Document 1: Rain Ready Ottawa Program Review and Recommendations



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1. Introduction

1.1. Purpose of the Review

The Rain Ready Ottawa (RRO) program is a City of Ottawa pilot program that encourages and supports residents in taking action on their property to reduce the harmful impacts of stormwater runoff on the Ottawa River watershed, public infrastructure, and their property. Established by Council as a pilot program in 2021, staff committed to report back on the results of the pilot program with recommendations for a continued program (<u>ASC2021-PIE-EDP-0008</u>).

The objectives of the review were to:

- Evaluate the effectiveness of the Rain Ready Ottawa pilot against its current goals, objectives and expected outcomes and determine if the pilot period should be extended, or a permanent program established beginning in 2024.
- Make recommendations on changes to existing program components, including rebates, home assessments, eLearning, demonstration projects, and community engagement activities.
- Make recommendations on how to expand the grant program, including the geographic area, eligible project types and property types to achieve the 50 year retrofit goals.
- Make recommendations on program implementation including what City unit should lead the program, staffing and proposed partnerships and/or contracts.
- Make recommendations on how to leverage other City property owner support programs, such as the on-site stormwater management program for intensification, Residential Protective Plumbing Program and Better Homes Ottawa Loan Program.
- Determine the scale up costs for an expanded Rain Ready Ottawa program to meet the 50 year retrofit goals.
- Determine the additional activities that Rain Ready Ottawa can utilize to improve project installations, engagement, and outreach.

1.2. Methodology

The review was undertaken by the Climate Change and Resiliency (CCR) Unit within the Planning, Real Estate, and Economic Development Department (PRED) with support from the Infrastructure Planning Unit (IP) of the Infrastructure and Water Services Department (IWSD). The review was conducted using a combination of external engagement and internal analysis.

Surveys were sent to rebate applicants, residents who received a home assessment, and eLearning users in order to gather their feedback. Interviews were conducted with certified landscapers to get their feedback on both the rebate program and the training program. A public engagement survey on Engage Ottawa was used to gather broad public feedback and feedback was solicited from Councillors in the existing priority areas via direct outreach. The various program streams were evaluated against their expected and actual outcomes, and their cost effectiveness was analyzed to determine which to continue offering and the best way to deliver them.

Internal staff whose service areas interact with Rain Ready Ottawa activities were consulted and their input incorporated into this report.

Using both the feedback and analysis, recommendations for a continued, permanent program were developed and are presented in this report.

1.3. Overview of Rain Ready Ottawa

The need for a residential private property lot-level program emerged from the Pinecrest Creek/ Westboro (ACS2011-IC-PGM-0114) and Eastern Subwatersheds Stormwater Retrofit Studies (ACS2019-PIE-IS-0002), which were part of the Council approved Ottawa River Action Plan (ORAP) (ACS2010-ICS-EDS-007). ORAP seeks to reduce the impacts of stormwater on the Ottawa River and its watershed. In these subwatersheds, a lack of stormwater management infrastructure has contributed to poor water quality, unhealthy ecosystems, flooding, erosion, pollution and beach closures.

To address this issue and meet Ottawa's retrofit targets, both retrofit studies recommended creating incentives for lot level actions by private property owners. They identified a balanced private-public approach as the best strategy in terms of impact and financial sustainability. Resultingly, Rain Ready Ottawa (RRO) was developed and then approved by Council in Winter 2021 (<u>ASC2021-PIE-EDP-0008</u>) and launched in Spring 2021.

The retrofit studies identified targets for the number of private property lot-level stormwater management systems that are needed to meet current and future stormwater management needs. The areas where retrofit studies had been completed became RRO's priority areas. Areas where retrofit studies were planned to occur become the RRO's secondary areas (See Figure 1 for Pilot Program Boundaries). These systems are rooted in the principles of Low Impact Development (LID). Table 1 states the 50 year retrofit targets in the Pinecrest Creek/Westboro and Eastern Subwatersheds.

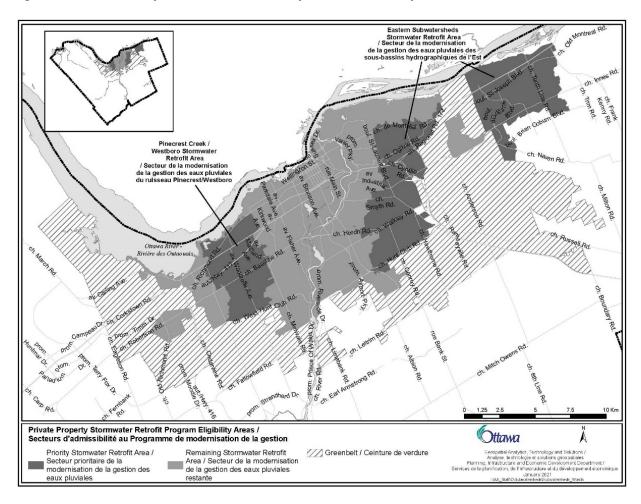


Figure 1: Rain Ready Ottawa Pilot Priority and Secondary Areas

Table 1: 50 year retrofit targets in the Pinecrest Creek/Westboro and Eastern Subwatersheds.

Measure	Number of	Percentage of Homes
	Installations	
Downspout	2,639	70% of the total roof area needs to drain to
Redirections		permeable or pervious surfaces
Permeable	16.2 ha or	15% of driveway surfaces.
Pavement	161,600 m ²	
Soakaway Pits	942	5% of properties.
and Infiltration		
Trenches		
Rain Barrels	9,425	25% of properties need at least 2.
Rain Gardens	1,885	10% of properties

Pinecrest Creek/Westboro Targets

Eastern Targets

Measure	Number of Installations	Percentage of Homes
At least one of the above	14,700	30% of properties

Low Impact Development (LID) is a stormwater management strategy that seeks to mitigate the impacts of increased runoff and stormwater pollution as close to its source as possible. LID comprises a set of site design strategies and best management practices that harvest, filter, evapotranspire, detain and infiltrate stormwater. This is required because the process of developing land results in more hard surfaces that increase runoff volume, increase runoff rate, and decrease infiltration into the soil. The goal of LID is to mimic the natural hydrologic cycle by using techniques that allow rainwater to be absorbed where it falls.

LID can help maintain the diversity of aquatic life and opportunities for human uses, protect water quality, preserve groundwater and stream baseflow characteristics, reduce combined sewer overflows, reduce the potential for flood damage, reduce occurrences of stream erosion, and increase the resiliency of communities and associated stormwater infrastructure to frequent rainfall events that are expected to increase as a result of climate change. Some of these benefits occur at a local scale while others occur at larger scales only when LID are broadly applied in an area.

The Rain Ready Ottawa pilot utilized the following six components to reduce barriers to LID implementation, increase project installation numbers, and improve the quality and impact of projects:

- 1. Residential Home Assessment Program
- 2. Industry Training Fusion Landscape Professional (FLP) Program

- 3. eLearning Education Program
- 4. Community Engagement Initiatives
- 5. Financial Incentives
- 6. Demonstration Sites

The Rain Ready Ottawa program was designed and administered by the Climate Change and Resiliency unit in PRED and funded by Infrastructure Planning in IWSD.

The pilot project budget was \$750,000 funded from existing Stormwater Management Retrofit capital accounts. An additional \$100,000 also from existing Stormwater Management Retrofit capital accounts was allocated to the program to coordinate the installation of demonstration rain gardens across the city.

1.4. Program Goals and Objectives

The overall goal of Rain Ready Ottawa was to develop and test a program that promotes the adoption of lot-level home stormwater management practices that can be scaled to meet the long-term 50-year targets established in the Stormwater Management Retrofit Plans. It was implemented with the following objectives:

- 1. Build homeowner awareness of stormwater management practices and provide the information required to undertake lot-level improvement projects.
- 2. Build industry capacity to implement projects and normalize home stormwater management practices.
- 3. Reduce financial barriers to action in the priority stormwater retrofit areas through an incentive program.
- 4. Encourage uptake in the priority stormwater retrofit areas through targeted community outreach.

RRO included the following targets for home assessments, industry consultations and project installations for the pilot period.

Activity	Target
Certified Landscape Professional Home Consultations	55
Rain Ready Ottawa Home Assessments	195
Projects installed with RRO rebates	103
Actions completed as a result of Home Assessments (no rebate	23

Table 2: Rain Ready Ottawa Pilot Targets

2. Program Review and Outcomes

2.1. Program Components

This section provides an overview of the various program components and their outcomes over the pilot period of Rain Ready Ottawa. Specific achievements, challenges, and recommendations are also discussed.

2.1.1. Residential Home Assessment Program

Through Rain Ready Ottawa, property owners have received custom stormwater LID management advice for their homes. These home assessments (HAs) are delivered by EnviroCentre, an Ottawa based non-profit organization. They consist of a site visit with a property owner to determine the best on site stormwater solutions for their property. Recommendations are incorporated into a custom report that is delivered to the property owner for them to use as a starting point for retrofitting their property. Properties within the priority areas that receive a home assessment are eligible for rebates following delivery of their final report.

Home assessments were originally identified as an important activity for raising homeowner understanding and encouraging intervention. Home assessments also ensure that the right measures that meet a property's stormwater management needs are selected. Within the original program design, the goal was to deliver 195 home assessments over the pilot period.

Program Outcomes

Since June 2021, Rain Ready Ottawa has delivered 416 Home Assessments (Figure 2), with a waitlist of 643 remaining. Rain Ready Ottawa also conducted one home assessment as a special request for a 13-unit condominium complex. As a result of this home assessment, the condominium corporation redirected of all the units' downspouts.

