ACER Canada
Proposal to Environment Canada - Climate Action Awareness Fund
Submitted October 26, 2020

Call for Proposals

Environment Canada – Climate Action and Awareness Fund (CAAF) objective is to support projects that will develop knowledge, tools and/or skills that engage communities in activities to enable climate action.

Community-based climate action projects should help to support Canada's goals for climate action, such as net zero greenhouse gas emissions by 2050

Project Title

Project Crossroads: Climate justice science, for trees and for people.

Total Proposal value: $1,472,588 for 2021-2025

EC-CAAF: $816,712
In-Kind $655,876

Project Goals and Objectives

ACER Canada's proposal "Project Crossroads: Climate justice science, for trees and for people" supports health and wellbeing of communities with significant exposure to climate risk through action on climate change adaptation, risk reduction and Greenhouse Gas (GHG) mitigation.

Peel Region's geospatial maps show these exposed communities also coincide with highest COVID-19 caseload by postal code, and also disproportionately racialized

By 2025, ACER will engage more than 2000 people from all ages and backgrounds, to plant 7,500 native tree indicator species for climate change research. After Year 4, more than 18 T of Carbon will have been sequestered where people most need shade. Carbon capture will increase as tree canopies grow.

Using civic engagement and proven "Citizen Science" research protocols, ACER will develop high-exposure communities with knowledge, tools, and skills that engage them in climate action to mitigate heat by planting cooling indicator species shade trees and reporting Smithsonian data for climate change research.

Community risk reduction to both climate change and COVID-19 recovery, was demonstrated in October 2020 in Bramalea Sustainable Neighbourhood Action Plan areas, when community non-profits and public school councils reconnected to residents in COVID-compliant community tree planting.

Residents' tree growth data supports plans for future urban forest plantings and meets objectives of Peel Region Climate Change Action Plan for building community resilience with green infrastructure.

Carbon sequestration and carbon dioxide are easily computed by residents, using ACER's on-line Treepedia and Carbon Calculator, thus generating local climate solutions to meet federal Climate Change targets and offset GHG emissions.

Project Description

In delivering Project Crossroads, ACER will impart the knowledge, tools and skills to communities with significant exposure to climate risk to empower capacity to take action on climate change.

Key Performance indicators will be met. Residents of all ages and backgrounds are inclusively engaged, invited through their community ecosystem comprised of schools, faith and service groups, settlement and non-profit agencies.

Using proven "Citizen Science" research protocols, ACER will establish community indicator tree species sites to restore urban tree canopy.

Restoring tree canopy is needed to reduce heat vulnerability in areas where Peel health data show up to 500% higher emergency response calls during extreme heat events.

In August 2019, ACER targeted "heat islands" in collaboration with Peel Health, using Geographic Information System (GIS) data maps from Neighbourhoods Information Tool (NIT) https://www.peelregion.ca/planning-maps/nit/ . Diverse and cross-sectoral stakeholders joined with conservation authorities and urban foresters to add further GIS layers for high crime, recent immigration and lowest-decile income.

In 2020, the heat island targets coincide with highest COVID-19 caseload by postal code, and are disproportionately racialized

Through meetings and digital/on-line resources, ACER prepares and resources residents to plant, monitor, measure, collect and report Smithsonian data for open-data sharing with international research and mitigate/iterate/innovate processes. ACER will support community's sustained collection and annual data reporting with celebrations.

ACER's Project Crossroads "proof in concept" demonstration in October 2020 delivered four community treeplanting events. ACER's outreach through community non profit ecosystem led to oversubscription of volunteers, especially students. Post-event mood perception surveys were vibrant.

ACER Canada (www.acer-acre.ca) was founded in 1987 by Alice Casselman B.Sc., M.O.Ed., retired Science Department Head and Founder of Council of Outdoor Educators of Ontario.

Project Team Experience

Since 1987, without exception, ACER has delivered all projects on time and within budget. (See ACER History of Accomplishments 1997-2020)

ACER's active Board is supported by a Science Advisory Committee, comprise d of industry experts. (Refer to ACER's organization chart.)

ACER's core program coordinator and admin staff support each project with on site experts and "Citizen Science" volunteers.

Commencing in 1990, Eco-Action funded ACER 's pioneer"Citizen Science" projects with Environment Canada - Ecological Monitoring and Assessment Network(EMAN) and Smithsonian Institution (SI)..

Citizen Science" prepares and trains on-site volunteers in international protocols to plant, monitor, mitigate, annually measure, record and freely share data to contribute to climate change research. All ACER program protocols sustain annual results supported with digital training modules.

