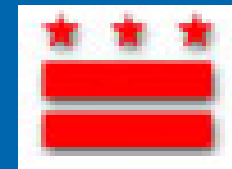
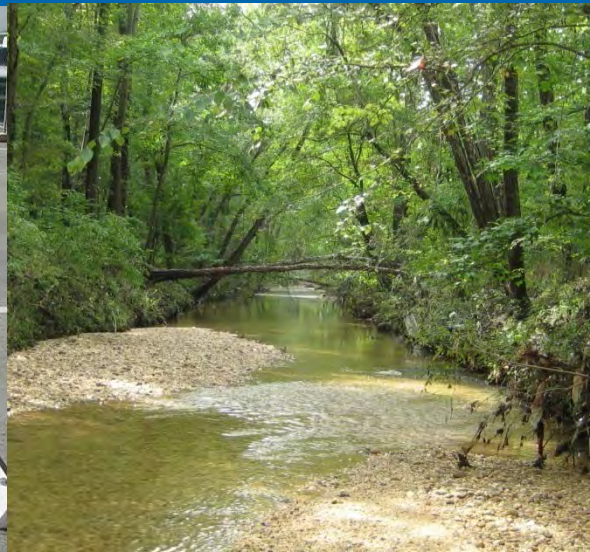


Stormwater Retention Credit Certification, Trading, and Use

Regan Wilhelm
Environmental Protection Specialist
Department of Energy and Environment



Training Objectives

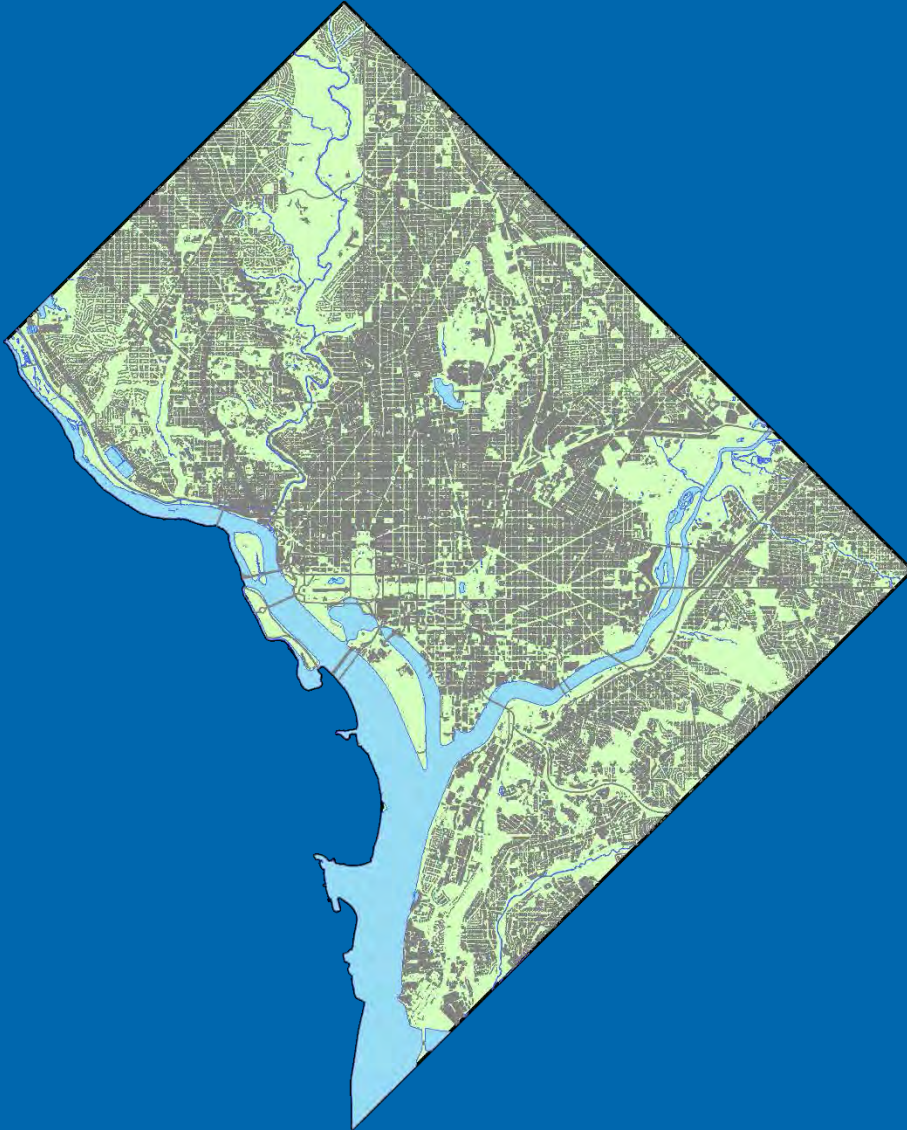
- Understand how the Stormwater Retention Credit (SRC) trading program can help restore the District's waterbodies
- Understand how SRCs may be a cost-effective option for complying with the District's stormwater regulations
- Understand how properties can generate revenue by installing green infrastructure
- Be able to analyze the financial return from potential SRC projects and participate in the SRC program

Training Outline

- Stormwater Runoff and Green Infrastructure
- Using SRCs to comply with District requirements
- Benefits of SRC program to District waterbodies
- Generation of SRCs
 - Eligibility, maintenance requirements, and certification
 - Buying and selling SRCs
 - SRC Price Lock Program
 - SRC Aggregator Startup Grant Program
 - SRC Site Evaluation Program
- DOEE facilitation of the market and SRC market status
- Financial Return on SRC Projects
- SRC Registry

Stormwater Runoff and Green Infrastructure

Imperviousness in the District



- 43% of the District's land is impervious.
- A single 1.2-inch storm produces about 525 million gallons of stormwater runoff.



Cost of the Problem



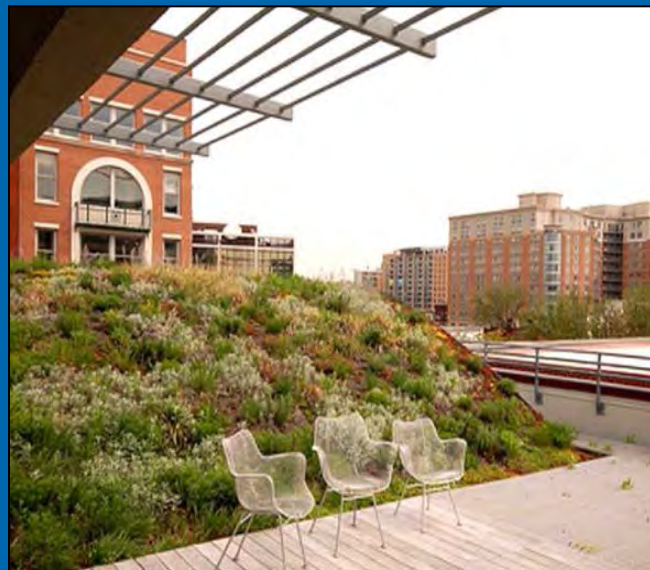
- Combined Sewer system
 - \$2.6B+ capital project
 - Largely funded by DC Water rate payers
- MS4
 - \$7B+ green infrastructure (GI) build-out
 - \$10M/year public investment

Green Infrastructure Retrofits

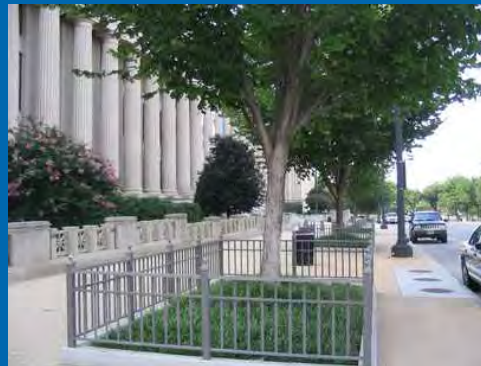
- Retain stormwater runoff, reducing pollution
- Essential for long-term restoration of waterbodies



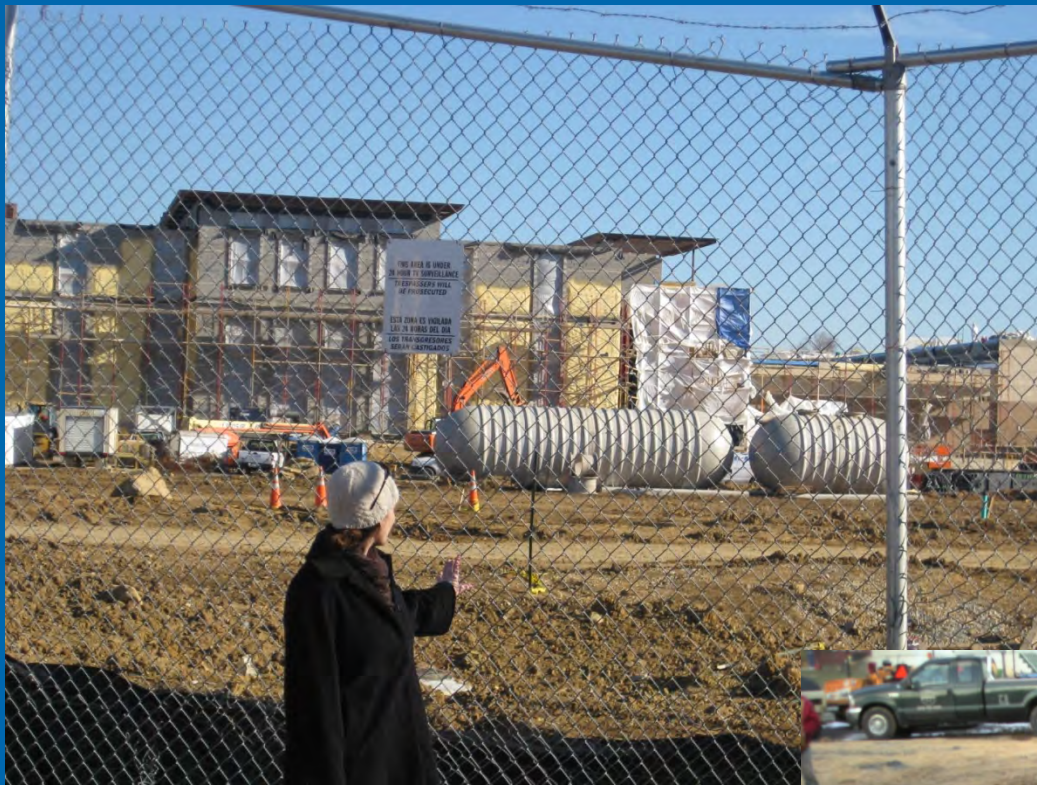
Green Roofs



Bioretention Cells



Rainwater Harvesting (non-potable)