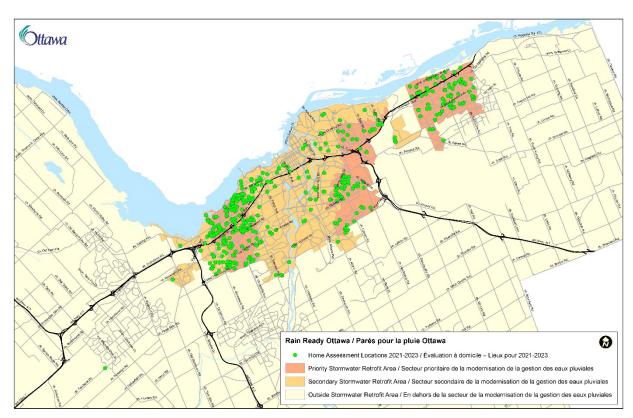


Figure 2: Map of Homes that Received a Rain Ready Ottawa Home Assessment.

Demand for home assessments has been consistently high and distributed across the priority and secondary stormwater retrofit areas of Ottawa (Figure 1), demonstrating that residents are actively seeking and accessing information and supports that can help equip them to better deal with stormwater concerns on their property and within the city.

Demand for home assessments quickly surpassed expectations and the allocated budget, with a waitlist of over 800 households by the end of 2022. Additional funding was re-allocated to allow 150 home assessments a year to be delivered in 2022 and 2023. To further meet the demand for stormwater management advice, an online learning option was developed to equip homeowners with the information needed to decide whether to invest in a project and the skills needed to undertake projects on their own. Home assessments were limited to the priority pilot retrofit areas to encourage project installations through the rebate program. Waitlisted homeowners were directed to utilize the newly launched eLearning program (see Section 2.2.3).

Since 2021, the home assessments have resulted in 25 rebate applications. This is below expectations established in the original program design, where it was assumed that 40 percent of home assessment would result in a rebate application. That actual percentage is 6 percent. Of note, the projects that lead to rebate applications have typically been a larger scale and more complex to implement than those that have been installed as a result of independent action.

Home Assessments have been more successful than expected in incentivizing independent action without the support of a rebate. Based on evaluation surveys, an estimated 33 percent of homeowners who received a home assessment made at least one improvement to their onsite stormwater management. This exceeded program design expectations of 20 percent. Based on user feedback in post-assessment surveys, an estimated 260 projects have occurred as a result of home assessments, with the most common changes being downspout redirections, followed by installing a rain barrel and a garden.

With regards to costs, delivering a home assessment costs approximately \$600, this includes time to conduct the assessment on site, and the time spent developing the full home assessment report. With regards to outcomes, home assessments are leading to implementation of low cost and low effort on-site stormwater management solutions, but they are not translating into the more complex installations that are needed at a high volume to meet the 50-year retrofit study targets, in particular rain gardens and soakaway pits.

Project Type	Estimated Number of Installations
Downspout Redirection	150
Rain Gardens	23
Soakaway Pits	18
Permeable Pavements	21
Rain Barrels	49
Other ^a	9
Total	261

Table 3: Estimated Project Installations from Home Assessments

^a includes rainwater collection and grading.

Lessons and Participant Feedback

Post assessment surveys were conducted in 2022 and 2023 to identify barriers for taking action and in applying for a rebate. Property owners who received a Home Assessment most commonly cited a lack of time and knowledge as the most common barriers to both proceeding with work and in applying for a rebate. The high cost of projects was cited by 1 in 3 as another barrier to proceeding with their recommendations and installing a project.

In addition, for the first two years of Rain Ready Ottawa, home assessments were offered in the secondary priority retrofit area alongside the priority area. This proved a limiting factor for getting projects installed. Many property owners who received a home assessment in the secondary area indicated they would rather wait to see if rebates might be introduced in their area than install their project at the time of receiving their home assessment.

Through home assessment feedback, property owners have indicated that they would have also liked to have received guidance on grading through the home assessment

and more information on how to go about installing rain ready projects. Additional postassessment feedback indicated that they are also interested in receiving additional guidance on how to protect their home from storms and flooding, including protective plumbing and other nature-based solutions such as tree planting.

Additional details on the home assessment feedback surveys can be found in Document 2 Summary of Participant, Stakeholder, and Public Engagement Feedback.

Recommendations

Due to the high per unit cost and low rate of conversion to rebates, it is recommended that home assessments for single family homes not be offered in the next phase of the program. eLearning and other education sessions are more cost effective and are leading to the same rate of project installation currently as home assessments.

Due to the better cost to outcome ratio, it is recommended that home assessments be provided for condominiums, and cooperative housing complexes. Home assessments for single family homes will be reconsidered during the next program review in five (5) years. This may include a user fee model.

2.1.2. Industry Training

To build industry capacity to support projects, meet retrofit goals, and normalize home stormwater management, the City partnered with Landscape Ontario (LO) to offer Ottawa based landscaping companies training in Fusion Landscape Design to help them become certified Fusion Landscape Professionals (FLP).

<u>Fusion landscaping</u> combines the science of hydrology with the art of horticulture to equip these companies with the skills needed to design and install landscapes that are designed first and foremost with stormwater management in mind. Certified FLPs are able to design, install, and maintain downspout redirections, rain gardens, soakaway pits, and permeable pavements.

Landscape Ontario promotes, coordinates, and organizes the training sessions, and Rain Ready Ottawa covers \$500 of the training costs per Ottawa-based attendee. In addition, the City assists with promoting the training locally.

By supporting industry training, the City is supporting these businesses in transitioning their business models to be more sustainable. It helps them engage with the green economy by giving them the training and support needed to implement these techniques. Likewise, this training increases their client base by meeting the increasing demand from property owners for environmentally friendly and sustainable landscapes.

Outcomes

Through this partnership, Landscape Ontario (LO) has successfully trained and certified 31 landscaping and landscape design professionals across 20 local firms (Figure 3). Additional training has been planned with LO to occur in the Winter of 2024. A total of 57 industry professionals have taken the training, with 37 completing the certification.

These local firms are distributed across the city, with a relatively even distribution of rural, suburban, and urban companies employing individual who have achieved certification. Staff are working with LO to improve certification rates and course outcomes.

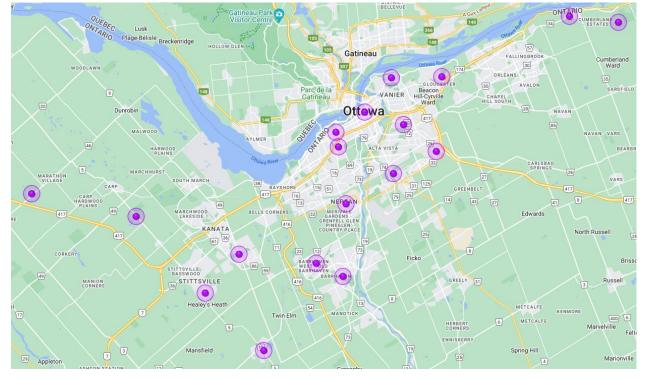


Figure 3: Map of Fusion Certified Companies in Ottawa.

This partnership allows the City to leverage private industry to maximize the reach and impact of RRO, and positions Ottawa well to meet the long-term retrofit targets. The subsidized training and rebates have helped build a positive relationship with this industry group and has turned many into ambassadors for the City, this program, and our stormwater management goals. Outside of rebate projects, many FLPs have stated that they now incorporate some element of fusion landscaping into all of their landscape projects. This leads to additional lot-level stormwater management projects being installed and shows the structural change FLP training is leading to.

Lessons and Participant Feedback

The current FLP training format works well for participants, but some have raised concerns about the registration system and the way in which the training is promoted. Low pass rates have also been a concern. Landscape Ontario has been receptive to feedback and is in the process of updating and improving the FLP training course and accreditation process, including the certification and pass rate, in collaboration with the City of Ottawa, Region of Peel, Region of Durham, and Region of York.

Rain Ready Ottawa has been enthusiastically embraced by many FLP companies. Consultations with certified landscapers indicated strong support for the existing Rain Ready Ottawa program and FLP certification. Both have been found to provide notable benefits to businesses, with rebates being a significant driver of new business for some firms. For RRO, this partnership with private industry has proven integral to meeting program targets, and continuing the successful leveraging of this industry will contribute to meeting the 50-year targets.

Rain Ready Ottawa is frequently promoted and referenced in third party advertising by FLP companies and landscaping suppliers on their websites and marketing campaigns. Promotional efforts by RRO have likewise driven new customers to these businesses. This has resulted in these new customers being better informed on and understanding the value of onsite stormwater measures for their home.

In 2022, RRO was modified to add Interlocking Concrete Pavement Institute (ICPI) certification as an eligible certification to access rebates in 2022. To date no applications have been received for ICPI projects, but outreach has been limited due to changes that occurred within ICPI as a result of its merger with the National Concrete Masonry Association (NCMA) to form the Concrete Masonry and Hardscapes Association (CMHA). As a result, ICPI certification has transitioned into a new certification program that will need to be investigated and added back into Rain Ready Ottawa.

Additional details on the feedback provided by FLPs can be found in Document 2: Summary of Participant, Stakeholder, and Public Engagement Feedback.

Recommendations

It is recommended to continue supporting the FLP certification and certified companies. To better support the training, it is recommended that more outreach and engagement occur at local industry events to better inform them about upcoming training opportunities and how they can most effectively leverage Rain Ready Ottawa.