ACER research produced academic papers and notable citations in both urban and rural settings. Data analysis identifies critical links between forest biodiversity changes and climate change. Conservation authorities have evolved practices for optimal species survival.

Following 1997 establishment of many Niagara Escarpment Biosphere Reserve Studies (NEBRS) GO Global 1-hectare plots, ACER and partners used SI's international monitoring protocols to collect data on forest growth and biodiversity.

ACER's best practices were demonstrated featured by Environment Canada: Climate Impacts and Adaptation Division, at SIs 2008 conference to field-train SI staff and university students in Panama, and assist Laurentian University establish their coastal plot in Costa Rica.

Project delivery experience

Financial Capacity

Since 1997, when ACER received its first major grant, all project undertaken have been delivered on time and on budget. EcoAction, our first funder, supported installation and inventory of 3 sets of one-hectare lots along the Niagara Escarpment for Environment Canada. Our key donors have supported us over the years funding continuing projects and new programs as ACER developed them i.e. Planting for Change with 60 schools by TD Friends of the Environment since 2008, Ontario Trillium Fund for larger grants as we built capacity, and Ontario Great Lakes Guardian Community Fund for 13 Conservation Authorities as partners in our Riparian Rangers program, planting and monitoring along watercourses.

Program Management Capacity

ACER's programs, once initiated, are contiguous and ongoing. On-site experts are developed and sustained.

- Despite 2020 pandemic and loss of spring planting season, ACER's completed its 2020 research across its programs. See maps https://www.acer-acre.ca/programs.

- See "ACER History of Accomplishments 1997-2020"

ACER constantly adapts programs to meet needs and address data gaps.

Project Crossroads following 2019 municipal Declarations: Climate Change is a Crisis. In October 2020 ACER demonstrated four pandemic-compliant community tree plantings for climate change research to Bramalea SNAP urban revitalization areas. Surplus volunteers were engaged in a new community delittering collaboration. Student volunteers logged 40 service hours.

In September 2020, delegations to Toronto and Peel school boards introduced pandemic-adapted Outdoor/On-line/Remote unit to deliver hands-on STEM unit "Shovel, Mulch and MOR" (Measure Our Resources). Data collection will capture carbon sequestration.

Major research ongoing since 2000 at Humber Arboretum, was embodied in papers presented at 2006 UN Convention on Bio Diversity by Environment Canada scientists https://www.cbd.int/doc/reports/cbd-report-2006-en.pdf)

Five separate demonstration models encompassing 2167 tree plantings distribute across SI GO Global 1-hectare experimental plots, and four indicator-species tree installations

- 2008 - Planting for Change partners with 60+ schools to install indicator-species tree plots with community planting event

- 2015 - Riparian Rangers partners with 13 Ontario Conservation Authorities in plantings along watercourses

Graduation and Jobs Creation: conduct field research and yield academic papers:

- 1993 - Canada Summer Jobs Students - 21 total

- 1993 - University of Toronto / UT Mississauga/ Sheridan College ~45 student program/Intern placements

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Primary Activity

Project Crossroads: Climate science justice, for trees and for people proposes to take action on climate change mitigation, including environmental restoration to reduce greenhouse gas emissions.

Communities reached in Primary Activity:

Communities with significant exposure to climate risk

ACER's inclusively engages communities together with their non-profit ecosystem comprised of schools, faith and service groups, settlement and non-profit agencies. Taking the lead from established cultural norms, ACER taps local wisdom as it imparts proven knowledge, tools and skills that empower capacity for collective action on climate change. Key performance indicators are met.

Restoring tree canopy is a lead tenet for green infrastructure in Peel Climate Change Plan, which aligns with the federal Climate Change targets.

ACER identified Communities with significant exposure to climate risk in using Neighbourhoods Information Tool (NIT) https://www.peelregion.ca/planning-maps/nit/. EMS calls ranged 500% higher in areas of low tree canopy. ACER's stakeholders GIS layers for higher crime, recent immigration and lowest-decile income.

Ground truth from embedded community - Boys and Girls Club of Peel, settlement agencies, school parents, faiths and service groups confirmed many residents are racialized or newcomer families with unmet needs.

Peel Health COVID-19 caseload maps revealed heat islands were hardest hit. Toggle ACER's map of Bramalea SNAP schools: https://www.acer-acre.ca/wp-content/uploads/2020/06/Bramalea-SNAP-Map.pdf

Planting cooling shade brings residents action for relief from heat. Meetings to prepare and train for planting, monitoring, measuring, collect and report data help residents understand how to mitigate impact of climate change.