12.20.2010 16:06

Regulations Key to MS4 Stormwater Solution

- Most regulated development in the District is redevelopment; trading was essential to implementing regulations.
- Large construction/redevelopment sites install GI to control runoff (called the Stormwater Retention Volume, or SWRV)
- Scale of development makes it biggest driver of retrofits and key part of the solution:

Total area subject to SWM
regulations annually
(15M ft² - @ 1% of land)

Total area retrofitted with
retention via DOEE direct
investment annually

10 : 1

2013 Stormwater Rule

Amended January 31, 2020

Major land-disturbing activity

- 5,000 ft² or more of land-disturbing activity, including
 - 2,500 ft² or more of post-project impervious surface, or
 - Any pre-project natural surface (forest or meadow)

Major substantial improvement activity,

Renovation for which two conditions are met:

- Cost exceeds 50% pre-project value of structure, and
- Combined structure footprint and disturbance $\geq 5,000$ ft²
(e.g., 6,000 ft² building or 4,000 ft² building 2,000 ft² land disturbance), including
 - 2,500 ft² or more of post-project impervious surface, or
 - Any pre-project natural surface (forest or meadow)

Stormwater Retention Volume

- The runoff that must be retained by the regulated site is called the Stormwater Retention Volume (SWRv)
- This is calculated using the required storm size for the site
 - 1.2 inches for Major Land Disturbing Activities
 - 0.8 inches for Major Substantial Improvement Activities
- This may be retained through a combination of on-site and off-site retention

Stormwater Retention Volume (SWRv)

Equation for a Major Land Disturbing Activity

$$\text{SWRv} = P (Rv_I * \%I + Rv_C * \%C + Rv_N * \%N) * SA * 7.48 / 12$$

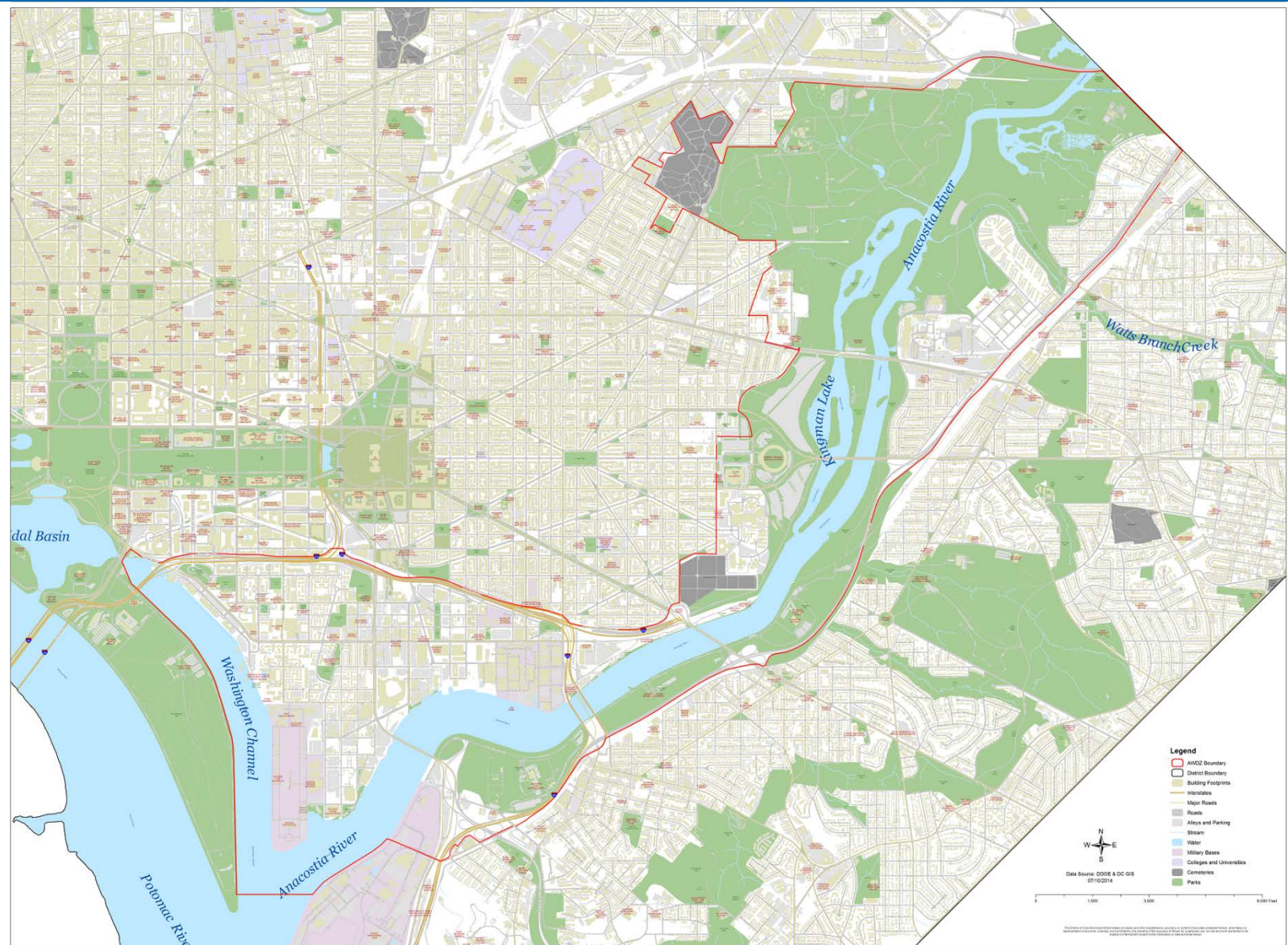
- SWRv = Volume required to be retained (gal)
- P = 1.2 inches (90th percent rainfall event for the District)
- $Rv_I = 0.95$ (runoff coefficient for impervious cover)
- $Rv_C = 0.25$ (runoff coefficient for compacted cover)
- $Rv_N = 0.0$ (runoff coefficient for natural cover)
- %I = % of site in impervious cover
- %C = % of site in compacted cover
- %N = % of site in natural cover
- SA = Surface area (square feet)

Impervious Surface = 14,000 sf

SWRv = 10,000 gal.

Anacostia Waterfront Development Zone

- Sites within the AWDZ that receive District government funding have additional requirements:
 - Major Substantial Improvements have to retain stormwater from the first 1.0" of rainfall
 - All sites have to treat stormwater from the first 1.7" of rainfall



Using Stormwater Retention Credits

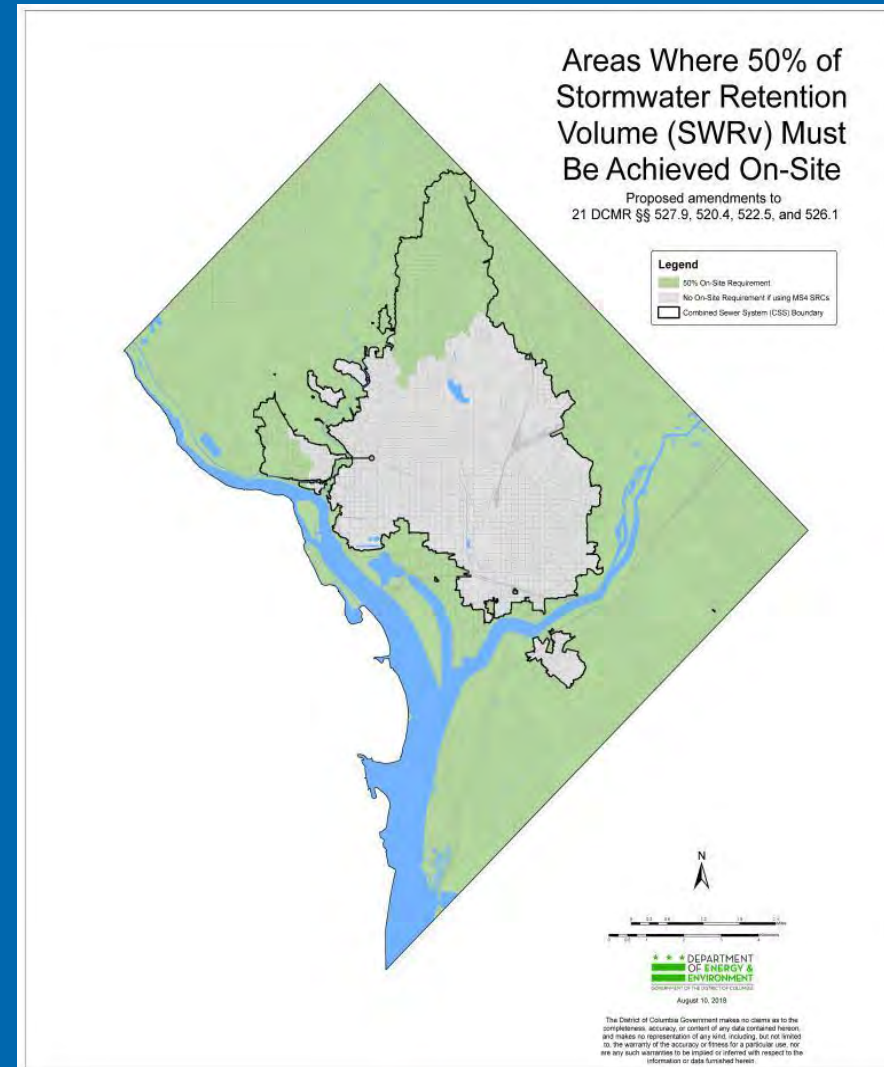
Allowable Use of Off-Site Retention

For sites located in the MS4 or in portion of CSS where CSOs will be reduced with GI: On-site retention $\geq 50\%$ of Stormwater Retention Volume (SWRv).