In order to enhance the involvement of the private sector in raising awareness about Rain Ready Ottawa and facilitating the implementation of on-site stormwater techniques, it is recommended to expand the geographic scope of rebates, provide more marketing support to FLPs, and participate in more industry events. This will assist in streamlining the access to rebates for current certified companies and engaging more firms in the program.

It is also recommended that Rain Ready Ottawa identify other industry sectors where partnerships and training would be beneficial. This could include garden centres, eavestrough installers, and other construction firms that work in landscaping contexts.

2.1.3. eLearning Education Program

In Spring 2023, RRO launched a series of free, online, bilingual learning courses where residents could learn more about the stormwater management techniques RRO

encourages them to install at home. These self-led courses were designed to equip residents with the skills needed to plan, install, and maintain the following:

- Overview of Stormwater Management
- Reoriented and extended downspouts
- Rain Gardens
- Soakaway pits and infiltration trenches

As a part of program modifications made in 2022, residents who take the eLearning courses are now eligible to apply for the downspout redirection, rain garden, and soakaway pits. Each course is approximately 45 minutes in duration and contains an overview of Rain Ready Ottawa, relevant City of Ottawa bylaws, and detailed instruction on the chosen project type.

Outcomes

Since launching in the spring of 2023, RRO's eLearning platform has had 275 signups with over 700 course registrations and 220 course completions (a single user can sign up for multiple courses). It is succeeding in addressing the backlog of demand for home assessments by providing a cost-effective alternative for learning about solutions to stormwater management issues. eLearning provides an avenue for residents who are not interested in getting a home assessment, unable to get one due to the waitlist, or unsure if they need to hire an FLP, to access financial support for projects.

The eLearning courses have succeeded in increasing the number of rain ready projects being installed and the number of rebate applications being submitted. Approximately one in two users report making a stormwater management improvement to their property, with the most common being a downspout redirection. eLearning is equipping residents with the skills they need to undertake some stormwater management projects as do-it-yourself projects.

To date, 12 rebate applications have been submitted and 22 projects installed as a result of a homeowner taking one or more eLearning courses. In particular, eLearning is having an impact on the volume of rain garden rebates being applied for and installed in the priority areas, contributing to meeting the long-term goals for these assets. Improvements to course content, structure, and promotion, alongside expansion of the rebate eligible areas, will likely translate into additional rebate applications.

Lessons and Participant Feedback

Users report a generally high level of satisfaction with the courses, with some technical issues with accessing and navigating the current courses. There has been some interest expressed in more technical guidance, so it is recommended to create complementing resource materials for users to access.

Additional details on the feedback provided by users can be found in Document 2: Summary of Participant, Stakeholder, and Public Engagement Feedback.

Recommendations

It is recommended to undertake improvements to the eLearning courses based on users' feedback. Users have also indicated an interest in learning about additional stormwater management and flood protection techniques such as tree planting, protective plumbing, and climate resiliency improvements for their home. As such, there is an opportunity to expand the course offerings to offer information on additional projects people can install, or additional activities they can undertake to make their home climate resilient.

Creating a course that provides property-owners with the skills for assess their own property should also be explored, as this could help fill existing knowledge gaps and compensate for the pausing of home assessments for single family homes. ELearning users would still need to complete project specific courses in order to be rebate eligible.

While there are currently no concerns that projects have not been properly installed, as the volume of projects installed via eLearning certification is expected to increase, a system for verifying that the projects have been effectively installed should be established through site visits to a select number of applications. This will supplement existing requirements to submit before and after photographs and will provide an extra level of quality assurance that the City is rebating projects that were properly installed and that there are no deficiencies that will result in a poorly performing asset.

2.1.4. Rain Barrels

Targets for rain barrel installations were identified in the stormwater management retrofit studies. To promote the use of rain barrels and encourage best management practices for using them, the City partnered with rainbarrel.ca and community groups in the Pinecrest Creek/Westboro and Eastern Subwatersheds.

Rainbarrel.ca is a national non-profit that helps local groups run fundraisers in which rain barrels are sold for \$55. Fundraising groups make \$10 on each rain barrel sold. Through RRO, the City supported groups seeking to run fundraisers in the priority retrofit areas by providing:

- Education resources on the proper use and installation of rain barrels
- Promotional material for Rain Ready Ottawa
- Prizes
- Social Media boosting

The City also promoted rain barrel sales as a fundraiser tool to increase the number of sale events.

Outcomes

Since 2021, Rain Barrel sales have been promoted using RRO social media channels and through joint promotion with local councillors. Educations materials were developed and shared, alongside RRO promotional material. The impact has been minimal, with the number of sales and volume of rain barrels sold remaining constant over the three years of the pilot.

Lessons and Participant Feedback

Timing has been identified as a factor for limited impact, as many rain barrel fundraisers occur from May to June, which was prior to many of RRO's in person outreach events in 2023. Increasing the amount of engagement that happens before may lead to additional sales as residents continue to express strong demand and interest in rain barrels. This could be partnered with giving away rain barrels through draws at events and having the rain barrels installed professionally to ensure proper functions and facilitate their use as a promotional tool.

Recommendations

Rain barrels on their own are not an effective on-site stormwater management solution and must be combined with other projects. To support the high demand from residents for support in installing rain barrels, while also ensuring that rain barrels contribute to a permanent on-site stormwater management solution, it is recommended that rain barrels installed with a diverter to a redirected downspout be added to the downspout redirection rebate as an eligible expense.

It is also recommended to continue supporting local rain barrel sales that occur through rainbarrel.ca through promotional support as a part of outreach and engagement activities.

2.1.5. Financial Incentives

Rain Ready Ottawa offers rebates of up to \$5,000 to incentivize property owners in priority areas to retrofit their properties with lot-level stormwater management techniques.

Rain Ready Ottawa offers five different rebates (Table 4). Rebated practices follow the <u>Low Impact Development Stormwater Management Planning and Design Guide</u> and <u>Fusion Landscape Design</u> principles. These two guidelines provide science based and field-tested best practice recommendations for on-site stormwater management for residential properties.

Rebate	Description	Funding	Notes
Downspout Redirection	Extension of downspouts to drain a minimum of 3 metres from a residence while also being managed on site. Also covers costs to disconnect downspouts directly connected to the City's stormwater system.	Up to \$750	Based on eligible expenses, residents can claim up to \$1,000 per redirection, 75% of expenses being rebated.

Table 4 – Overview of Rebates

Rebate	Description	Funding	Notes
Rain Gardens	Bowl shaped garden designed to hold and infiltrate water into the group. Typically planted with native plants to provide co- benefits to pollinators.	Up to \$2,500	Rain garden size and rebate is calculated based on the Directly Connected Impervious Area (DCIA) being managed. A DCIA is any impervious area that is generating runoff that the new project is now managing. Examples include roofs and walkways. Rebate is \$75 per metre squared.
Soakaway Pits	Underground chambers filled with loose, clear stone and wrapped in geotextile. Stores runoff and allows it to slowly infiltrate back into the ground.	Up to \$2,500	Soakaway Pit size and rebate is calculated based on the DCIA being managed. Rebate is \$20 per metre squared.
Permeable Pavement	Hardscapes that allow water to infiltrate and be absorbed into the ground where it falls.	Up to \$5,000	Permeable pavement is repeated based on the final size of the installed area. This is calculated at \$50 per square metre.
Fusion Landscape Design	Applicants who work a certified landscaper can rebate some of the design work.	Up to \$500	Credit for landscape design work. Design must include at least two of the above project types.

To be eligible for these rebates, the property must be zoned residential and located in one of the two priority stormwater retrofit areas. These are:

- Pinecrest Creek/Westboro Stormwater Retrofit Area
- Eastern Subwatersheds Stormwater Retrofit Area

Property owners can verify their eligibility by utilizing the eligibility checker on ottawa.ca/rain. Once a property owner has verified their geographic eligibility, they must satisfy one of the following criteria:

- Receive a Rain Ready Ottawa Home Assessment
- Complete relevant eLearning modules
- Receive a quote from a certified Fusion Landscape Professional

Applications are submitted through ottawa.ca/rain and are reviewed and approved by City staff on an ongoing basis. Applications can be made for more than one project type and are limited to a maximum of \$5,000 per property. Two rebates provide shared or complete cost covering up to a set amount, while three provide a rebate based on either the final size of the installed project or the amount of runoff being managed by the installed project. Once they have received approval, applicants can complete their project(s). Following completion, applicants need to submit a claim form to the City through ottawa.ca, which is then reviewed and, if all conditions remain satisfied, approved.

Outcomes

As of December 2023, Rain Ready Ottawa has received 106 applications for rebates, with 101 being approved, and installation complete or underway on a total of 157 projects. Rebates have also been given for 39 fusion landscape designs. Over \$340,000 in rebates have been allocated, supporting a total private investment of \$1.45 million (Table 5 and Table 6).

The average cost of a project is \$18,141 comprised of an average City funded rebate of \$3,519 and average private investment of \$14,620 a funding ratio of approximately 1 to 4. This totals \$1.8 million invested in lot level stormwater management since 2021, which is diverting harmful stormwater runoff from City infrastructure and our natural waterways, protecting both assets for the long term.

The number of applications and the value of projects has been consistently growing since the launch of RRO in 2021. From 2021 to 2023, the total value of approved rebates and the total project value more than doubled, demonstrating the growing interest in the program and its effectiveness in incentivizing action through its various program streams. Annual growth in applications and project value has been 53%. It is expected that these volumes will continue to grow as more firms are certified, more residents use eLearning to install projects themselves, and if the eligible area for rebates expands. This in turn will positively impact program towards meeting the 50-year retrofitting goals.

