

To: Board of Management

From: Leona Mitchell
Director of Facilities & Infrastructure

Subject: **2018 ENVIRONMENTAL INITIATIVES REPORT**

Date: 2019-10-10

SUMMARY:

The purpose of this report is to update the Board of Management on environmental priorities and initiatives achieved for the Toronto Zoo in 2018.

RECOMMENDATIONS:

It is recommended that this report be received for information.

FINANCIAL IMPACT:

There is no financial impact from this report.

DECISION HISTORY:

In 2006, the Toronto Zoo introduced a Greenprint that provided resources and suggestions for the creation of the 2007 Green Plan. The Green Plan addresses the Toronto Zoo's major environmental impacts and provides action steps towards a greener solution by outlining goals, targets, timeframes and areas of responsibility.

COMMENTS:

The Green Eco-Zoo Team (GEZT), a non-technical advisory committee to the CEO, addresses the environmental impacts of Zoo operations, policies and procedures, and makes recommendations that will lessen our ecological footprint in the Rouge Valley and on the earth. The organizational structure of GEZT incorporates all divisions and units of the Zoo and meets quarterly.

GEZT provides an annual report to the CEO for presentation to the Board of Management on environmental projects, programs and initiatives in progress or completed over the past year. Kyla Greenham, Manager of Conservation & Environment, chairs GEZT.

In 2018, GEZT concentrated on 5 main areas to focus the Toronto Zoo's environmental sustainability platform; the implementation of an ISO14001-compatible Environmental Management System (EMS), palm oil awareness, energy consumption reductions, water consumption reductions, and waste management. The Toronto Zoo continues to

complete projects to improve energy efficiency, water conservation, waste diversion and employee and public engagement to reduce its overall carbon footprint. In 2018 the Toronto Zoo implemented an Environmental Management System (EMS) that will provide strategic direction for capital and operational projects to realize the 2027 greenhouse gas emission targets of the Green Plan.

Environmental Management System

On January 1, 2018, GEZT implemented an ISO14001-compatible Environmental Management System across all Zoo divisions and branches. The EMS will guide staff in decision making, communication and regulatory compliance for the protection of the Environment from impacts of Zoo operations. It incorporates the Zoo's vision and mission, existing policies and operating procedures, financial and operational constraints, and the environmental objectives and targets as the Zoo works to reduce its impact on the environment. Permanent staff (260), volunteers (188) and non-permanent staff (100) underwent training for the EMS to understand the system, the action plan planning process, and their role and responsibility within the EMS. Throughout the year, the EMS Coordinator (Manager of Conservation & Environment, formerly Curator of Conservation & Environment) and GEZT members worked with Branch Managers and Supervisors to imbue the principles of the EMS within branch operating procedures and practices.

Internal EMS audits were conducted by qualified GEZT members to assess the level of understanding and implementation of the EMS within different branches; including Custodial, Guest Operations, Horticulture & Material Collections, Procurement and Transit. The positive feedback from these audits shows a high level of involvement and incorporation of the EMS within the first year. There were no significant findings of concern or violation during any of the branch audits. The EMS Coordinator continues to work with Branch Managers and Supervisors to further advance the EMS and targets.

In 2018, GEZT set Action Plan priorities for energy, water, waste and the palm oil conservation message. GEZT developed a business case and issued an RFP for a site-wide Energy Retrofit Project. Commencement of the Energy Retrofit Project is planned for 2019. GEZT, Horticulture and Project Management coordinated the installation of a 21,000L rain harvest system to increase grey water use at the zoo and decrease potable water consumption. Details about this project will be discussed in the infrastructure section. Members of GEZT, Materials Collections and Custodial conducted a waste audit in August 2018 to benchmark the current status of the Zoo's waste management program. Results of the audit will be discussed later in the Waste Management section. The Curator of Conservation & Environment worked with Compass Group Canada to review all of Compass' waste management policies and protocols to ensure an alignment between the two organizations with implementation in 2019. A Palm Oil audit was completed in all areas of the Zoo except Food & Beverage Services by Compass Group Canada; and Education continues to develop plans and design for a Palm Oil Hotspot.