- Free to go off site
- Less than 50%: must prove that on-site retention is technically infeasible or environmentally harmful

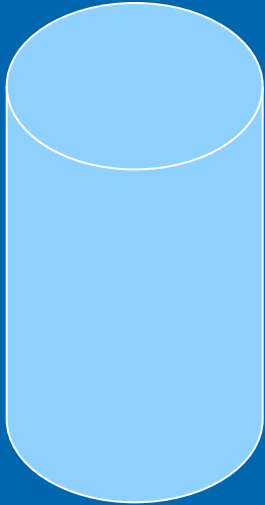
No minimum on-site requirement for projects:

- Located in portion of CSS where CSOs will be reduced with storage tunnels.
- Using MS4 SRCs to meet Off-site retention

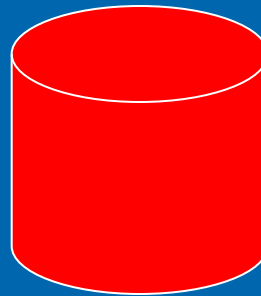


Off-Site Retention Volume (Offv)

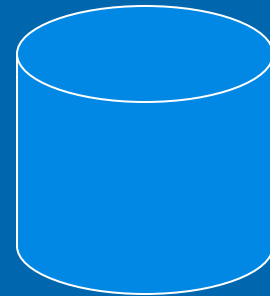
$$\text{SWRv} - \text{On-Site Retention Volume} = \text{Offv}$$



10,000
gallons



5,000
gallons



5,000
gallons

Two Options to Achieve Offv

Stormwater Retention Credits (SRCs)

- Privately tradable
- 1 SRC corresponds to 1 gallon of retention for 1 year
- 1 SRC achieves 1 gallon of Offv for 1 year (restrictions apply)
- Each SRC has a unique serial number
- Buyer and seller negotiate price (\$1.73 12-month average)
- You can also generate your own SRCs

In-lieu fee (ILF) payment

- Paid to DOEE.
- Corresponds to 1 gallon of retention for 1 year.
- Achieves 1 gallon of Offv for 1 year.
- Adjusted annually for inflation (current price = \$3.78)

On-site vs. Off-Site Compliance

- On-site compliance costs/benefits include:
 - The cost to design and install GI on-site
 - The cost to maintain GI on-site
 - Opportunity costs associated with lost space for other amenities
- Off-site compliance costs/benefits include:
 - SRC trading prices (\$1.73) or the ILF price (\$3.78)
 - Opportunities to generate SRCs from a voluntary GI project
 - Potential time-saving in permitting and construction

Calculating Cost to Achieve Offv

Impervious surface =
14,000 sf

SWRv = 10,000 gal.

On-site minimum = 5,000 gal.

On-site retention = 7,000 gal.

Offv = 3,000 gal.

Calculating Cost to Achieve 3,000 gal Offv

	In-Lieu Fee	SRCs
Annual	$= \$3.78 * 3,000$ $= \$11,340$	$= \text{SRC Market Cost} * 3,000$ $= \$5,190 \text{ (if cost = \$1.73)}$
5 years	$= 5 * \$3.78 * 3,000$ $= \$56,700$	$= 5 * \text{SRC Market Cost} * 3,000$ $= \$25,950 \text{ (if cost = \$1.73)}$

Timeline for Achieving Offv

Approved
SWMP
with Offv

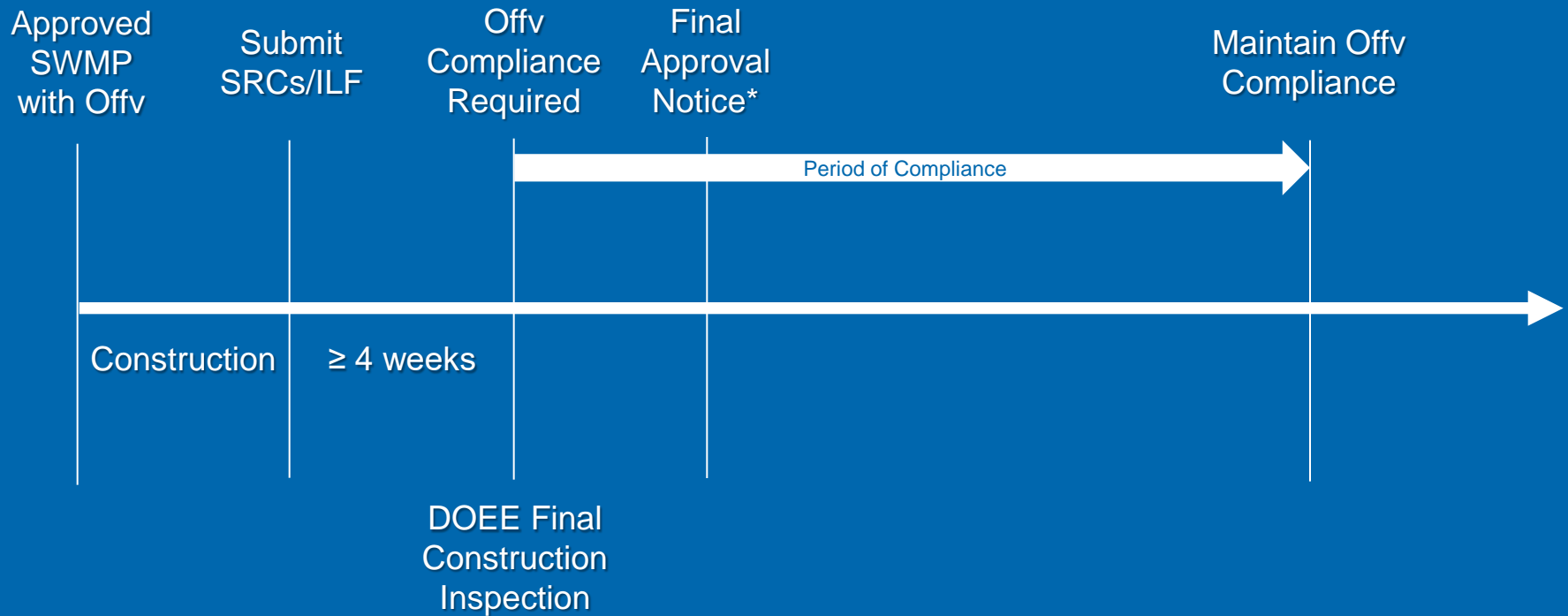
Offv
Compliance
Required

Construction

DOEE Final
Construction
Inspection

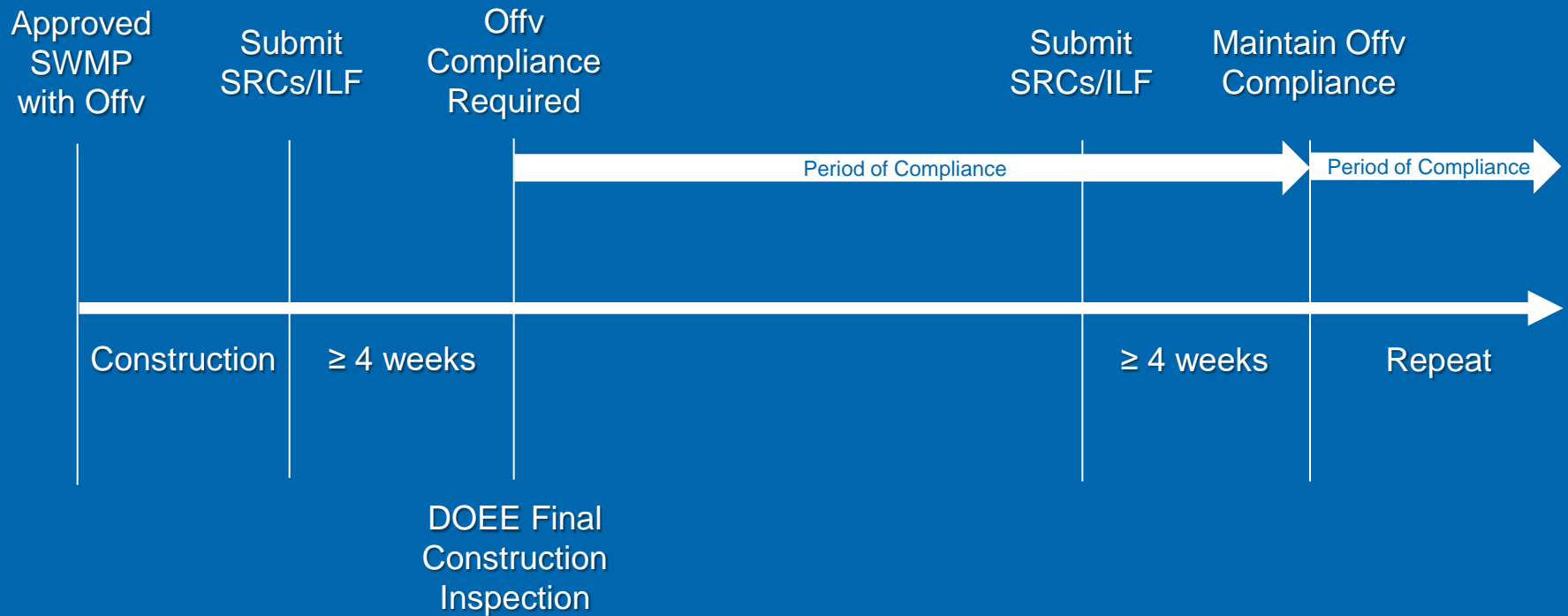


Timeline for Achieving Offv



* To receive a Final Approval Notice, regulated sites must submit an As-Built SWMP and proof of meeting any Offv obligation.