Year	Applications	Year over Year Increase	Number of Projects	Year over year Increase
2021	22	-	27	-
2022	32	+45%	41	+52%
2023	51	+60%	89	+117%

Table 5: Program applications by year, 2021-2023.

Table 6: Total investment by year, 2021-2023.

Year	Total Rebate Value	Year over Year increase	Total Project Value	Year over Year Increase
2021	\$72,179	-	\$351,922	-
2022	\$109,690	+50%	\$587,215	+66%
2023	\$162,982	+49%	\$838,851	+40%

Applications that were not approved were either withdrawn, incomplete, or submitted by a property owner from outside the rebate eligible area. One claim was also denied as the final project as installed did not abide by the program guidelines and City bylaws.

The most common projects supported by Rain Ready Ottawa have been permeable pavements and downspout redirection (Table 7). Permeable pavements constitute 43% of all projects funded by RRO while downspout redirections constitute 41%. This is a result of most permeable pavement projects including a downspout redirection.

The high ratio of permeable paving projects has been driven in large part by the proactive marketing efforts of the permeable paving industry, and the rebates successfully reducing the financial barriers of this asset. Rain gardens and soakaway pits trail these two project types by a significant margin, however both project types have seen an uptick in rebate applications in 2023 as a result of the launch of eLearning, increased home assessment follow up, and improved online reference resources for these two project types. Applications are also beginning to involve more project types, with a significant increase in the number of project types per application in 2023 compared to previous years.

Rebate	Total Rebate Amount Approved	Number of Projects	Percentage of all Projects	Percentage of Rebates
Downspout	\$45,535	64	41%	33%
Redirection				
Rain Gardens	\$18,030	13	8%	7%
Soakaway Pits	\$12,950	11	7%	7%
Permeable	\$268,580	67	43%	35%
Pavement				
Project Total		157		
Fusion Design	\$21,375	39	N/A	20%
Rebate				
Total	\$344,850	196	100%	100%

Table 7: Summary of Rebates Awarded

Rain Ready Ottawa rebates are successfully incentivizing investment by property owners in lot level stormwater management techniques. In turn this is leading to progress in meeting the retrofit goals set out in the stormwater retrofit plans. Compared with projects that occurred as a result of a home assessment, rebated projects are larger in scope and more complex, with many applications incorporating multiple project components.

All program streams have been successful in leading to rebate applications. Eligibility for the rebate was most often achieved through the FLP stream. Across 106 applications, 82 worked with an FLP, 25 received a home assessment, and 11 were the result of eLearning. Of note, 13 applications were eligible as a result of at least two criteria. Table 8 summarizes this information. Note that the number adds up to greater than 106 as a result of some applicants utilizing multiple eligibility criteria.

Table 8: Source of Eligibility

Eligibility Criteria	Number	Percentage of all applications
Fusion Landscape Professional	82	76%
Home Assessment	25	24%
eLearning	11	10.5%

The following are images of projects that have been supported by the rebate program.

Figure 4: Example of Rebate Supported Projects. Clockwise, a permeable driveway, downspout redirection, and soakaway pit.





Lessons and Participant Feedback

Post-project surveys with rebate recipients indicated a high level of satisfaction with the existing application and claim process and the existing rebate program. Recipients consistently highlighted that the program reduced financial barriers for installing these projects. Suggestions for improvement included clarifying the requirement for a home assessment, improving the education resources available to support homeowners in completing the work themselves, and increasing outreach and engagement with the community.

For many applicants, installing rain ready practices provided them with peace of mind during extreme weather events, was more environmentally friendly and sustainable, and climate resilient. Applicants reported reduced runoff from their property and reduced localized flooding on their property and damage to their home. Many encouraged the City to continue offering this program to support more residents like them.

Additional details on the feedback provided by rebate recipients can be found in Document 2 Summary of Participant, Stakeholder, and Public Engagement Feedback.

Recommendations

To make it easier for residents to determine if their project is eligible, improve outcomes, and help meet the 50-year targets, it is recommended to modify the existing project criteria to broaden the eligible costs within some programs and add new requirements to others as summarized in Table 9 below.

Table 9: Proposed Rebate Changes	Table 9:	Propose	d Rebate	Changes
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Project	Proposed Changes	Funding
Downspout Redirection	 i. Provide clearer language on eligible expenses, including on eavestroughs. iii. Add rain barrels as an eligible expense if: The rain barrel is installed using a diverter connected to the downspout. The downspout is still extended to a minimum of 3 metres from the foundation. Rain barrels installed without a diverter will be ineligible. Rain barrels cannot be installed independent of extending the downspout to ensure the safe conveyance and dispersal of stormwater on site. 	Remains Unchanged
Rain Gardens	No changes recommended.	Remains Unchanged
Soakaway Pits	No changes recommended.	Remains Unchanged
Permeable Pavement	i. Require approval from City Right of Way (RoW) staff for all applications that propose widening of driveways and walkways.	Remains Unchanged
Fusion Landscape Design	No changes recommended.	Remains Unchanged

Issues related to wider driveways require new language be added to the applicant guide and submission of proof of approval from the Right of Way (RoW) group. Unsanctioned widening resulted in the denial of one claim and has caused issues with others.

It is recommended to maintain the same maximum funding amounts per project and per property as current funding amounts are deemed effective at incentivizing installations. This number should be adjusted in the future to account for cost increases in these projects, if required.

Changes to the program agreement should also be made to allow the City to use completed projects in promotion and advertising for RRO, alongside permitting the City to install promotional signage in front of completed projects for a set number of days to promote RRO. This would help the program more effectively leverage residential projects for peer-to-peer exchanges that encourage others to do the same.

2.1.6. Financial Incentive Participation

Projects supported by Rain Ready Ottawa have been installed across the two designated program priority retrofit areas (Figure 5). To date, 62 applications have been received from the Eastern Subwatersheds and 43 have been received from Pinecrest Creek/ Westboro. More applications have been received from the Eastern Subwatersheds, reflecting that this subwatershed contains about twice as many eligible properties than the Pinecrest Creek/Westboro subwatershed.

Within the priority areas, participation has been concentrated in some neighbourhoods, most notably within the Carlingwood/McKeller Park/Highland Park neighbourhoods of the Pinecrest Creek/Westboro priority area and the Elmvale neighbourhood of Alta Vista Ward in the Eastern Subwatersheds.

Distribution across Orleans is notably well dispersed, indicating that messaging is successfully reaching residents in priority areas across Orleans West – Innes, Orleans East – Cumberland, and Orleans South – Navan. Of note, in 2023, there was an increase in program participation in College Ward which was likely as a result of more dedicated outreach in this ward. Total applications went from 1 to 8 over the course of the year.

Uptake gaps are present in some existing stormwater retrofit areas. There remain opportunities to increase uptake in College, Knoxdale-Merivale, and Beacon Hill-Cyrville. These can be addressed by designing and undertaking more dedicated outreach in these areas. Likewise, building stronger relations with local community groups would help with engaging residents in these areas.

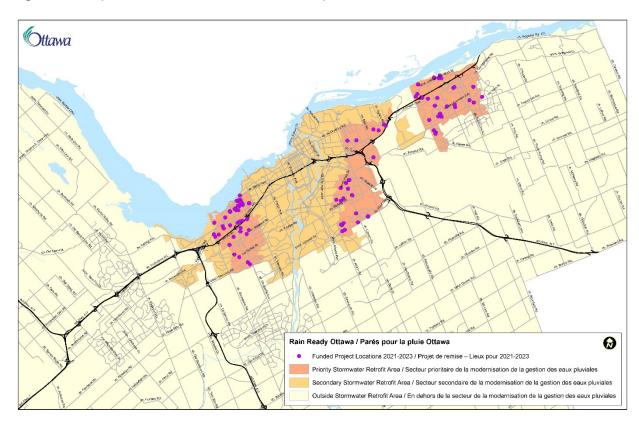


Figure 5: Map of Distribution of Rebate Recipients.

The current rebate program effectively addresses the needs of freehold single-family properties, townhouses, and semi-detached dwellings. Financial barriers are being reduced and projects are getting installed. Residents living in these kinds of properties within the rebate eligible area are able to easily satisfy the application needs of the rebate.

The current rebate structure however is ineffective at supporting properties with shared ownerships, such as condominiums and cooperative housing. Rain Ready Ottawa has consistently received inquiries from residents living in these kinds of properties, but few have been able to pursue the rebates as the scale of changes needed at these properties does not align with current financial supports.

For example, low rise condominiums cooperative housing within the priority areas cannot effectively access rebates as the current program does not account for the communal landownership structure of these properties. Under the current guidelines, they receive a maximum rebate of \$5,000 regardless of the number of units as a result of communal asset and land ownership, whereas freehold properties of a similar layout could benefit from that amount on a per property basis. Exploring the development of a separate rebate stream that is better suited to these properties will lead to an increase in adoption of on-site stormwater management techniques.

2.1.7. Demonstration Projects

To promote Rain Ready Ottawa and rain gardens as a stormwater management solution, the City worked with EnviroCentre to design and install three (3) demonstration rain gardens in the Eastern Sub-watershed and the Pinecrest Creek/Westboro stormwater retrofit areas.