As part of the EMS, record of incidents that may have or had an impact on the natural environmental were retained with investigation of such incidents, and implementation of recommendations to reduce the risk of the incident occurring again. In 2018, there were four incidents reported to the Conservation & Environment Office. These included a diesel fuel spill at the Africa Restaurant when a vendor vehicle collided with a rock retaining wall

at the Africa Restaurant that ruptured the fuel tank. Immediate response by Safety & Security, Material Collections and Horticulture contained the leak to minimize soil contamination. A number of aging Photocopiers on site were leaking copy toner. All copiers have since been replaced. A delivery truck leaked steering fluid across the Administrative Parking lot. Quick reporting and response by Safety & Security contained and cleaned up the leak without issue. Finally a Security Officer found a number of barrels and buckets left on Toronto Zoo property near the Main Barn by a member of the public. The barrels and buckets contained the hazardous chemical Toluene. Toronto Zoo reported the incident to the Ministry of Environment and Climate Change as per Ministry regulations and disposed of the material through the Zoo's Hazardous Waste Management Program. All incidents were contained with minimal impact to the environment and did not subject the Toronto Zoo to any fines or charges.

Energy Efficiency Improvements

To actively achieve our 2007 Green Plan targets, the Zoo has identified the need to improve operational efficiencies in its building infrastructure. Many of the changes made in 2018 are not publically profiled, but are more effective in reducing the Zoo's overall carbon footprint. Direct action taken to address the Zoo's top operational activities that impact the environment are designed to optimize our current energy and water consumption levels. Optimization of these activities to meet the needs of Zoo operations and reduce our consumption is the first step in a long term plan to reach a target of reducing greenhouse gas emissions by 95% below 1990 levels by 2027.

In recent years, the Toronto Zoo has realized energy reductions through capital and operating projects completed by the Facilities & Infrastructure Division (formerly Facilities & Services).

Since 2015, the Utilities Branch has been replacing hot water storage tanks with on-demand hot water heaters. As of the end of 2018, a total of 22 hot water heaters have been replaced by 20 on-demand hot water heaters. This provides an estimated annual energy savings of \$3,168 (\$144 per tank).



In support of taking action on climate change, the Toronto Zoo celebrated Earth Hour on Saturday March 31, 2018 by turning off all non-essential lights from 8:30 p.m. to 9:30 p.m. To increase public awareness about Earth Hour and the impact of climate change, Toronto's Facebook, twitter and Instagram pages each hosted three spotlights on how climate change is impacting the habitat range of endangered species that can be viewed at the Toronto Zoo. Signage throughout the Zoo the week leading up to Earth Hour, also highlighted impacts to habitat and how people can reduce such impact.



Since 2016, the Utilities Branch has been installing Variable Frequency Drives (VFDs) on pump, motors and heaters in larger buildings. The addition of VFDs to the Administrative Support and Americas Pavilion is expected to realize up to 30% reduction in energy consumption per month per building. These projects were supported from the saveONenergy Incentive Rebate Program and the City of Toronto Energy & Environment Office

Green Technology Implementation

The Facilities and Services Division continues to upgrade lighting systems to LED and has replaced approximately 15% of all Zoo lighting with LED bulbs. In 2018, the conversion of all lighting to LED in Parking Lot 1, Staff Parking lot and service areas around the Administrative Support Centre were completed. Facilities and Services continue to retrofit public pathways inside the pavilions.

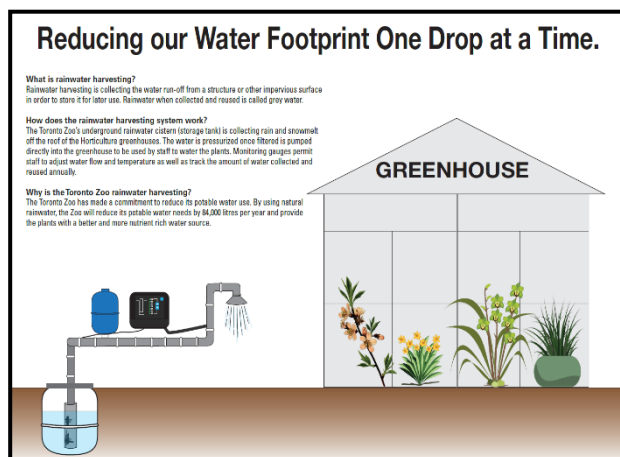
New Infrastructure



The Toronto Zoo installed its first water bottle filling station in the Administrative Support Complex in 2018. An additional five units were purchased and will be installed in public locations in the spring of 2019 to support the Zoo's efforts to reduce waste and the conservation message associated with the 2019 Washed Ashore Art of the Sea exhibition. In the three month of operation in 2018, Toronto Zoo staff eliminated 968 water bottles.

