017	Anacostia	CSS
621	1/29/2016	Rock Creek	CSS	9/21/2017	Anacostia	CSS

FY 2018 Goals: DOEE expects SRC trades to increase throughout FY2018, as regulated demand increases, both from regulated sites with an approved Offv that reach the end of construction and from new regulated sites going through the permitting process. In addition, as SRC purchase agreements become available to SRC generators, DOEE expects a significant increase in the generation of SRCs in the MS4. DOEE also plans to continue providing trainings and undertaking other efforts to assist program participants.

4.1.4 Green Landscaping Incentives Program

The District is using a series of stormwater incentive programs to help single-family residents and commercial properties, multi-family residences, schools, and churches plan and implement stormwater retrofit projects and increase planted areas. The Green Area Ratio and DOEE’s RiverSmart programs fulfill the requirements of Section 4.1.4 of the MS4 Permit. Additional information about DOEE’s incentive programs can be found at: <http://doee.dc.gov/riversmart>.

District green landscaping incentive programs are:

- Green Area Ratio
- RiverSmart Homes
- RiverSmart Schools
- RiverSmart Communities
- RiverSmart Rooftops
- RiverSmart Rebates
- Stormwater Retention Credit Trading
- RiverSmart Rewards
- RiverSmart Innovation Grant

Green Area Ratio

The Green Area Ratio (GAR) is a zoning regulation that integrates sustainable landscape elements into parcel site design to promote greater livability, ecological function, and climate adaptation in the urban environment. The GAR sets minimum lot coverage standards for landscaping and site design features in site construction. The GAR assigns a weighted score to a