The rain gardens were designed in collaboration with a fusion certified professional, City staff, Councillors and the local community. They were installed at the following locations:

- 1. Margaret Rywak Community Building, Manordale Park, 2021 (Figure 6)
- 2. Pierre Rocque Community Centre, 2022
- 3. Aquaview Park Community Centre, 2023

Outcomes

The communities where the rain gardens are located have welcomed the addition of a new community asset, as have local Councillors. Interest in getting rain gardens installed at additional sites across the city has been expressed by community groups and Councillors to both meet the environmental goals of Rain Ready Ottawa and to beautify public spaces.

These gardens are important outreach activity to demonstrate to the community the value of planting a rain garden on their property to deal with stormwater. Likewise, they build connections between Rain Ready Ottawa and communities and demonstrate to residents that the City is investing in green stormwater management infrastructure to improve how stormwater is managed at public buildings to both protect the Ottawa River watershed and public assets from runoff damage.

Figure 6: Margaret Rywak Community Building Rain Garden, 2021 and 2023



Lessons and Participant Feedback

While community groups have embraced the rain gardens as an idea and local asset, maintenance has been completed by RRO staff and contractors to date. Options for long term maintenance need to be explored, including potentially through formal agreements with local community or gardening groups. There are multiple rain garden community maintenance programs that exist in other municipalities that Ottawa could learn from in order to meet the maintenance needs of the current and future rain gardens, as well as Ottawa examples such as the partnership to maintain the bioswales along Sunnyside Avenue and various community planter boxes.

Recommendations

Aside from the program promotion and community improvement benefits, demonstration projects also contribute to meeting the public targets of the City's stormwater management retrofit plans. Table 10 provides an overview of these goals within the Pinecrest Creek/Westboro Subwatershed. Rain Ready Ottawa should continue to coordinate and lead the installation of rain gardens to meet these goals.

Table 10: Target Lot level Stormwater Management Measures on Public Property within the Pinecrest Creek/Westboro subwatershed.

SWM Measures	SWM Measure by Land use with Number of Target Install and/or area converted.											
	Residential Area	Institutional Area	Commercial Area	Industrial Area								
Downspout Redirection	N/A	46	N/A	N/A								
Rain Gardens	N/A	23	N/A	N/A								
Permeable Pavement – Parking	N/A	6.80 ha	N/A	N/A								
Permeable Pavement - Sidewalks	10.34 ha	0.94 ha	0.78 ha	0.10 ha								

Rain Ready Ottawa has also begun supporting outreach activities related to other City Low Impact Development (LID) pilots including the existing Hemmingwood Way bioretention cells and the upcoming Carlingwood Library permeable parking lot. Supporting outreach on these activities has allowed RRO to leverage them to create linkages between what the City of Ottawa is doing and what residents can do. It is recommended to continue supporting these LID pilots in 2024 and beyond.

2.1.8. Community Engagement Initiatives

Outreach, engagement, and communications constitute an important activity for the RRO program and is done through the leveraging of in person events, online events, and advertising.

Driving behavioral change is an integral part of meeting the stormwater retrofit goals. Rain Ready Ottawa's outreach activities focus on informing residents on the benefits, both on an individual and community scale, of changing how they manage their stormwater. Messaging also focuses on building climate resiliency, sustainability, and flood preparedness.

Outcomes

Rain Ready Ottawa has dedicated social media pages that allow for flexibility in designing and rolling out messaging to residents. This has helped the program build and consistently distribute content year-round. Content planning and posting was handled by EnviroCentre. At times, there were content gaps because content was only being planned out one quarter at a time. As such there is a need for longer term planning of the social media pages.

To date, these pages have had a total reach of over 40,000 and have a total of 601 followers. Investing additional resources into paid social media campaigns and pairing those with campaigns utilizing City owned communications tools and local traditional media types in target areas, will lead to greater reach and engagement.

Rain Ready Ottawa content was distributed monthly using City newsletters, mainly the Climate Change Newsletter. In 2023, this newsletter had a total distribution of 158,055 with an average monthly readership of 8,318. RRO content was also distributed in Councillor newsletters and social media. RRO also appeared in several stories posted on the City's news page.

In 2023, the lifting of remaining public health guidance that limited in person engagement allowed for a significant increase in the amount of in person engagement undertaken by Rain Ready Ottawa that year.

These events included a Flood Preparedness Webinar, Earth Day Seminar, Rain Garden Workshop, and various community speaking engagements. Pop up booths at the Westboro Farmers Market, Orleans Farmers Market, and Alta Vista Farmers Market also provided opportunities for residents to learn about Rain Ready Ottawa. The Ottawa Fall Home Show was the most successful event, with 311 direct engagements. Across all events, RRO cumulatively engaged with over 1,000 residents on stormwater management issues and solutions at events across Ottawa in 2023.

Event	Date	Direct Engagements
Ward 8 and 9 Flood Preparedness Webinar	April 01, 2023	35
Earth Day Seminar	April 01, 2023	80
Ward 7 Seniors Tea	May 01, 2023	33
Ward 10 Seniors Tea	June 01, 2023	50
Westboro Farmers Market	July 15, 2023	92
Orleans Farmers Market	July 27, 2023	45
Alta Vista Farmers Market	August 12, 2023	48
Aquaview Community Association BBQ	August 27, 2023	38
Ward 7 Community Event	September 01, 2023	43
Rain Garden Workshop	September 16, 2023	40
Sustainability Showcase	September 23, 2023	50
Ottawa Fall Home Show	September 28th – October 1st 2023	311
Green Doors Open	October 14, 2023	35
Community Speaking Engagements	Various	100
Total		1,004

Table 11: Summary of Outreach Events in 2023.

Participation in many events was done in coordination with the wider Climate Change and Resiliency communications team to promote multiple City of Ottawa homeowner support programs, such as the Better Ottawa Homes Loan program. Information was also provided on the Residential Protective Plumbing Program.

Rain Ready Ottawa has attracted the attention of local media multiple times since launching in 2021. All media engagements have been earned through the activities of the program. This has included two on air interviews with the project coordinator in 2023 and a site visit to the Manordale Park rain garden in 2021 by CTV News. In addition, Rain Ready Ottawa has been referenced in media interviews with fusion certified landscapers and within articles discussing flood preparedness.

To encourage action on downspout redirection and rainwater collection, a contest was held from September to October 2023. The contest was open to residents living in both the priority and secondary retrofit areas and received 39 entries from across the city. The contest awarded a prize of a rain garden and a fusion landscape design. To participate, residents had to either redirect and extend their downspout, or install rainwater collection and submit proof.

The contest generated significant media attention, Councillor engagement, and resident engagement. Social Media ads run by Public Information and Media Relations (PIMR) in support of the contest had a total reach of 300,000. The prizes were awarded at an Environment and Climate Change Committee meeting, which generated additional exposure for the program both internally and externally. The contest also led to the installation of 39 downspout redirection or rainwater collection projects across the city.

Outreach and engagement events have positively contributed to increasing the number of visitors to ottawa.ca/rain. Together, engagement and outreach events resulted in a 50% increase in the number of visitors to ottawa.ca/rain in 2023 when compared to 2022. In person events and promotional campaigns led to spikes in activity on Ottawa.ca/rain, demonstrating the impact these are having on program awareness amongst the public. Overall, ottawa.ca/rain has been visited over 50,000 times and traffic is highest from early spring to late fall, coinciding with rainy weather and flooding events in Ottawa.

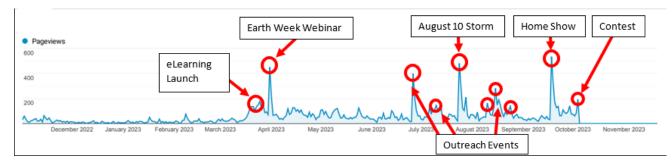


Figure 7: Engagement Event Impacts on Web Traffic on ottawa.ca/rain in 2023.

Feedback from FLPs, rebate recipients, home assessment recipients, and the general public on outreach and engagement highlighted the need for RRO to increase the amount of outreach and engagement it currently undertakes. Suggestions include creating more educational opportunities for residents through online educational offerings, additional webinars, and in person classes.

Increasing the number of engagement events will further drive traffic to RRO resources and equip residents with the knowledge and skills needed to confidently access RRO, undertake the work, and acquire a rebate. The need for more engagement events will only increase with the expansion of the program priority area and the opportunity to leverage other programs to promote RRO.

Feedback was also solicited and received on the current layout of ottawa.ca/rain. While many users find the current information helpful, some struggled to locate relevant information or important documents, including the applicant guide for rebates. A holistic review of the current webpage is currently underway, and updates made in time for Spring 2024. In the longer term, investments should be made in improving RRO's digital assets including exploring a combined application and claim portal.

To further drive engagement and outreach, Rain Ready Ottawa should continue to collaborate with complementing homeowner programs such as the Better Homes Ottawa Loan Program and the Residential Protective Plumbing Program. Likewise, there are opportunities to align with other programs such as the City's tree planting programs, proposed on-site stormwater management requirements in the draft Infrastructure Master Plan (2024) and anticipated upcoming Climate Resiliency Strategy activities.

By improving the alignment of activities and messaging with other climate mitigation, adaptation, and homeowner support programs offered by the City, the reach and awareness of Rain Ready Ottawa could expand, in conjunction with raising awareness for these other programs.