Increasing trust and community relationships leads to risk reduction,states resilience expert Daniel Aldrich, Director of Security and Resilience Studies Program, Northeastern University. Emergency preparedness is more efficient where relationships pre-exist crisis.

Data collection captures informs on climate change, as well as captures carbon sequestration that helps meet federal Climate Change Targets.

Additional groups to describe the selected community:

- Living with disabilities
- Low-income
- New Canadians
- Small to medicum sized businesses (fewer than 500 employees)
- Visible minorities

For its Project Crossroads "proof in concept" demonstration run in October 2020, Knightsbridge community was identified in 2019 by ACER using maps of low tree canopy and Peel Regional health data for high incidence of EMS response during extreme heat as a community with significant exposure to climate risk.

Peel Region's geospatial maps show climate-exposed communities also coincide with highest COVID-19 caseload by postal code, who are also reported to be disproportionately racialized and low income.
ACER publicized the connection between climate change and COVID-19 impact in creation of its digital invitation to Knightsbridge residents http://bit.ly/ACER-invites-Knightsbridge-residents. On Page 2 of the invitation appears ACER's map of Bramalea SNAP schools embedded with a clickthrough link to Peel Region's COVID-19 caseload by postalcode.

From the embedded community ecosystem of non-profit and settlement agencies, public schools, faith and service groups, local politicians and property owners, ACER knows that both physical and mental health disability are disproportionately prevalent amongst residents. NIT data confirms, with 30-day reporting

In addition to racialized, low-income, eroded mental health and physical disability, Knightsbridge community has other vulnerable populations comprising children and youth, New Canadians and small-medium business enterprise (SME).

Service sector, food, faith groups, settlement and non-profit agencies have been unable to adapt to pandemic protocols to reopen to the residents that they serve.

ACER's four demonstration plantings have brought relief, to all, together -- in outdoor activity that is safe, social and low-barrier to participate. ACER's inclusive approach reduces stigma, and residents feel comfortable to find other familiar members of their community and community ecosystem engaged in the community tree planting.

From ACER demonstration project, perception surveys were vibrant with enthusiasm, in anticipation of spring.

Communications Plan

Refer to Communications Plan document, attached.

ACER adapted its communications to pandemic protocols. New to ACER Board in June 2020 is a Journalist, who established a Communications Committee, and had the website evolved to a mobile-friendly format.ACER's communications are digital, through social media platforms of Twitter (2011) and Facebook (2010), and Instagram (2020). Digital messaging is amplified through resident community leaders, school parents and

non-profit agencies and include digital tags from local politicians. Digital analytics are tracked by ACER's webmaster. ACER creates MailChimp press releases at least once per month, with greater frequency to publicize planting events. As a result, since May 2019, ACER has been covered by Peel Weekly News and Toronto.com digital media eight times.

Since August 2020, community partner Brampton Focus /Brampton Neighbourhood Watch is training students in digital media to record video and publish content about ACER's community tree planting events. ACER creates printed materials only when budgeted, or as an in-kind with project partners. ACER's e-mail and telephone communications with community non-profit ecosystem are the most productive way to communicate information out to residents. Calls for volunteers are often oversubscribed, and ACER is adept to ensure that volunteers are kept engaged. ACER presents regularly in municipal Environmental Action Committees, school board curriculum activities, at Environment & Sustainability committees of local boards of trade, and at the Peel Region-Poverty Reduction Strategy Committee. ACER is very engaged with environment association ecosystem, such as Green Drinks of Mississauga and Mississauga Climate Action Network.

Reporting Plan

Key Performance Indicators are provided.

These include: mapping and tracking planting installations, as well as individual specimens; numbers of volunteers; new and updates to manuals; videos - produced and posted; Intake and post-event surveys of participants and residents at planting events;

Plantings data is collected annually. Planting teams have four-year follow-up. In 2020, Project Crossroads has a new KPI satisfaction survey for municipal and private land owners and residents. Photographic images will track changes to the landscape..

Social data collected on Peel NIT will be monitored for change. It is anticipated that over time as tree canopy improves that EMS calls during severe heat episodes can be mitigated. ACER will watch for reported rates of crime, and residents' perception for community safety and well-being through the embedded non-profit ecosystem partners.

As funding becomes available, more Project Crossroads sites can be installed. The ones that are established will continue to yield data to contribute to carbon sequestration, tree canopy, and hands-on STEM curriculum for students.

ACER believes there is costs savings and value-add when more residents participate. New ways to value carbon capture as offsets under Environmental Damages Fund can be a new revenue stream for municipalities and school boards to fund social and human infrastructure, as well as green infrastructure.