Timeline for Achieving Offv



Achieving Offv

- The Stormwater Management Plan (SWMP) states the Offv, but not how the Offv will be met
- Meet Offv before Final Construction Inspection
- Offv is an ongoing obligation that can be:
 - Met annually or on a multiyear basis
 - Met with a mix of SRCs/ILF (and the mix can change)
 - Reduced in the future by installing additional retention
- If a site lapses in compliance with Offv:
 - DOEE assesses the ILF and a 10% late fee
 - DOEE will take enforcement action

Use of SRCs

- SRCs can be banked indefinitely
- 1-year lifespan begins when SRCs are used
- Sewershed Restrictions:
 - MS4 projects must use MS4 SRCs
 - AWDZ projects must use MS4 SRCs (1:1.25 ratio if not Anacostia watershed)
 - Requirements for CSS projects depend on location and amount of on-site retention
- Maintenance failure at SRC-generating sites does not invalidate SRCs purchased from that site
 - Original owner of the SRCs is responsible for replacing the lost retention capacity

Use of SRCs

Regulated Site Location	On-Site Retention	2013 Stormwater Rule	2020 Amendment
AWDZ sites (relief required)		Any SRC (1.25 ratio for non-Anacostia)	SRCs from MS4 (1.25 ratio for non-Anacostia)
MS4	≥50%	Any SRC	SRCs from MS4
	<50% (relief required)	Any SRC	SRCs from MS4
CSS areas where CSOs are reduced with GI	≥50%	Any SRC	Any SRC
	<50% (relief required)	Any SRC	<ul style="list-style-type: none"> • SRCs from MS4 • SRCs from CSS areas where CSOs are reduced with GI
CSS areas where CSOs are reduced with storage tunnels	≥50%	Any SRC	Any SRC
	<50%	Any SRC	SRCs from MS4

MS4 sites can continue to use CSS SRCs if:

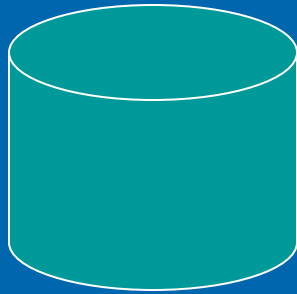
- The site is already approved and self-generates SRCs from an already-approved project, or
- The SRCs are purchased according to a contract that has already been signed

Benefits of the SRC program to District Waterbodies

Trading's Potential to Increase Retention

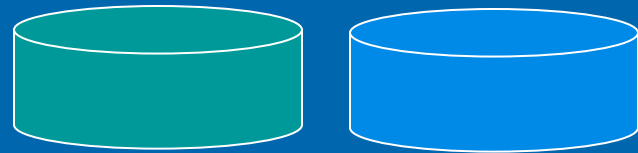
➤ Same retention for 1.2" storm:

Strict On-Site



10,000
gallons

Trading

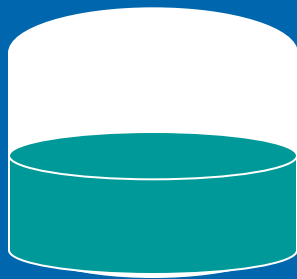


5,000 + 5,000 =
10,000
gallons

Trading's Potential to Increase Retention

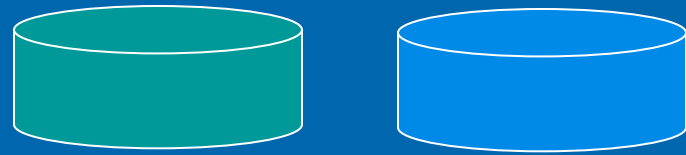
- Greater retention for storms smaller than 1.2"
- Example – 0.6" storm:

Strict On-Site



5,000 gallons

Trading

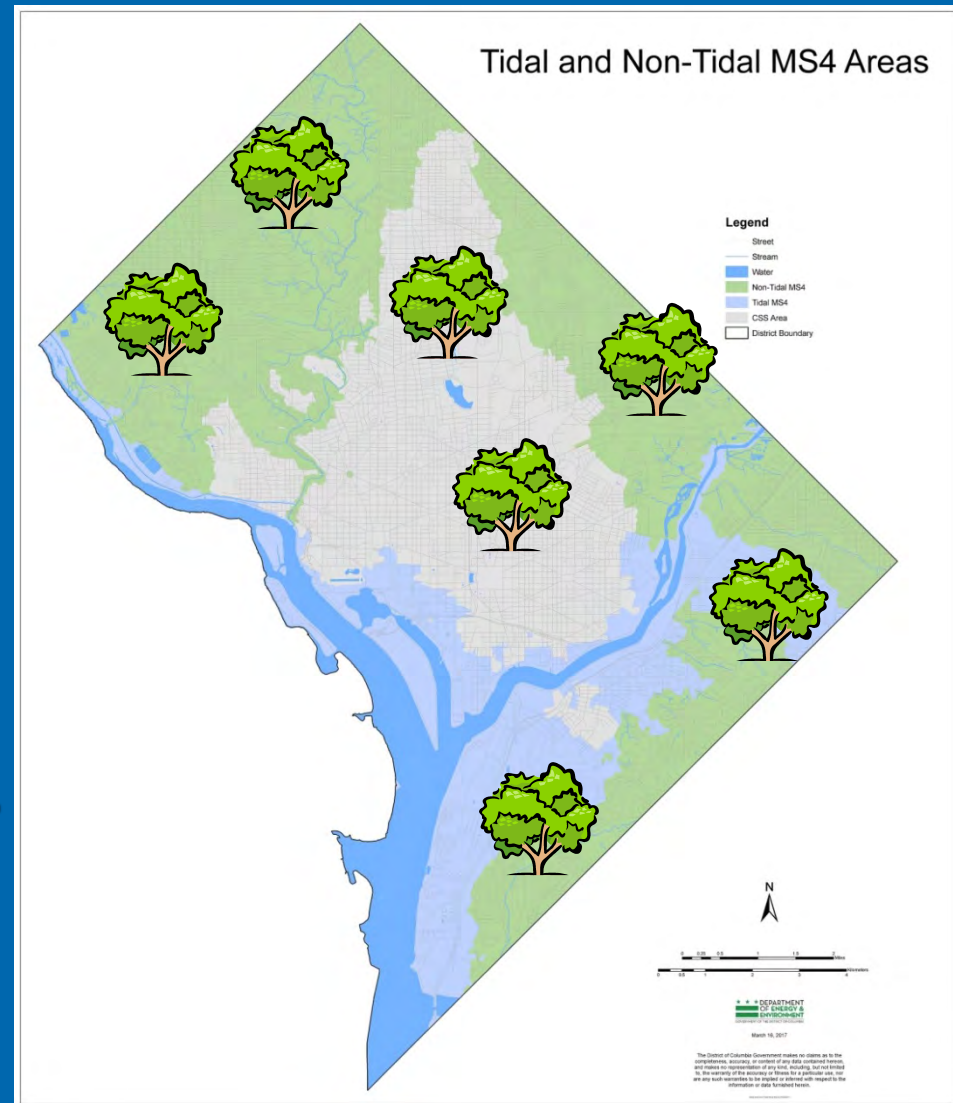


5,000 + 5,000 =
10,000 gallons

- 90% of storms in Washington DC are less than 1.2".
- This scenario yields ~50% increase in annual retention.

Benefits to District Waterbodies

- Increased annual retention District-wide.
- Increased capture of first-flush volume.
- Shift retention BMPs to most vulnerable tributaries and improve socioeconomic outcomes.



Generation of SRCs

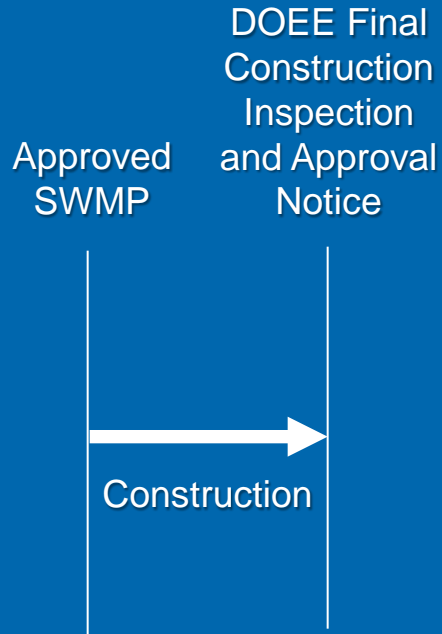
Generating SRCs

- Reduce stormwater runoff by installing GI voluntarily
 - DOEE approval of a Stormwater Management Plan
 - Project must be located in the District
 - GI must have been installed since July 1, 2013
 - First SRC certification submitted within 3 years of project completion
 - Projects that start generating SRCs can continue to generate SRCs if they do not lapse in SRC certification for more than 6 months
- Pass DOEE's construction and maintenance Inspections
- Provide a maintenance contract or plan for the period of SRC certification
 - You can receive SRCs for up to 3 years at a time

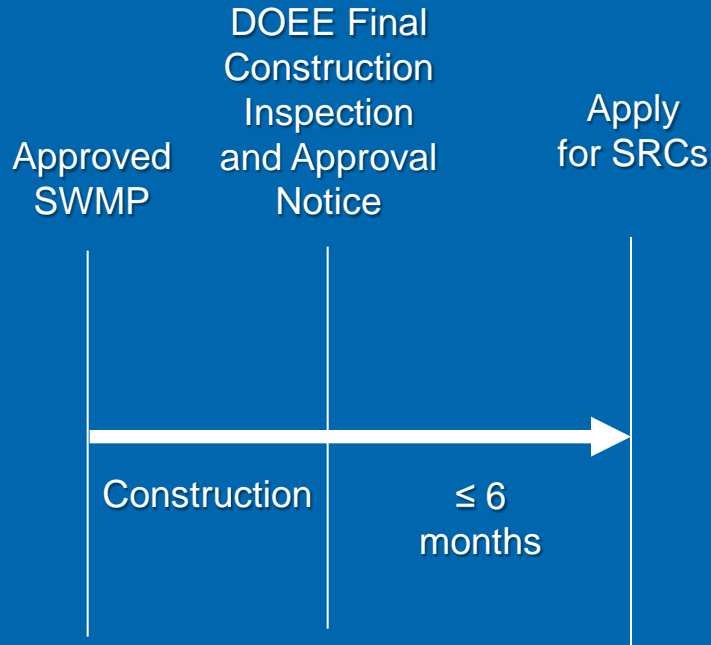
Maintenance Requirements

- Property used for SRC-retrofits not permanently obligated to that use:
 - No maintenance covenant required for SRC-generating retention capacity.
 - Retention capacity must be maintained for time period for which DOEE certifies SRCs.
 - Maintenance obligation can be ended by forfeiting SRCs or purchasing SRCs for DOEE to retire or paying ILF.
- Failure to maintain retention capacity for time of SRC certification results in:
 - DOEE requires retention volume to be compensated for.
 - DOEE may take enforcement action.
 - No additional certification of SRCs.