2.2. Overall Evaluation of Program

Overall, the current program design is effectively engaging with residents and industry on lot-level stormwater management. Homeowners are becoming more aware of what they can do to reduce stormwater runoff from their property and are taking action to implement changes. At the same time, private industry is being effectively equipped to install these solutions. The program should continue to be implemented as designed, with an increased leveraging of in person engagement and private industry to drive awareness and adoption amongst both groups, alongside improving program outcomes across the city. Likewise, increasing the amount of rebate funding available and expanding the eligible area will lead to an increase in the number of lot-level projects being implemented.

When measured against the program's objectives, Rain Ready Ottawa has achieved the following:

- 1. Build homeowner awareness of stormwater management practices and provide the information required to undertake lot-level improvement projects.
 - Outreach and Engagement activities have successfully informed residents on the value of these systems and have resulted in increases of engagement with the program.
 - Home Assessments have been extremely popular and have equipped hundreds of households with the knowledge to make simple changes. However, this is a costly activity and has not led to the kind of complex projects needed.
 - eLearning and other education sessions have attracted high attendance and user numbers. Content for these has been designed to be instructional and informative and is successfully leading to homeowners undertaking lot-level improvement projects.
- 2. Build industry capacity to implement projects and normalize home stormwater management practices.
 - Rain Ready Ottawa has successfully trained 57 landscape professionals in fusion certified landscaping in collaboration with Landscape Ontario. Of those training, 37 have been certified and are actively implementing fusion landscapes across Ottawa.
 - Regardless of eligibility for rebates, landscapers are incorporating FLP techniques into their designs for clients across the city, not just those within RRO priority areas.
 - Supporting firms in meeting changing client demands and in transitioning to the green economy.
 - Industry is increasingly marketing RRO and the solutions it promotes and there is demand from additional firms to be certified to be able to engage with RRO.
- 3. Reduce financial barriers to action in the priority stormwater retrofit areas through an incentive program.
 - Rebates are incentivizing the installation of on-site stormwater management techniques and reducing financial barriers, most notably for complex solutions such as permeable pavement and comprehensive landscape projects that involve multiple elements. Scaling up the rebate program is needed to meet the priority retrofit area targets.
 - Using three eligibility streams has been effective at getting projects installed.
 - Rain Ready Ottawa offers an effective range of low-cost to high-cost solutions that meet the needs to residents with varying income levels.

- 4. Encourage uptake in the priority stormwater retrofit areas through targeted community outreach.
 - Targeted outreach at both community events and ward events has resulted in distribution across the priority areas. It has led to notable clusters of success with encouraging installations.
 - Coordinating outreach efforts with other complementing programs and Councillor offices has led to better outcomes in targeted neighbourhoods and wards.





Rain Ready Ottawa should continue to be implemented and scaled up to achieve the 50-year stormwater retrofit targets as established in current and future retrofit studies.

In terms of cost effectiveness, outreach and engagement, eLearning, and Fusion landscape Certification were the most cost-effective activities. They either resulted in a high level of engagement or resulted in the best cost-outcome ratio for project installations.

With regards to program targets, RRO is anticipated to meet or exceed all Key Performance Indicators (KPIs) established in the initial program design (Tables 12 and 13). Home Assessments succeeded in leading to the installation of simple fixes, often without the support of a RRO rebate. The rebates themselves were successful in incentivizing the installation of more complex projects, such as permeable pavements or complete landscape redesigns, through the fusion landscape professional stream and to a lesser extent, the eLearning stream.

 Table 12: Key Performance Indicators for the RRO Pilot

Activity	Target	Completions
Certified Landscape Professional Home Consultations	55	39ª

Activity	Target	Completions
Rain Ready Ottawa Home	195	416
Assessments		

a. Captures Fusion Landscape Professional Design Rebates. This number does not capture the total number of consultations conducted by private businesses, who have indicated through surveys and conversations that they promote Rain Ready techniques in all residential projects they undertake in Ottawa.

Table 13: Project Installation Targets and Outcomes from RRO programs, 2021-2023

Activity	Installation Target	Completed	Approved and under construction.
Projects installed with RRO rebates.	103	95	61
Actions completed as a result of Home Assessments (no rebate)	23	209ª	-
Total	126	298	61

a. Based on home assessment user feedback surveys where approximately one in three have indicated that they implemented at least one of their recommendations within one year of receiving the report. Numbers here do not include rain barrels.

Outside of rebate applications, FLPs have indicated that they are increasingly incorporating fusion techniques into all of their residential projects, regardless of rebate eligibility. This successful industry-wide shift will contribute to meeting the 50-year targets, but changes will need to be made to data collection to ensure that this impact can be effectively measured.

Expanding the eligible rebate area will add additional targets to the program but will also further advance the goals of the Ottawa River Action Plan and the Infrastructure Master Plan by supporting more on-site stormwater management for the benefit of the City's built and natural assets.

2.3. Program Delivery

The pilot program was delivered by the Climate Change and Resiliency (CCR) Team within the Planning Real Estate, and Economic Development Department (PRED), with financing and technical advice from the Infrastructure Planning division of IWSD. Delivering RRO through CCR has benefitted the program through joint promotional activities with the Better Ottawa Homes Loan Program, a program that helps residents retrofit their home to mitigate emissions and build resiliency.

An internal Technical Advisory Committee (TAC) was involved in the original design of the pilot program and provided guidance and suggestions on improvements during the pilot. For 2024, it is recommended that the TAC be dissolved, and its members be consulted going forward on an as-required basis.

With regards to the budget, the pilot program has spent or committed most of the allocated budget (Table 14). Remaining pilot funds will be allocated to rebates.

Program Component	Budget	Spent to Date	Committed	Remaining
Fusion Landscape	\$60,000	\$28,991	\$10,000	\$21,009
Professional Program				
Residential Home	\$195,000	\$254,522	-	(\$59,631)
Assessment Program				
Community	\$75,000	\$42,523	\$7,850	\$24,626
Engagement Program				
Residential Incentives	\$340,000	\$205,564	\$135,862	(\$1,426)
Communications	\$10,000	\$3,119	-	\$6,881
Sub-total	\$680,000	\$534,831	\$173,712	(\$28,543)
Contingency	\$70,000			\$70,000
Total	\$750,000	\$534,831	\$173,712	\$62,884
Demonstration Rain	\$100,000	\$86,878	-	\$13,122
Gardens				

Table 14 – 2021-2023 Rain Ready Ottawa Pilot Budget as of December 2023

2.4. Environmental Scan of Other Municipal Stormwater Management Programs

To support the review of the Rain Ready Ottawa program, a review of 65 comparable programs was undertaken to understand general program trends. Programs were evaluated based on the types of projects they support, the amount of funding available, the way that funding was allocated, if they offered home assessments, and the nature of their outreach and engagement activities. Additional facts of note were recorded alongside each program. Details of this review can be found in Appendix 1.

To support the review of these programs, interviews were held with the program coordinators of programs in Guelph, Kitchener, Toronto, Victoria, Delta, Edmonton, Washington D.C., and Montgomery County, Maryland. These programs were selected for their similarities to the existing Rain Ready Ottawa program and offered opportunities to derive lessons learned on activities that Rain Ready Ottawa is seeking to scale up in the future. Findings were incorporated into the review document as a part of the recommendations.

Appendix 1: Summary of other stormwater management programs in North America

Municipalities across North America offer a diverse selection of stormwater management education, credit, and rebating programs. A review of 65 programs was undertaken in late 2023 to understand the trends and direction of these programs. This built on work conducted in 2021. It was conducted through review of the program documentation and conversations with respective program coordinators. Table 16 summarizes the practices offered by these programs. A summary of the programs reviewed can be found in Document 2: Review of Residential Stormwater Information and Incentive Programs in Canada and the United States.

Program Component	Count	Percent With
Downspout Redirection	13	20%
Rain Gardens	26	40%
Soakaway Pits	3	5%
Permeable Pavement	8	12.5%
Rain Barrels/Cisterns	29	45%
Tree planting	5	7.5%
Depaving	1	1.5%
Green Roofs	4	6%

Table 15: Summary of Stormwater Management Program Components

Across municipalities, programs varied both in the types of stormwater practices supported and the incentive levels provided to install these projects. As in research conducted in 2021, rain barrels remain the most common practice to be incentivized, followed by other forms of rainwater collection and rain gardens. Incentives for soakaway pits, permeable pavement, and downspout redirections are less common. Notably, a number of programs provide funding for tree planting and green roofs in support of onsite stormwater management.

Program delivery also varies considerably, ranging from full delivery by municipalities, to outsourcing to non-profit entities. Aligning with Ottawa's current approach, most municipalities use a combination of the two to maximize program reach and activities.

Programs that support tree planting typically install the tree at no cost to the property owner. Support for tree planting was justified as a result of their low cost-to-benefit ratio when it comes to stormwater absorption. A co-benefit of tree planting is it supports the growth of the urban tree canopy and reduces the urban heat island. Green roof programs were only offered within highly urbanized municipalities, such as New York City, where limited green space means these solutions are more viable than in areas with more suburban or greenfield characteristics.

Of the programs reviewed, 10 were a credit program, and 35 were a rebate program. In addition, 1 offered a combination of both, with rebates being offered to residential properties and credits offered to ICI and higher density projects. Of the remaining 20, most were awareness and public education programs, with some offering minimal incentives such as a set number of free rain barrels annually.

Credit programs give residents reduced stormwater management fees in exchange for installing projects that contribute to reducing stormwater runoff. Credit programs typically focus on one project type, typically rainwater collection and storage in rain barrels and cisterns but can also include rain gardens and permeable pavements.