A collaborative effort between Horticulture, the Conservation & Environment Office and all Toronto Zoo Staff resulted in the installation of an underground rainwater cistern adjacent to the Zoo's Greenhouse. The cistern collects ice/snow melt runoff greenhouse's roof. It is reuse 81,000L of melt annually. The collected before reaching the cistern tank, and is then pumped into the Zoo's water the plant encompasses 9,720 use of grey water snow melt and rain valuable nutrients for

from the anticipated to and rain water water is filtered underground refiltered and Greenhouse to collection, which square feet. The collected from which has plants and does



not contain salt and chlorine as found in tap water will be better for the Zoo's plant collection and will help reduce our potable water consumption. The project funding was made possible, in part, by the People Power Challenge (PPC). PPC is an employee engagement program that gives businesses an exciting way to engage staff and drive sustainability results while competing against other organizations. Toronto Zoo has participated in the PPC from 2015 to 2017 and has been awarded total of \$11,000.00 in awards for participation over the three years.

Environmental Awareness/Public Outreach

The Toronto Zoo reached a number of audiences in 2018 to promote environmental and sustainability awareness through public outreach opportunities.

Toronto Zoo held Party for the Planet in celebration of Earth Day onsite with activities located throughout the Zoo. Eight environmental organizations in Ontario were invited to provide visitors with fun resources showcasing the many ways we can be leaders in "green" living including; Great Lakes Outreach, PhoneApes Cell Phone Recycling, Live Green Toronto, Royal Ontario Museum, GreenLid, Toronto Hydro and Furniture Bank. Approximately 11,843 guests attended the event. Bullfrog Power sponsored the event by providing alternative energy for the Caribou Café and Tundra Trek facilities for the weekend, savings equivalent to carbon sequestered by 3.6 tree saplings grown for 10 years. This year's theme of 'Reducing Your Environmental Footprint' highlighted the many things we can do to support conservation and biodiversity through actions in our life. A series of 4 workshops added to the Party for the Planet agenda hosted by Toronto Zoo staff, local artisans and experts; Biomimicry Frontiers, Natural Body Care and Lotions, Potions and Creams with Anarres Natural Health, Solar toys, and test driving Electric vehicles by Plug n Drive were very successful as an interactive learning experience for guests as well as a revenue generating opportunity for the Zoo. 250 people participated in the workshops. Another 35 people took the opportunity to test drive an electric vehicle. For the month of April tours of the Toronto Zoo Sustainability Initiatives – ICEnergy, Green Roofs, Geothermal, rain harvest system, solar installations and the Wildlife Health Centre were provided by the Curator of Conservation & Environment. A total of 230 people participated in these tours. Four pedal power stations were set up around the Zoo to allow guests to recharge their cellphones and tablets using their own pedal energy.

As an Arctic Ambassador Centre, the Toronto Zoo actively engages target audiences in better understanding the impact of climate change on polar bears and their arctic habitat and the reliance of humans on a carbon-based economy. Through our education programs we encourage students to become engaged in activities within their local community that result in stewardship or conservation actions that mitigate greenhouse gases. We work closely with Polar Bear International (PBI) and partner organizations to; support content development, share messaging tools, coordinate public information activities and, create metric tools to measure program successes. Through these activities and collaborations the Zoo informs, inspires, and empowers others to take immediate steps to reduce CO₂ for the conservation of polar bear habitat and other species impacted by a warming world.