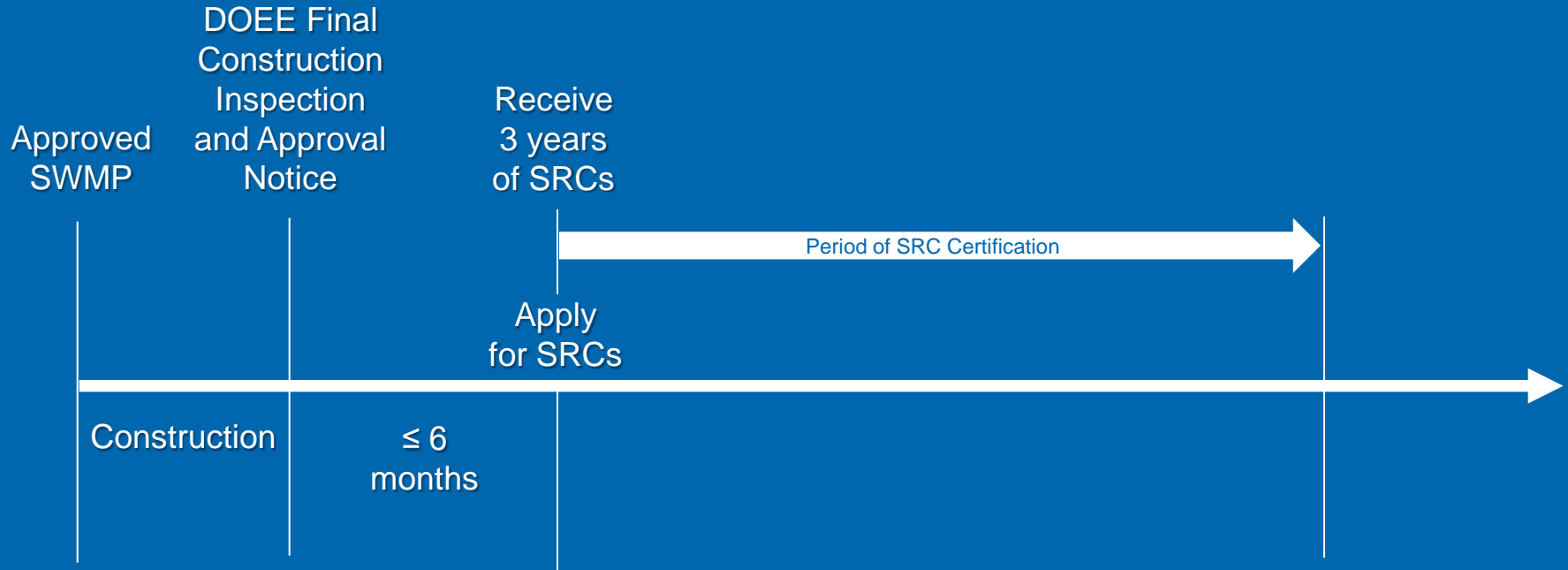
Timeline for Generating SRCs



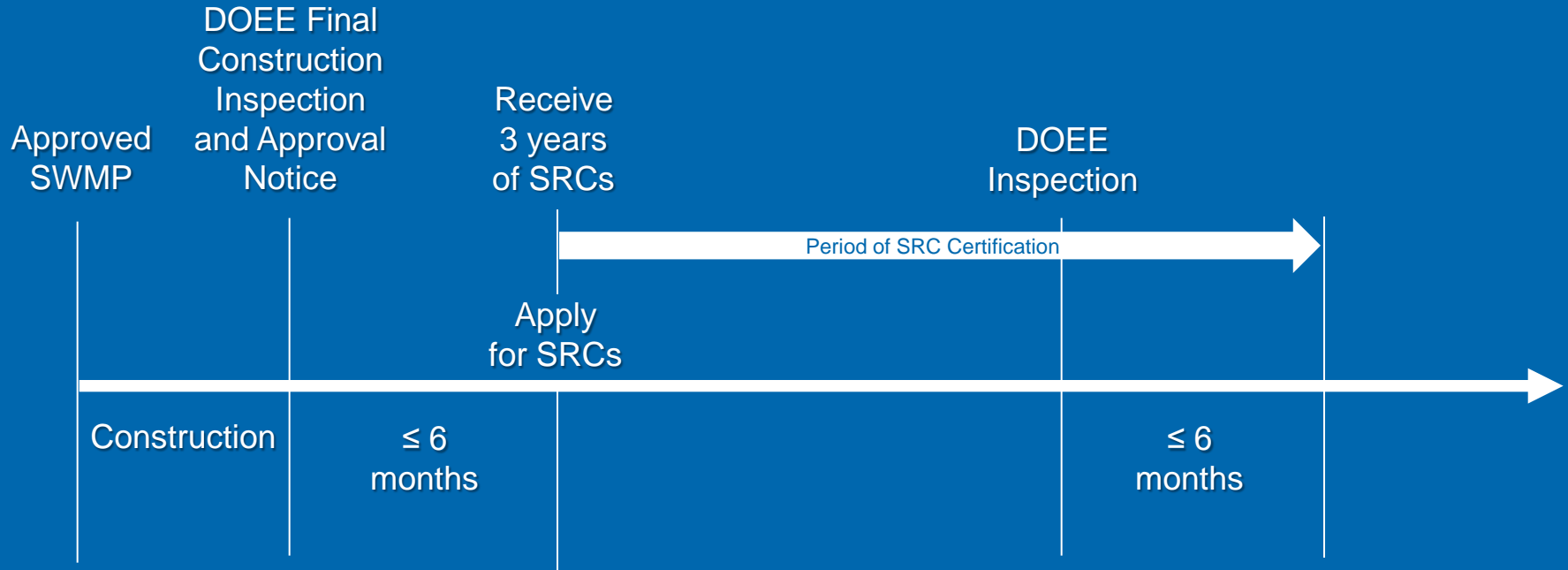
Timeline for Generating SRCs



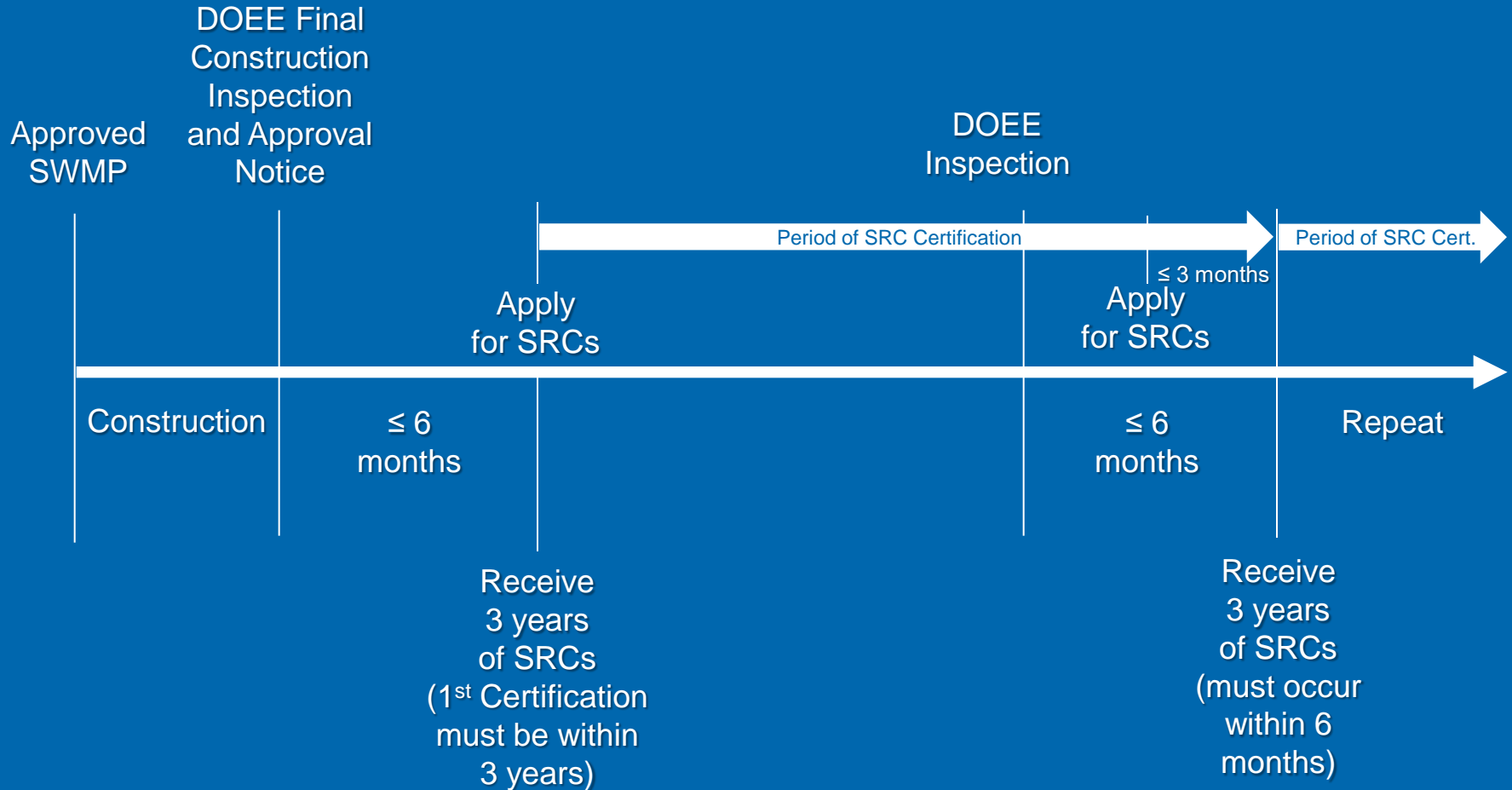
Timeline for Generating SRCs



Timeline for Generating SRCs



Timeline for Generating SRCs



Overview of SRC Certification Process

- 1) Design and receive DOEE approval of SWMP (review fees apply).
- 2) Install retention capacity
- 3) Pass DOEE final construction inspection
- 4) Apply for certification of SRCs (within 3 years of completion), including:
 - 1) As-built SWMP
 - 2) For period of certification, submit maintenance contract or documentation of ability/expertise
- 5) Receive up to 3 years' worth of SRCs
- 6) Maintain retention capacity and pass inspections
- 7) After 3 years, apply for additional SRCs (within 6 months), including:
 - 1) For period of certification, maintenance contract or documentation of ability/expertise
- 8) Receive up to 3 years' worth of SRCs.