While crediting programs provide for an annual source of repayment for residents, they do not address the kind of upfront financial barriers that prevent adoption in the first place. In addition, previous research conducted as part of developing the RRO pilot found that stormwater credit programs are costly to administer as they require an ongoing assessment of changes in runoff for each individual property. This previous research also determined that rebate programs are more likely to lead to action on the part of private property owners due to how it reduces initial financial barriers to adoption.

Rebate programs tend to be incorporated into broader programs that provide residents with more financial support and guidance than be found in crediting programs. Guelph, Hamilton, and Toronto are all municipalities where rebate programs for onsite stormwater management can be found. These programs rebate a comparable suite of projects as Rain Ready Ottawa, including rain gardens, downspout redirections, and permeable pavements.

These programs aim to reduce runoff volumes entering both local watersheds and municipal stormwater management systems. They also improve residents' resiliency to rainfall events, protect their property, and contribute to greening cities. Many rebate programs included a home assessment aspect, either as a requirement for an application, or an additional resource for residents. Home assessments are typically delivered free of charge, and for those programs where it was a requirement, concluded with a scheduling of a project installation date.

Across Canada, crediting and rebating programs can be found in every province, with the highest concentration of these programs being in Ontario, following by British Columbia. The City of Guelph for example offers a rain garden rebate that has utilized home assessments and certified installers to successfully install 87 rain gardens since launching in 2019.

More broadly within North America, cities including Seattle, Philadelphia, and Washington DC offer rebates to residents to install on-site stormwater management, with rebates being offered ranging from \$1,500 to \$7,500 USD.

Examples include Washington DC's RiverSmart program, which provides rebates to homeowners to install rain gardens, permeable pavement, and rain barrels. This program has been in place since 2008 and has resulted in over 20,000 project installations in that time. Philadelphia's rebate program has incentivized 5,000 project installations since 2012. Both of these programs utilize a combination of home assessments and community engagement to drive installations. The DC RiverSmart program delivers 1,100 home assessments a year, with 50% of those home assessments leading to a project being installed within 6 months.

Rebate programs in the US are notable for their broader scope and higher rebate amounts when compared to most Canadian programs. The Northeast US in particular has many major cities running comprehensive rebate programs that support not only residential properties, but ICI properties as well.

As identified in initial research in 2021, a diverse approach to encouraging the adoption of onsite stormwater management techniques by private property owners is needed to incite action and behavioral change. These lessons were incorporated into Rain Ready Ottawa and have resulted in a multi-faceted program that has led to significant action by target audiences.

As a testament to the success of its diversified approach, Ottawa has begun to attract attention from other municipalities across Canada who are looking to replicate the approach that Rain Ready Ottawa has taken in dealing with issues related to stormwater management and runoff, such as Edmonton and the Region of Durham.

Overall, compared to other stormwater retrofit rebate programs in Ontario, Ottawa's approach is more diversified, and has been more successful in incentivizing the installation of a variety of stormwater management projects than comparable programs. Ottawa's approach is more comparable to the diversified programs common in the United States and Rain Ready Ottawa should continue to look to these, as well as other Canadian based programs for best practices and inspiration going forward

Program Name (outdoor, ind outdoor) Host organization Location	oor, indoor and	Downspout Disconnection	Rain Barrels	Raingardens	Permeable Paving	Backwater valves	Soakaway Pit	Funding Amounts	Rebate / Stormwater Charge Credit / Subsidy	Home Assessment Component	Resident Education and Outreach	Notes
	Cana	adian Pr	ograms									
Front-yard Makeover Sustainable Neighbourhoo Plan Lake Wilcox, Richmond Hil	-	0	1	1	1	0			Rebate	Yes	Yes	
Stormwater Stewardship Hamilton Conservation Au Hamilton Area		1	1	1	1	0	1	\$2,500 Max	Rebate	Yes	Yes	City of Hamilton is exploring further residential financial support. <u>Link. Retrofit only.</u> <u>Stormwater Incentive Program</u> Engage Hamilton
Stormwater Credit Progra City of Kitchener Kitchener	<u>m</u>	0	1	1	1	0	1	Credits of 20-45% depending on stormwate r captured	Credit	No	No	Separate ICI program offering credits divided into three types
Waterloo Stormwater Ma City of Waterloo Waterloo, ON	nagement	0	1	1	1	0	1	Credits of 9-45% depending on stormwate r captured	Credit	No	No	Trees are considered eligible expenses for the credit based on the amount of stormwater it is calculated that they can absorb.
RAIN Smart Neighbourho Reep Green Solutions Kitchener	<u>ods</u>	0	1	1	1	0	0		Credit	Yes	Yes	Offers onsite home assessments to help people identify the solutions that can help them.
Downspout Disconnection Program Region of Peel Brampton, Mississauga, Ca		1	0	0	0	0	0	\$1,000 Max	Rebate	No	Yes	Eliminating direct connection to the stormwater system of the region. Post project site visit for verification.
Wet Weather Flow Maste City of Toronto Toronto		1	0	0	0	1	0		Rebate		Yes	

Program Name (outdoor, indoor, indoor and outdoor) Host organization Location	Downspout Disconnection	Rain Barrels	Raingardens	Permeable Paving	Backwater valves	Soakaway Pit	Funding Amounts	Rebate / Stormwater Charge Credit / Subsidy	Home Assessment Component	Resident Education and Outreach	Notes
PollinateTO Community Grants City of Toronto Toronto							Up to				Grants are for community rain gardens. Can be located on private property if at least 3 rain gardens are installed to
Eco-Roof Incentive Program City of Toronto Toronto	0	0	1	0	0	0	\$5,000 Up to \$50,000	Rebate	No Yes, as a part of project close out	Yes	create a pollinator path. Incentivization of green roofs to reduce stormwater volumes and reduce urban head island effects. Uses certified contractors
Basement Flooding Protection Subsidy Program City of Toronto Toronto	1	0	0	0	1	0	Up to \$3,400	Rebate		No (indoor only)	Similar to RPPP. Covers backwater valves, sump pumps, and weeping tile disconnection.
Basement Flooding Grant Program - City of London City of London London, ON	0	0	0	0	1	0	Up \$9,000 depending on project type.	Rebate		No (single incentiv e)	Similar to RPPP. Nature based solutions focuses on avoiding altering existing grading
Halton Region Flood Prevention Program Halton Region Halton Region (Burlington, Oakville)	1	0	0	0	1	0		Rebate		No (indoor only)	
Preventative Plumbing Devices for the Residential Inflow and Infiltration Subsidy Program (RIISP) Greater Sudbury Sudbury	1	0	0	0	1	0		Rebate		No (indoor only)	Information for retrofitting your
Your Green Yard Credit Valley Conservation Mississauga and Brampton	0	0	0	0	0	0	N/A	None	No	No	yard to include rain gardens and bioswales filled with native plants to manage stormwater on existing properties.
Downspout Disconnection Program City of Markham Markham, ON	1	1	0	0	0	0	N/A	None	No	No	Rebate program considered complete as of 2022 due to the elimination of connected downspouts.

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Stormwater Management - Richmond Hill City of Richmond Hill Richmond Hill, ON	0	0	0	0	0	0	N/A	None	No	No	Advocates for rain ready like actions, but provides no funding support.
Ready for Rain; Oakville Green Conservation Association Oakville, ON	0	0	0	0	0	0	N/A	None	No	Yes	Has received an investment from the Province to install community rain gardens across the City.
Barrie Water Conservation City of Barrie Barrie, ON	1	1	0	0	1	0	75% up to \$2,000	Rebate	Yes	Νο	Rebates are for disconnections. Focus is on reducing the amount of stormwater flow from downspouts and sump pumps connected to the storm sewer system. Encourages the use of rain gardens, but provides no funding.
Rain Garden Rebate Program City of Guelph and REEP Green Solutions Guelph, ON	0	1	1	0	0	0	Up to \$2,000	Rebate	Yes	Yes	Includes a home assessment. Rainbarrel program offers them at a discounted price. Provides rebates for rainwater harvesting systems. Retrofit raingardens into existing areas with installs handled by a contracted non-profit
Rain Barrel Program - Kingston City of Kingston Kingston, ON	0	1	0	0	0	0		Subsidy	No	No	Advocates for rain ready like actions but provides no funding support. Emphasis on retrofitting your property, includes into on the value of trees and green roofs.
Rain Garden Rebate Program - Eco Superior EcoSuperior Thunder Bay, ON	0	0	1	0	0	0	Up to \$625	Rebate	Yes	Yes	Funded by the City of Thunder Bay. Emphasizes that value of retrofitting these onto your property to manage more stormwater and keep local waterways clean. Site visit required prior to approval.