It is critical to avoid any data gaps in longterm measurements to calibrate/mitigate/iterate/innovate for future plantings aiming to increase health and wellbeing of the residents, whose exposure to impacts of climate change have been worsened and expose under COVID-19 pandemic.

Project externalities: risks, permits and environmental stability

Ahead of planting events, all participants from novice to experienced are apprised of the process. At planting events, everyone together is guided through safety and other protocols to guide the planting event, and the measuring to collect data.

Permits required for the project are "locates" from property owners, which are certificates obtained from utility

companies and facility management to avoid planting areas which would be contra-indicated for tree and vegetation roots.

Since 1987, ACER has coordinated with property owners for any required permits, and routinized the locates process into its tree planting program.

COVID-19 adaptation:and risk reduction

ACER's outdoor activities are scheduled in 2-hour increments. Participants are forewarned and understand there is no biobreak amenities for washrooms, or for food. Bottled water is available upon request. Participants are further advised to bring their own masks and gloves. Work gloves are provided if requested. Site visits will be conducted by masked and distanced stakeholders on projected planting sites, including a professional landscaper and city forestry staff.   COVID planting protocols, ACER designed and field tested several times, modified by stakeholder organizations to fit local needs, will be used in these plantings.

Data analysis will be managed remotely. Google meet and other platforms will be used for planning and operations virtual meetings. Planting groups will not exceed 3 people working together in an outdoor setting.   All people will be masked and follow social distancing. Equipment will be sanitized between groups. COVID precautions have been vetted by 4 organizations in planting events. Safety training and pandemic protection training will be provided ahead of time and checked for adherence during any event, in accordance with public health restrictions.   A copy of ACER's COVID planting protocol can be found at www.acer-acre.ca/covid plantings

Project Evaluation

By 2025, ACER will engage more than 2000 people from all ages and backgrounds, to plant 7,500 native tree indicator species for climate change research. After Year 4, more than 18 T of Carbon will have been sequestered where people most need shade. Capture will increase as tree canopies grow.

ACER can predict how data will contribute to climate change research - by increasing canopy, capturing carbon sequestering, reducing risk to communities with installation of green infrastructure that help to meet Environment Canada goals.

ACER has been keeping Smithsonian data continuously and contiguously for decades. Its research contribution has helped to evolve investments in conservation areas which inform species thriving, for better return on investment.

There can be no gaps in the data. The time is now to ensure the future, and scale up recovery.

ACER requires adequate funding to scale up its community tree planting for climate change research so that it can make an even more meaningful impact. The Project Crossroads "proof in concept" demonstrates an appetite for communities to enthusiastically engage and play a role in climate mitigation, together.

ACER further want to get data on narrative that people do better from this activity. Resilience is bottom up, so long as decision makers can reach down to help.

Capturing carbon is a way to create revenue for municipalities and school boards, to continue virtuous investment in social and human care infrastructure.

Canada is at the Crossroads. Let us pick the best path, together, for our future, together.
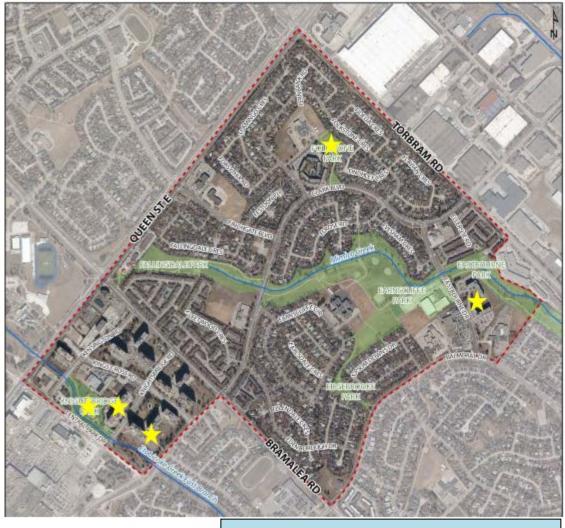
Project Crossroads

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Proposed planting locations

Prepared January 2020 City of Brampton

Potential Areas of Focus for Anti Racism Action Program

Prepared December 2019 City of Mississauga

Character Area

Non Residential Area

Areas of suitability

Low Suitability

High Suitability

Areas of suitability based on overlay of high community crime (mischief, homicide, robbery and muggings), Peel Region NIT - neighbourhood Information Tool scores (low wellbeing), and low tree canopy.

All suitability data sourced from Region of Peel and shown at the Statistics Canada Census Tract level, with City of Mississauga Character Area geographies overlaid for reference.