-----Repeat 6-8 indefinitely-----

Certification of Additional SRCs

Year of Application	Year of Certification	Number of SRCs	Total SRCs	Cumulative SRCs
Year 1	Year 1	1,000	3,000	3,000
	Year 2	1,000		
	Year 3	1,000		
Year 4	Year 4	1,000	3,000	6,000
	Year 5	1,000		
	Year 6	1,000		
Year 7	Year 7	1,000	3,000	9,000
	Year 8	1,000		
	Year 9	1,000		

Unique Serial Number for Each SRC

Beginning of
certification year
(yyyymmdd)

-

Major & Sub
drainage
(A,R,P & 2 digits)

-

SWMP number
(5 digits)

-

Individual gallon
of capacity
(6 digits)

20200101-A18-01400-000001

20200101-A18-01400-000002

20200101-A18-01400-000003

...

20200101-A18-01400-000998

20200101-A18-01400-000999

20200101-A18-01400-001000

Unique Serial Number for Each SRC

Beginning of
certification year
(yyyymmdd)

-

Major & Sub
drainage
(A,R,P & 2 digits)

-

SWMP number
(5 digits)

-

Individual gallon
of capacity
(6 digits)

20140101-A18-01400-000001 through 20140101-A18-01400-001000
20150101-A18-01400-000001 through 20150101-A18-01400-001000
20160101-A18-01400-000001 through 20160101-A18-01400-001000
20170101-A18-01400-000001 through 20170101-A18-01400-001000
20180101-A18-01400-000001 through 20180101-A18-01400-001000
20190101-A18-01400-000001 through 20190101-A18-01400-001000

Example SRC Transaction

- Grocery parking lot voluntarily retrofits w/4,000 gal GI practice to generate 3 years of SRCs or 12,000 SRCs.
- Church parking lot voluntarily retrofits w/2,000 gal GI practice to generate 3 years of SRCs or 6,000 SRCs.
- Regulated site has 3,000 gal Offv and purchases total of 18,000 SRCs to achieve Offv for 6 years.
- By end of 6-year period, regulated site purchases additional SRCs.

Process for Buying and Selling Credits

1. Negotiate terms of transfer/contract between buyer and seller
 - Template contract available at doee.dc.gov/src
 2. Submit application for transfer of SRC ownership
 - DOEE will process application and provide confirmation
- DOEE tracks price information for transfers and makes this public – but does not provide project/contact information associated with prices

DOEE-Funded Projects

- DOEE limits SRC certification for projects that are DOEE funded
- DOEE certifies 50% of SRCs and withholds the other 50%
- Once the withheld 50% multiplied by the average selling price = the total value DOEE provided, DOEE will certify 100%

DOEE-Funded Project Example

- DOEE provides \$5,000 for a BMP with 1,000 gallons of SRC eligibility

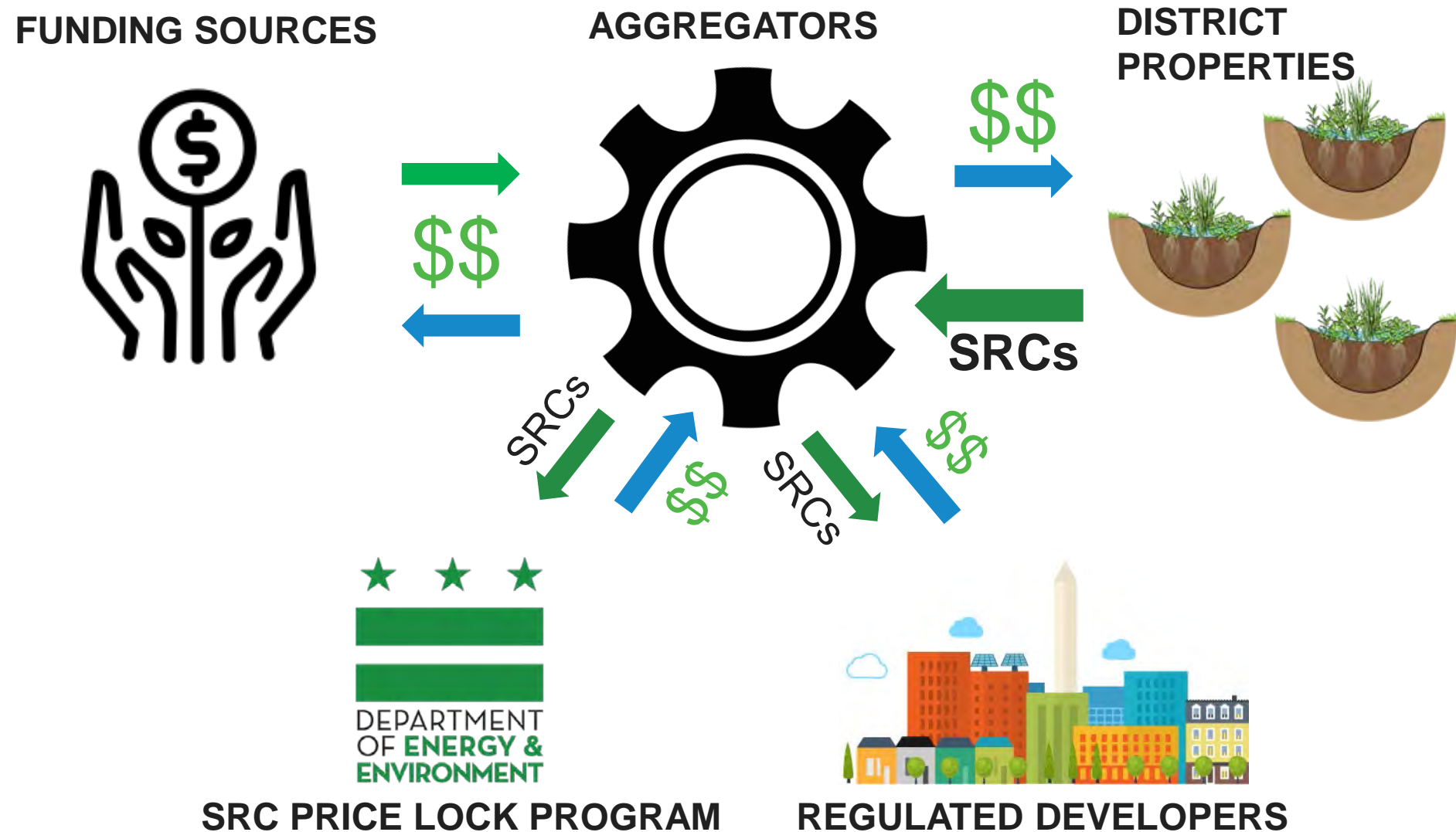
Year	SRC Eligibility	SRCs Certified	SRCs Withheld	Average Price	Value Recouped	Value Recouped to Date
1	1000	500	500	\$1.5	\$750	\$750
2	1000	500	500	\$2	\$1000	\$1750
3	1000	500	500	\$2	\$1000	\$2750
4	1000	500	500	\$1.5	\$750	\$3500
5	1000	500	500	\$1	\$500	\$4000
6	1000	500	500	\$2	\$1000	\$5000
7	1000	1000				
8	1000	1000				
9	1000	1000				

SRC Price Lock Program

SRC Price Lock Program

- DOEE is purchasing SRCs at fixed rates
 - Eligible GI must be new, voluntary, and in the MS4
 - Participants also have the option to sell on the market
- Option to sell to DOEE provides certainty about the revenue from an SRC-generating project
 - Effectively constitutes a price floor
- DOEE has made an initial commitment of \$11.5 million to purchase SRCs