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<u>Windsor Flooding Prevention Program</u> City of Windsor Windsor, ON	1	0	0	0	1	0	Up to \$2,800	Rebate	No	Yes	More of a protective plumbing program akin to RPPP
Storm Drainage City of Regina Regina, SK	0	0	0	0	0	0	N/A	Credit	No	Yes	Encourages residents to extend downspouts to 3m from property.
Stormwater - Ville de Sherbrooke Ville de Sherbrooke Sherbrooke, QC	0	0	0	0	0	0	N/A	None	No	No	
Baril De recuperation d'eau de pluie Ville de Laval Laval, QC	0	1	0	0	0	0	\$70	Rebate	No	No	Single program that provides subsidized rain barrels to residents to capture rainwater and store it one site for use later.
<u>L'eau du pluie et sediments</u> Ville De Quebec Quebec, QC	0	0	0	0	0	0		Nece			Public education program focused on encouraging retrofitting properties to manage more stormwater on site. Emphasis on downspout redirection and installing rain
Rainwater Rewards Credits City of Victoria							N/A \$35 -	None Rebate	No	No	gardens. Rebates for low density, credits for high density.
Victoria, BC UniverCity Stormwater Management SFU Community Foundation	0	1	1	1	0	1	\$1,500	and Credit	No	Yes	
Burnaby, BC Stormwater Management - Abbotsford City of Abbotsford Abbotsford, BC	0	0	0	0	0	0	N/A	None	No	Yes	
Stormwater Management - Cocquitlam City of Cocquitlam Cocquitlam, BC	0	0	0	0	0	0	N/A N/A	None None	No	Yes	

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Rainbarrel Program City of Richmond Richmond, BC	0	1	0	0	0	0		Rebate	No	No	Small rebate for rain barrel installation to store and manage more stormwater on site.
Combined Stormsewer Grant City of Burnaby Burnaby, BC	0	0	0	0	0	0	Up to \$2,500	Grant	Yes	No	Rebate to separate sewers for qualifying homes to reduce the amount of combined runoff entering watershed. Burnaby also provides info on green infrastructure solutions for homeowners.
Okanagan Homeowner's Guide to Using Rain as a Resource Okanagan Basin Water Board Okanagan Similkameen Vallies, BC	0	0	0	0	0	0	N/A	None	No	No	
Stormwater Management - Saanich Saanich Saanich, BC	0	0	0	0	0	0	N/A	None	No	Yes	
Rainwater Harvesting Regional District of Nanaimo Nanaimo, BC	1	0	0	0	0	0	Up to \$750	Rebate	No	Yes	Rebate is specifically for cisterns.
<mark>Ruelles Vertes</mark> Ville de Montreal Montreal, QC	0	0	0	0	0	0	N/A	None	No	No	The City provides a variety of supports for changing alleyways into green spaces, this can includes a variety of green infrastructure assets.
Yard Smart City of Calgary Calgary, AB	0	0	0	0	0	0	N/A	None	Np	Yes	Provides information and advice for people looking to plant a more sustainable garden on their property.
Change for Climate City of Edmonton Edmonton, AB	0	0	0	0	0	0	N/A	None	No	No	EPCOR is looking to implement a program similar to Rain Ready Ottawa to support the City of Edmonton's stormwater management goals.

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Naturalized Storm Water retentions / Rain Gardens Seine-Rat River Conservation District Winnipeg, MB	0	1	1	0	0	0	\$500 - \$5,000	Rebate	No	Yes	Homeowners can get up to \$500 to install a rain garden and community groups can get up to \$5,000 to install one at a community site.
Stormwater Credits Program Halifax Water Halifax, NS	0	0	0	1	0	0	Up to 50%	Credit	No	No	
Stormwater Management Credits City of Saskatoon Saskatoon, SK											Credit is applied for through the building permit process.
	0	1	1	1	0	0	Up to 50%	Credit	No	Yes	
Rain Check	rogran	าร	[[[Motivated by reducing
Philadelphia Water Department Philadelphia, PA	0	1	1	1	0	0	\$1,500 USD	Rebate	Yes	Yes	stormwater outflows and pollution in local waterways. Applicants must attend an education seminar. Also involves a home assessment.
Rain Check Prince George's County Prince George's County, MD	0	1	1	1	0	0	\$6,000 USD for residential , \$20,000 USD for commerci al	Rebate	No	Yes	Motivated by reducing stormwater outflows and pollution in local waterways. Applicable to businesses as well. Provides funding for tree plantings. Does contractor training.
Stormwater Retention Credit Trading Program District of Columbia Washington, DC	1	1	1	1	0	1		Credit	No	Yes	Like cap and trade but for stormwater management. Can be applied to a wide variety of green infrastructure practices including trees and green roofs.

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<u>Clean River Rewards</u> City of Portland Portland, OR	1	1	1	1	1	1	Up to \$130 USD	Credit	No	Yes	Supports the same range of solutions as rain ready, put provide an ongoing credit as opposed to rebates. Can also be accessed by commercial properties.
RainReady Center for Neighborhood Technology Chicago, IL	1	0	1	1	0	0	N/A	None	Yes	Yes	Operates across the Cook County/Chicagoland area. Promotes building climate resiliency. Has online assessment tool.
Rice Creek Watershed District Cost-Share Grant Program Rice Creek Watershed District Minnesota Let it Rain Stormwater Program	0	0	1	1	0	0	Up to \$7,500 USD	Rebate	No	Yes	Includes a free home assessment to determine the best approaches and complete a plan. Applicants can also work with a private designer and submit that. Public education only.
Winooski Natural Resources Conservation District and UVM Lake Champlain Sea Grant Burlington, VT	0	0	0	0	0	0	N/A	None	No	Yes	Funding and installation is
Private Property Retrofit Incentive Program - NYC New York City New York City, NY	0	1	1	1	0	1	Varies based on assessed project.	Rebate	Yes	Yes	provided through Resilient NYC Partners. Provides home assessments to determine best project.
SoCal Water Smart SoCal WaterSmart / Los Angeles Department of Water and Power Los Angeles, CA Rainwater Harvesting - San Antonio	0	1	1	0	0	0	Up to \$10,000 USD	Rebate	No	Yes	Emphasis on stormwater diversion and low water use solutions. Turf replacement program focusing on replacing all lawn covering with native species. Motivators are stormwater
San Antonio Water System San Antonio, TX	0	1	1	0	0	0	\$100 USD	Rebate	No	Yes	management and water conservation

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Sustainable Landscapes Incentive											
Program							Up to				
San Diego County Water Authority San Diego County, CA	0	1	1	0	0	0	\$5,000 USD	Rebate	No	Yes	
Rainwater Harvesting Residential /	0	1	1	0	0	0	03D	Repate	INU	Tes	Variety of rebates available to
Commercial Rebate							Up to				help with rainwater retention
Austin Water							\$5,000		Project		and drought prevention.
Austin, TX	0	1	1	0	0	0	USD	Rebate	Specific	Yes	Irrigation system checks.
Santa Clara Valley Water District											
Conservation Rebates							Up to				
Santa Clara Valley Water							\$3,000		Project		
San Jose / Santa Clara Valley, CA	0	1	1	0	0	0	USD	Rebate	Specific	Yes	
Central Ohio Rain Garden Initiative											
Central Ohio Rain Garden Initiative											
Ohio	0	1	<mark>1</mark>	0	0	0		Rebate	No	Yes	
Rain Guardians San Francisco Water Power Sewer San Francisco, CA	0	0	0	0	0	0	N/A	None	No	Yes	The San Francisco Public Utilities Commission designs and installs rain gardens, and community groups assume ongoing maintenance.
12000 Rain Gardens Stewardship Partners & Washington State University Extension Puget Sound, WA	0	0	1	0	0	0	Varies, \$1,000 - \$5,000 USD depending on municipali ty	Rebate	Yes	Yes	Helps coordinate access to rain garden and LID rebates offered in 16 municipalities around Puget Sound, including Seattle. Does industry training
Rain Wise City of Seattle Seattle, WA	1	1	1	1	1	1	Up to \$5,000 USD	Rebate	No	Yes	Rebate is calculated based off of \$7 per square foot of runoff area managed by the new assets. Does contractor training

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RiverSmart Homes DC Department of Energy and Environment Washington, DC	0	1	1	1	0	0	Up to \$4,000 USD per property.	Rebate	Yes	Yes	In place since 2008, has achieved 20,000 installations. Also offers rebates for tree planting and depaving.
Rainscapes Montgomery County Department of Environmental Protection Montgomery County, MD	0	1	1	1	0	1	Up to \$7,500 USD per property. Up to \$20,000 USD for MURBs and HOAs	Rebate	Yes	Yes	Site visit is a part of project approval, and changes to the approved project type can be made based on the assessors' recommendations. Also provides rebates for pavement removal and green roofs.
Green Infrastrcuture City of Boston Boston, MA							N/				Offering a small amount of rain barrels as a giveaway, undertaking green infrastructure retrofits in City
Detroit Stormwater Hub City of Detroit and 11 other organizations and departments	0	1	0	0	0	0	N/A	None	No	Yes	right of ways. Tracks green infrastructure in Detroit.
Detroit, MI	0	0	0	0	0	0		None	No	Yes	
Clean Water Nashville Government of Nashville Tennessee Nashville, TN	0	0	0	0	0	0	N/A	Rebate	No	Yes	Supports green infrastructure investment through policy development. <u>City of Nashville</u> provides some support for private side LID development.
	0	0	0	0	0	0	\$5 USD a	nebale		163	Focus is on increasing drought
Los Angeles Turf Replacement Program Los Angeles Water Services Los Angeles, CA	0	0	1	0		1	square foot for the	Babata	Voc	Voc	tolerance in the LA Basin and improving onsite stormwater management. Includes
Outdoor Rebates City of Sacramento	U	U	1	U	0	1	landscape. Up to \$3,000	Rebate	Yes	Yes	contractor education. Focus is on increasing drought tolerance in Sacramento. Also
Sacramento, CA	0	1	0	0	0	0	USD	Rebate	Yes	Yes	provide design assistance.

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Healdsburg Water Rebates City of Healdsburg Healdsburg, CA							Up to \$5,000 USD for RB. \$1 sq.ft. for				Focus is on increasing drought tolerance in Healdsburg. Water storage is pitched as a benefit of lawn conversions.
	0	1	1	0	0	0	lawn.	Rebate	No	Yes	