The internal Polar Bear Interest Group hosted Polar Bear Fest to celebrate upcoming International Polar Bear Day with Polar Bears International (PBI) and to raise awareness

and support for polar bears. Visitors participated in fun and educational activities in the Special Events Tent (formerly Giant Panda Interpretive Centre), including a Polar Bear Fish Toss, Seal Pull, Nature Play area, special visits by outreach animals, craft table, and silent auction. Further to the Polar Bear Fest activities taking place in the Panda Interpretive Centre, there were also special presentations held in both the morning and afternoon in the Education Auditorium. Guests were able to meet polar bear keepers, who shared their stories about the Zoo's polar bear family and the importance of enrichment and training, followed by a presentation by one of our veterinary technicians on her experience in hand-raising our polar bear cubs. In the afternoon session, guests met the Zoo's Curatorial Assistant and learned what an important role she plays in the shipment of animals, like polar bears, followed by the story of Juno, the polar bear cub, and her amazing journey from Toronto Zoo to the Assiniboine Zoo in Winnipeg. Fifty-one children make a polar pledge to save and protect polar bears and fight climate change.

The Zoo hosted an e-waste collection in April 2018 for Earth Day collecting over 2,352 lbs of general e-waste for recycling. To date, the Toronto Zoo has recycled over 37,000 cellphones and donated more than \$30,000 to Great Ape conservation efforts in Africa.



Toronto Zoo GEZT continued to extend its reach by participating in additional events such as the with Symcor EcoFair, Humber College Sustainability Fair, University of Toronto's Environmental Sustainability Conference, Dunbarton EcoSchool Sustainability Fair, Bayview Collegiate EcoSchool Sustainability Fair, St. Beouff Catholic School Earth Hour, Canon Canada Shoreline Cleanup, Zero Waste Strategy Conference, Partner in Project Green Executive Leadership Workshop and The Sustainability Collaborative.

Renaturalization/Biodiversity Improvement Projects

The Toronto Zoo continues to commit to renaturalization of the Zoo site. Through Corporate Volunteerism and the commitment of Zoo staff to protect natural ecosystems, the Zoo hosted a tree planting and a large meadow planting in partnership Symcor Inc. in 2018. Symcor supports Acres for the Atmosphere and Meadows for Monarchs with significant donations as well as 200 staff and family who do the planting. A total of 100 other corporate volunteers from Price Waterhouse Cooper participated in two browse collection events to help support the Zoo's browse feeding program.



Once again, Toronto Zoo staff hosted two Great Canadian Shoreline Cleanups at the Rouge Beaches. Toronto Zoo staff, community residences and corporate volunteers participated in these two events collecting a total of 1,557 pieces of garbage, 14 bags of



recyclables and a few larger items including patio furniture. In the spring, a Toronto Zoo site wide clean up by staff ensured the site was clean after the winter months and ready for the busy summer season.

Toronto Zoo continues to be a key member of the Ontario BioBlitz Steering Committee. The format for the 2018 Ontario BioBlitz program enlarged this year to blitz Durham

Region with 2 flagship 24 hour bioblitz events and 5 smaller 4 to 6 hour taxonomic events throughout the region. Each of the flagship event hosted a School Day on the Friday offering a free bioblitz program of walks, workshops and collection periods for elementary and high school classes. 812 students participated on the school days, and a total of 1,349 people participated over the course of the summer. To date, 1,516 unique species were identified in Durham, however the number continues to grow daily as experts continue to identify blitz. Toronto Zoo, along committee members such and University of Guelph's Genomics (CBG) provided lead taxon groups Kerr, M. Franke and K. coordination of taxon Zoo staff participated in



samples obtained during the with several key steering as the CLOCA, TRCA, ROM, Centre for Biodiversity expert staff to conduct and throughout the event. Dr. K. Greenham assisted with the groups while an additional 18 the intensive blitz.

Partnerships/Collaboration

To achieve the goals of the 2007 Green Plan, Toronto Zoo has reached out to create partnerships and collaborations with like-minded organizations. These partnerships and collaborations have been instrumental in achieving project goals, developing a resource base of knowledge and materials, and developing a network from which to learn and share.

The Toronto Zoo continues to support the PBI "Call to Action" Campaign to showcase Toronto Zoo as an Arctic Ambassador Centre. It outlines some of Toronto Zoo's key goals and ongoing initiatives, such as providing displays that showcase "green energy" for visitors such as Ice-Bear, Geothermal Energy, and Green Roofs; as well as workshops on climate change for grades/youth groups and interpretation at the polar bear exhibit for visitors and educating the public through messaging in Keeper Talks. The Toronto Zoo's green initiative programs are profiled on the Arctic Ambassador Website <http://polarbearsinternational.org/get-involved/arctic-ambassador-centers>.