POTENTIAL SRC-GENERATING MODEL

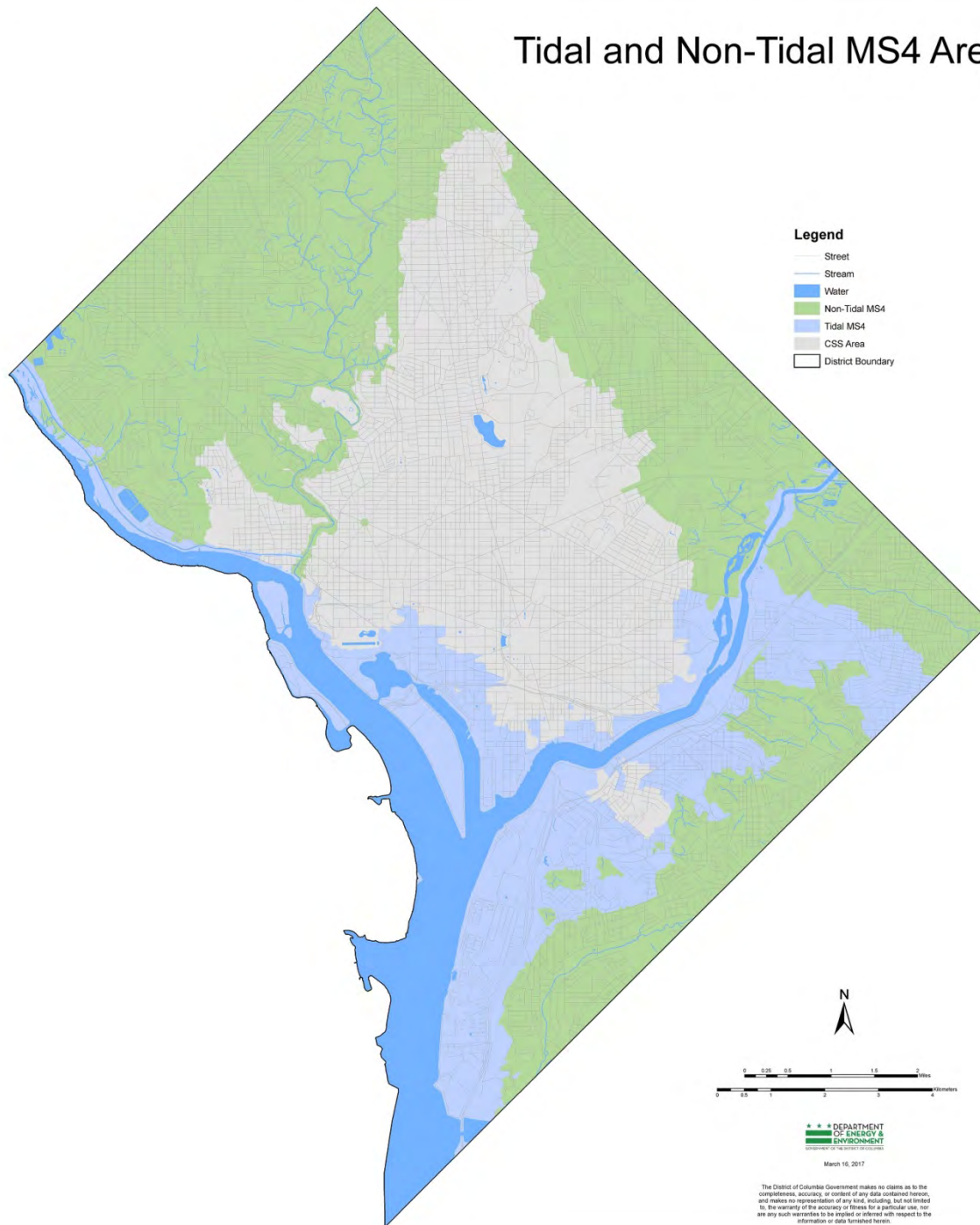


SRC Price Lock Program – Purchase Prices

- DOEE offers a price for the first 6 years of SRC certification that is expected to help recover construction costs
- DOEE offers a price for the subsequent 6 years that is expected to help cover maintenance costs
- Participants may negotiate a higher selling price on the market

Location	SRC Purchase Price, Years 1 through 6	SRC Purchase Price, Years 7 through 12
Non-Tidal MS4	\$2.03	\$0.42
Tidal MS4	\$1.77	\$0.42
CSS	N/A	N/A

Tidal and Non-Tidal MS4 Areas



SRC Price Lock Program - Process

- Apply online through the Surface and Groundwater System (SGS)
- Review and sign an SRC Purchase Agreement, which contains the purchase price and other terms
- Obtain DOEE approval for SWMP
- Construct green infrastructure, passing DOEE inspection
- Submit as-built SWMP

SRC Price Lock Program - Process

- Apply for SRC Certification for 3 years
 - Choose whether to sell on the market or sell to DOEE
 - To sell to DOEE, you must submit an Intent to Sell SRCs form within 1 year of the SRC certification date. You can sell your SRCs to DOEE in two separate transactions within the 1-year period
 - Maintain green infrastructure through the period of SRC certification
- Repeat the above steps for 12 years of SRC certification
- After 12 years, you can continue to generate SRCs to sell on the market, but you will not be able to sell these SRCs to DOEE

SRC Price Lock Program Application

- Preliminary (30%) design of proposed green infrastructure
 - Narrative description
 - Map or aerial view
 - Plan view sketch and cross section
 - Preliminary volume calculation
- Letter of support from property owner (if different from SRC seller)
- Cost estimate

SRC Price Lock Program

- All \$11.5 million is held in an escrow account
 - DOEE reserves the necessary funding for each project to ensure it is available at the time of the sale
- Program is opt-in
 - There are no penalties if you do not generate and sell SRCs to DOEE, but this may result in expiration of the SRC Purchase Agreement
- DOEE's grantee, the Center for Watershed Protection, helps DOEE with administration of SRC Purchase Agreements

SRC Aggregator Startup Grant Program

SRC Aggregator Startup Grant

- DOE offered grants of up to \$75,000 to assist SRC-aggregating businesses with preliminary technical and outreach work
 - Desktop assessment of prospective sites
 - Outreach to property owners
 - Field assessment/analysis of prospective sites
 - Preliminary design of green infrastructure
- Application period has closed, but may reopen if more funds become available
- Email if you are interested in receiving notifications

SRC Site Evaluation Program

SRC Site Evaluation

- DOEE's grantee, the Center for Watershed Protection, will evaluate green infrastructure opportunities
 - Will only be used to evaluate opportunities for new, voluntary green infrastructure in the MS4
 - Sites must have at least 0.5 acres available
 - Evaluations are provided directly to property owners
- Properties interested in green infrastructure can also work with SRC-aggregating businesses

SRC Site Evaluation - Process

- Apply for SRC Site Evaluation Program
- If selected, schedule an evaluation with CWP
- Review SRC Site Evaluation
 - You may meet with CWP to discuss the evaluation if desired
- Consider installing the SRC-generating green infrastructure and apply for the SRC Price Lock Program

DOEE Facilitation of the Market and Market Status

DOEE Facilitation of the SRC Market

- Website, Surface and Groundwater System, SRC and Offv Registry - doee.dc.gov/src
- SRC Price Lock Program
- SRC Aggregator Startup Grant Program
- SRC Site Evaluation Program
- Contract template for SRC transfers
- GIS viewer for impervious areas
- Financial Return Calculator

SRC Market Data (11/2/2020)

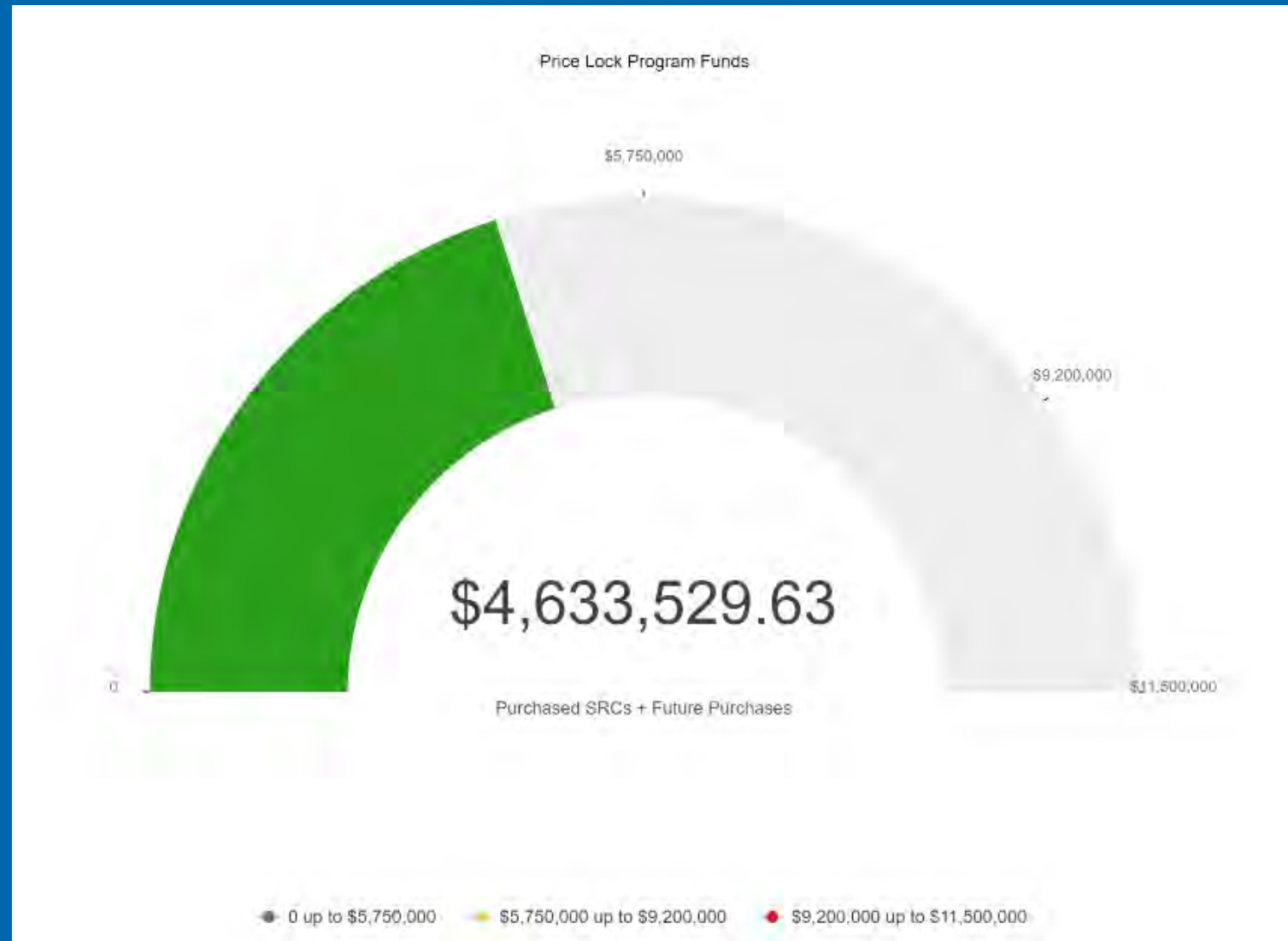
➤ SRC trades

- 112 trades overall
- 1,072,350 SRCs purchased
- \$1,980,672.98 in sales
- 38 trades in 2020 (YTD) at average of \$1.72
- 28 trades in 2019 at average \$1.86/SRC
- 9 trades in 2018 at average \$1.70/SRC

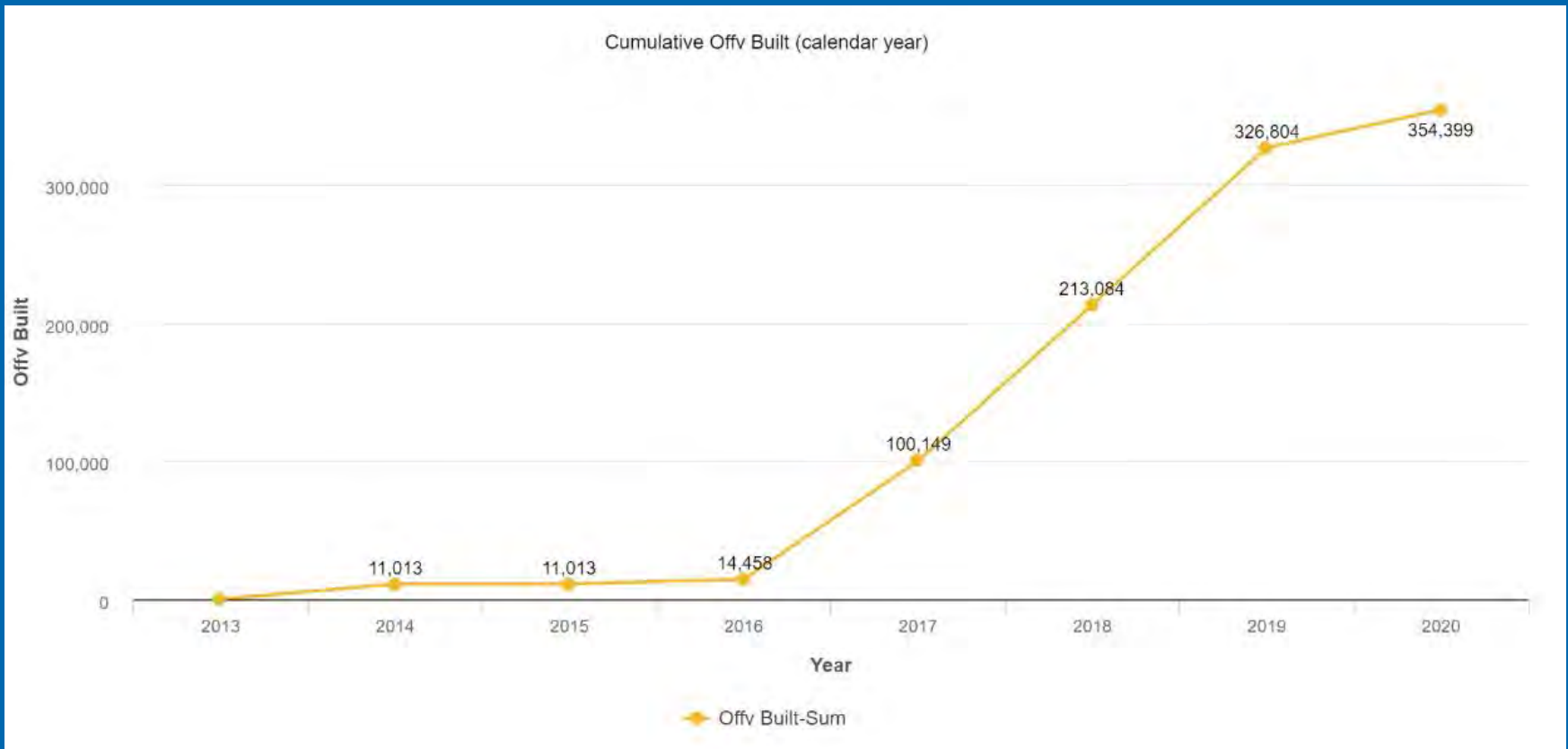
➤ Demand

- Approximately 13% of regulated sites (132 projects) have opted to meet some of their retention obligation off-site
- 977,604 gallons of Offv
- 72 projects have completed construction (or within 4 weeks)
 - 50 purchasing SRCs
 - 21 generating their own SRCs
 - 1 is paying ILF

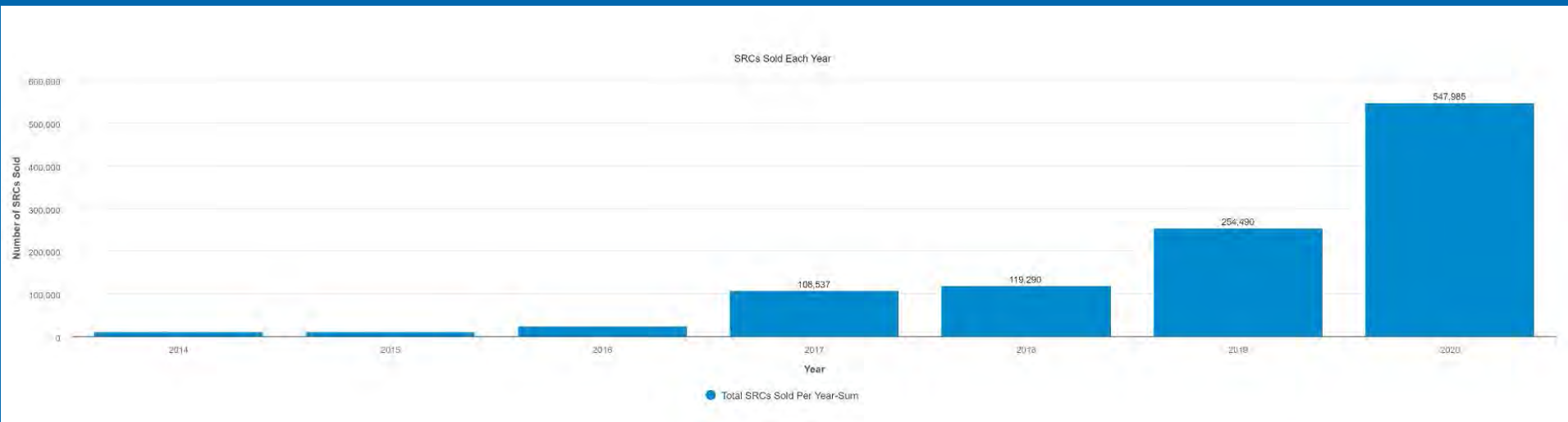
SRC Price Lock Funds (11/2/2020)



Built Offv (11/2/2020)



SRCs Sold (11/2/2020)



Financial Return Calculator

SRC Financial Return Calculator

- Estimates the potential SRC eligibility and ROI
- Designed with many end-users in mind
 - Engineers
 - Aggregators
 - Property owners
- Allows user to have high-level or granular project information
- Uses assumptions to fill in missing or incomplete project data

SRC Financial Return Calculator

- Example Project
- Voluntary project participating in DOE's Price Lock Program
 - Large site with ample impervious area
 - 30,000 ft² project area
 - 24,000 ft² of impervious area in CDA
 - 3,000 ft² standard bioretention installation
 - ...change some inputs to view the outcomes

SRC Registry



Mayor Muriel Bowser

311 Online Agency Directory Online Services Accessibility

What are you looking for today?



DC.gov doee.dc.gov

Department of Energy & Environment

DOEE Home Environmental Services Energy in the District Resources Laws & Regulations About DOEE

Environmental Services



See All Services A-Z

- Air Quality
- Environmental Education and Outreach
- Fisheries and Wildlife
- Lead-Safe and Healthy Homes
- Toxic Substances
- Water in the District
 - Anacostia River Monitoring
 - Chesapeake Bay Program
 - Flood Risk Management
 - Stormwater Management
 - Stormwater Retention
 - Credit Trading Program
 - SRC Eligibility and Certification Process
 - Generate SRC on your Property
 - Start an SRC-Aggregating Business
 - Selling SRCs
 - DC's Stormwater Management Regulations
 - SRC Price Lock Program
 - SRC Aggregator Startup Grants

Stormwater Retention Credit Trading Program

You can generate and sell Stormwater Retention Credits (SRCs) to earn revenue for projects that reduce harmful stormwater runoff by installing [green infrastructure](#) (GI) or by removing impervious surfaces. You can [sell your SRCs](#) in an open market to properties that have [regulatory requirements](#) for managing stormwater.

DOEE offers many resources to help you get started on an SRC-generating project. You can [generate SRCs on your property](#) or you can [start an SRC-aggregating business](#) to generate SRC from multiple properties.

For more information about the SRC trading program, contact Matthew Espie at src.trading@dc.gov or (202) 715-7644.

The following pages provide additional information on the SRC trading program:

- SRC and Off-Site Retention Volume (Offv) Registry** – Find SRCs for sale, SRC sale prices, and more market data.
- SRC Price Lock Program** – Lock in an SRC sale price with DOEE for your green infrastructure project in the MS4.
- Aggregator Startup Grant Program** – These grants support technical and outreach work to identify potential -generating green infrastructure projects in the MS4 (typically across multiple sites).
- Site Evaluation Program** – Request an evaluation of potential -generating green infrastructure projects on your property (you must have at least .5 acres available and be located within the MS4).
- SRC eligibility and certification process
- SRC program resources
- Training sessions
- Case Studies
- Press releases, SRCs in the news, and program reports

Additional Information

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**For more information about the SRC Program, visit
doee.dc.gov/src**

**To access DOEE's Surface and Groundwater System, visit
doee.dc.gov/sgs**

**For DOEE's stormwater management regulations and
related information, visit
doee.dc.gov/swregs**