Kyla Greenham represents the Toronto Zoo as a member of the Ontario Biodiversity Council (OBC) and Biodiversity Education & Awareness Network.

Kyla Greenham (Manager of Conservation & Environment) and Phil Rock (Horticulture Supervisor) completed a Bioswale Course through the Ontario Plant Council. The use of bioswales can be beneficial to reduce erosion from extreme weather events, increase groundwater recharge and improve natural water filtration.

Nia Gibson, Coordinator of Education for Sustainable Development Programs, is a member of the Ajax-Pickering Board of Trade ECObusiness Advisory Committee.

The Toronto Zoo also supported an intern from Seneca College's Sustainable Business Management program in the summer of 2018. The intern was responsible for developing conservation messaging and partnerships for plastic reduction and zero waste.

The Curator of Conservation & Environment and the Manager of Horticulture and Grounds participated in the Behaviour Psychology of Recycling webinar series.

Anna-Marie Burrows, Manager of Horticulture & Grounds is a member of the Durham Waste Advisory Committee and Partners in Project Green's Waste Management Committee.

Leadership

Toronto Zoo maintains its active member status with AZA's Green Scientific Advisory Group, providing mentorship to members of the sustainability staff at other Canadian Zoos and Aquariums. In 2018, Kyla Greenham attended the AZA Green Summit providing two presentations on the Zoo's employee engagement activities and the ECOexecutives program.

The Toronto Zoo continues to maintain its Level Two Ajax-Pickering Board of Trade ECO-business certification.

Employee Engagement

In July 2018 The Toronto Zoo took on the Plastic Free July Challenge. Working together, Zoo staff and volunteers had a strong finish of 8th out of the 78 Zoos and Aquariums participating, and 2nd out of Canadian Teams. Each team member gathered points by completing their choice of daily month-long challenges and one-time challenges. Daily challenges included things like bringing a reusable water bottle and not using plastic straws. One-time challenges brought in more points, and participants had to do things like learn about pet waste composting or plant a green garden. There were one-time challenge workshops and events held at the Zoo for staff by the sustainability team. DIY soap making and perfume taught people how to create sustainable beauty products. A documentary detailing the effects of plastic in our oceans was also screened during lunchtimes.



To finish off Plastic Free July a sculpture contest was held. The sculptures were to be made of plastic collected from work-related activities in each department for one whole week. Once the sculptures were completed they were displayed for staff and volunteers

to see. The Toronto Zoo's Green Eco Zoo Team voted on their favorites, and prizes were awarded to the team that made the best sculpture. It was a fun event-filled month that helped bring the Toronto Zoo together to learn about sustainability and to help keep plastic out of our oceans and natural environments. Overall, the Toronto Zoo Team kept 1,785 pieces of plastic cutlery, 1,029 plastic bottles, and 1,138 plastic straws out of landfill. 1,256 pieces of litter were picked up, and 71 petitions were signed. These are just a few of the many feats achieved.

Toronto Zoo participated in the Waste Reduction Week (October 15-19, 2018) by having a No-Print Day on Wednesday October 17. Suggested and implemented by the Zoo's Computer Services branch, access to printers and photocopies by staff was restricted for the day to bring their attention to the number of items they print in a single day. The goal was to reduce the amount of paper used at the Zoo over a year by having staff print only essential items. The activity was well received by staff.

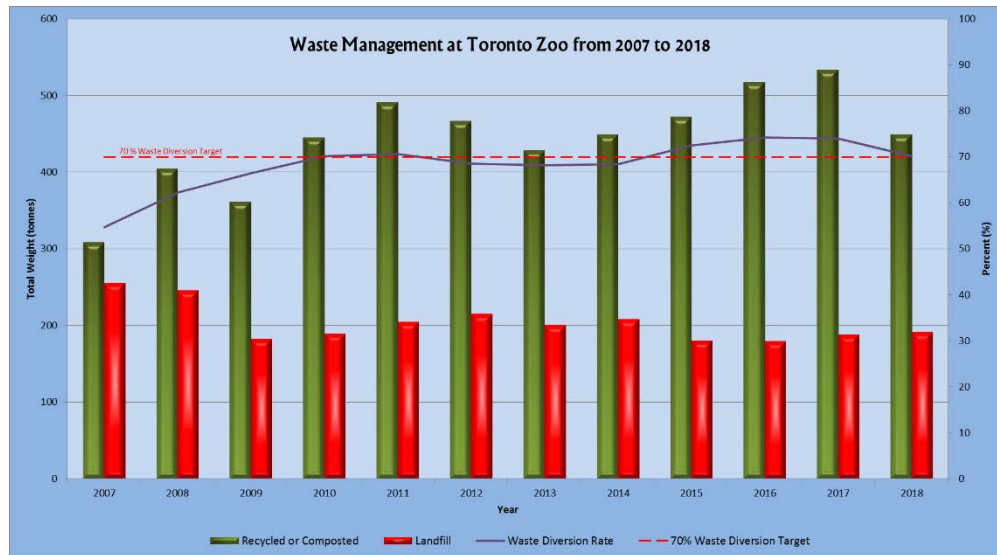
Toronto Zoo hosted another textile recycling event for staff during Party for the Planet. A total of 2,854 lbs of textiles were collected and donated to Diabetes Canada.

The Toronto Zoo continues to participate in the TerraCycle recycling program. TerraCycle is an international company with the innovation to divert currently non-recyclable (through local municipal recycling programs) products from landfill by innovative post-consumer waste product manufacturing. TerraCycle will upscale products by directly using the materials submitted into new items for sale such as purses/bags and pencil/pen holders, or recycle other products to create 100% post-consumer waste garbage receptacles, park benches, fence and cutting boards. The Zoo doubled the number of TerraCycle recycling programs from four to eight in 2018: Air freshener packaging, inkjet cartridges, Brita water filters, cereal plastic packages, latex/nitrile gloves, personal safety equipment, coffee pods and filter cartridges. To date, the Zoo has recycled more than 40,000 items at a weight of 8,500 kg of waste diverted from landfill.

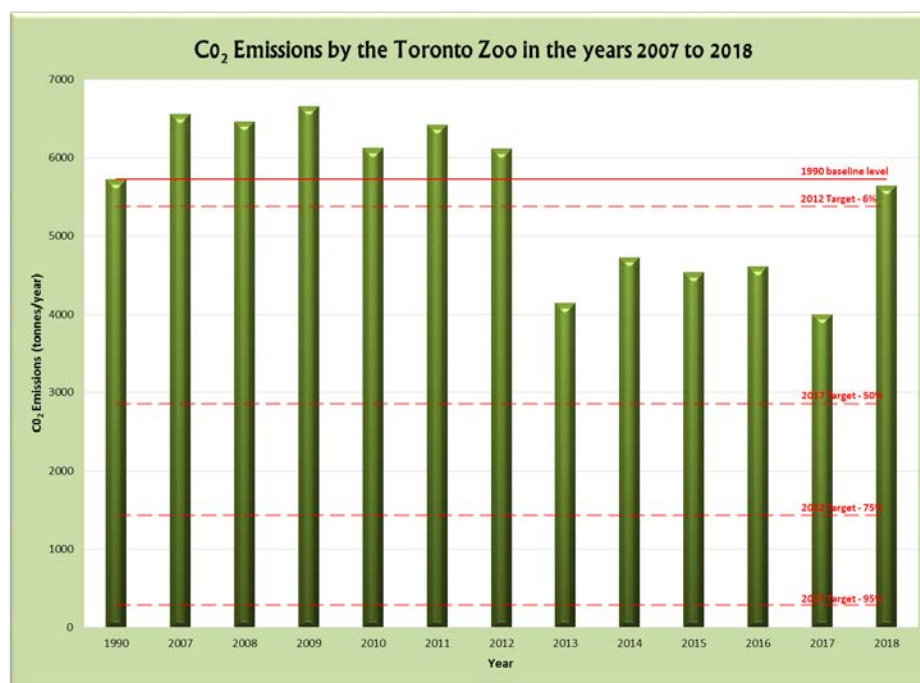
The Toronto Zoo Material Collections branch working with the City of Toronto Waste Management Division in 2008 set a target of diverting 70% of all Zoo waste from landfill. Setting up an intensive recycling and composting program for the Zoo, as well as increasing public and employee awareness of these programs has resulted in the Zoo achieving this target in 2010. The Materials Collections branch continues to source new opportunities to repurpose, upcycle or divert waste from landfill. Since 2010, the Toronto Zoo has successfully exceeded this target, achieving a waste diversion rate of 70% in 2018. This is slightly lower than the 74% achieved in 2017. Materials Collections are already investigating new recycling programs that will divert even more of the Zoo's waste from landfill in order to meet the TransformTO Report's objective of a zero-waste facility by 2030.

Members of the Toronto Zoo's Green Team, Material Collections and Custodial branches conducted a random 24 hour waste audit in August 2018 to set a baseline on current rates of compliance for the public and staff of the Zoo's Waste Management Program. There are clear indications that each of the recycling destined receptacles have a high rate of contamination far greater than the 10% contamination permitted by our recycling service provider. GEZT and Material Collections have developed an action plan under the Environmental Management System to address this high level of contamination for both

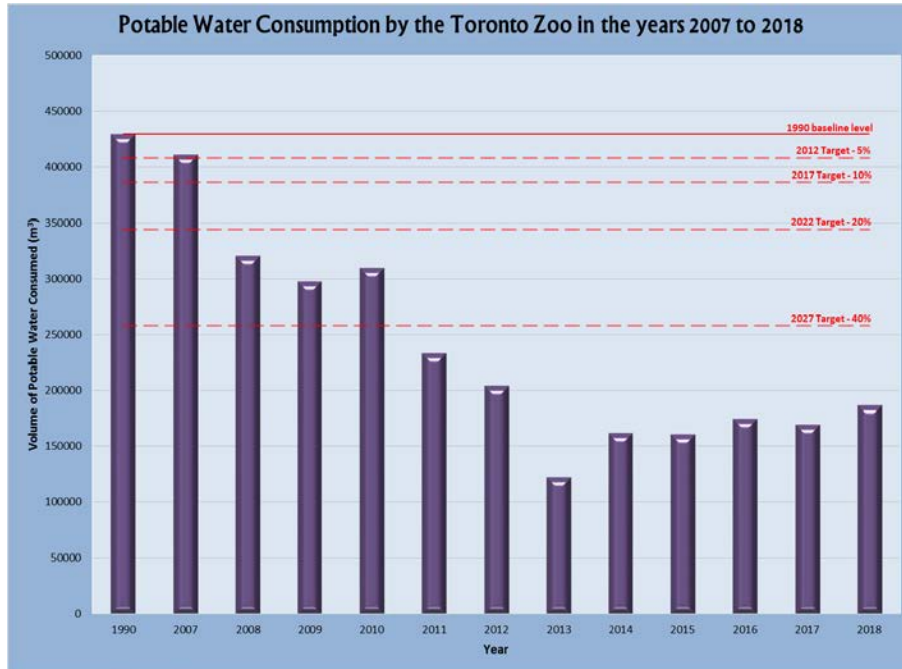
public and staff waste programs which will be implemented in 2019; these include new waste graphics, a zero-waste employee culture, staff sorting centres, increasing access to compost bins for the public, and new waste receptacles. The target objectives of the action plans to direct the Zoo towards a zero-waste facility by the year 2027.



The Toronto Zoo continues to make progress towards achieving the 2007 Green Plan Greenhouse gas emission and water consumption reductions. However, in 2018 there was a significant increase in greenhouse gas emissions because of several infrastructure retrofits converting electrical services to natural gas in response to the significant difference in cost per unit in utilities. Going forward an analysis is required to balance cost savings and ghg emissions in these types of retrofits.



A slight increase of 4% in water consumption was noted in 2018 as well. The Toronto Zoo remains below the 2027 40% target at 56.6% below 1990 levels.



The above noted activities are highlights from the 2018 operating year from the Toronto Zoo. We continue to complete our mission and vision to reduce the carbon footprint of Zoo operations, increase awareness of climate change and sustainability practices and report to the public our actions in achieving the targets of the 2007 Green Plan. Operating procedures, sustainability practices and green initiatives implemented in previous years continue to operate and the Zoo is showing progress towards meeting or exceeding the 2027 targets for greenhouse gas emissions, waste diversion, and water consumption. Plans for 2019 will focus on waste generation awareness, reduction and diversion, climate change awareness and customer service opportunities, environment restoration and large scale energy efficiency retrofit projects.

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