



Oregon Zoo Bond Citizens' Oversight Committee

CALENDAR YEAR 2017 REPORT

Presented April 2018 to the Metro Council and the community



Cover:

- Young people discover nature and how they can make a difference for wildlife at ZooCamps and programs at the Oregon Zoo Education Center.
- The historical and restored mosaic *Continuity of Life* by Willard Martin graces the entrance of the Oregon Zoo Education Center where more than 83,600 students on field trips enter the zoo annually to encounter wild animals and learn how to take action to create a better future for wildlife.
(photos: Michael Durham)

April 5, 2018

RE: Oregon Zoo Bond Citizens' Oversight Committee Report for the Calendar Year 2017

Dear Metro Councilors and Residents of the Region:

In 2008 voters of the region expressed the value they place on animal welfare, conservation education and water and energy conservation when they passed the \$125 million bond measure that funds habitat and infrastructure upgrades at the Oregon Zoo. To help ensure that the public's money is well spent, the bond measure mandated an Oregon Zoo Bond Citizens' Oversight Committee ("the committee") to provide independent citizen review. Every year, the committee presents an annual report to the Metro Council and our community. This is the committee's report on bond program progress from January through December 2017.

The report is divided into three required reporting items: (1) Assessment of Progress, (2) Spending Considerations, and (3) Project Modifications in Excess of Budget. In each section, the committee provides a narrative followed by a summary of findings and recommendations. For the recommendations from last year's 2016 report, you'll find an update on what was done to fulfill those recommendations, followed by new findings and recommendations from 2017. The new 2017 findings and recommendations are also summarized at the beginning of the report for your convenience.

The committee is pleased to report that in 2017, bond funds continued to be spent wisely, bond projects were advanced on schedule and within budget, and overall the bond program is on track to deliver on voter expectations.

Passage of the bond measure in 2008 has been followed by nine years of planning and construction, with two to three years remaining to complete the program. It's natural that such a major, multi-year project experiences an arc of activity, and the committee has felt a shift in its oversight on this "downhill slope" toward the finish line. In March 2017 we all celebrated the opening of the new Education Center, which on the heels of Elephant Lands opening, represented a tremendous stretch of nonstop construction. The staff and committee took a breath and – with no less energy – dove into planning and preparation for the bond measure's last three projects: Polar Passage, Primate Forest and the rhino habitat.

In some ways, committee activity on this homestretch was made easier:

- The zoo's experience with major construction under a Construction Management/General Contractor structure has worked extremely well, and the new projects moved forward benefitting from that experience and efficiency.
- The bond project's commitment to COBID firms exceeded expectations with 29.5 percent utilization on the Education Center, and lessons learned from that experience continue to inform the remaining projects.
- Habitat planning was enhanced by a clear commitment to animal welfare and alignment with the zoo's draft Integrated Conservation Action Plan.

- Allocation of remaining unallocated bond funds was approved by Metro in March 2017, charting a clear course to complete all projects with available resources.
- Elephant Lands animal welfare research results, and evaluation of the effectiveness of interpretive signage, indicate completed projects are delivering the intended results. Those participants in the Elephant Lands interpretive evaluation focus group who voted to support the bond measure are satisfied that their taxes were well-spent, and they are willing to continue making financial contributions to support additional habitat improvements. They feel that Elephant Lands met or exceeded the expectations of the public.
- Past experience with two major public art projects facilitated the selection process for the final art piece, *Melting Ice Bear*, for Polar Passage. The zoo will meet Metro's goal of investing one percent of direct construction costs on public art, greatly enhancing the visitor experience.

In other ways, winding down the bond program signaled challenges:

- After years of benefitting from low material and construction costs, prices began to escalate, requiring thoughtful value engineering to stay within budget.
- Competition for bids and workers in the midst of Portland's current building boom may make it more difficult to maintain past levels of COBID utilization.
- As projects in the pipeline are reduced in number and unallocated funds have been designated, there is increasingly less "wiggle room" for course corrections.
- As projects were completed and open to the public, the transition to operations must remain consistent with original design intent.
- Disruption of the zoo's central core with construction of Polar Passage, Primate Forest and the rhino habitat will require careful coordination to reduce revenue loss and support a positive visitor experience.

Thus, the Oregon Zoo Bond Citizens' Oversight Committee continues to fulfill a critical role in making sure that the bond projects conclude with the same robust success they have enjoyed to date, and we have great confidence that they will do so. The committee commends the zoo bond program team for ongoing planning, implementation and evaluation of their work. In addition, the zoo continues to build innovative partnerships and community support for its efforts.

It is my honor to thank the 14 other members of the Oregon Zoo Bond Citizens' Oversight Committee for their service, zoo bond staff and Oregon Zoo staff for their hard work and collaborative spirit, and the Oregon Zoo Foundation for its generous support. We present this report as a team effort.

Sincerely,



Ruth G. Shelly
Oversight Committee Chair
Executive Director, Portland Children's Museum

Oregon Zoo Bond Citizens’ Oversight Committee Report

A report to the Metro Council and community regarding progress on the zoo bond program

Presented April 2018 for the calendar year 2017

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Oregon Zoo Bond Citizens' Oversight Committee Report

A report to the Metro Council and community regarding progress on the zoo bond program

Presented April 2018 for the calendar year 2017

In 2008 Portland area voters expressed the value they place on animal welfare and water and energy conservation when they passed the \$125 million bond measure that funds habitat and infrastructure upgrades at the Oregon Zoo. As mandated by the bond measure, the Oregon Zoo Bond Citizens' Oversight Committee ("the committee") provides independent citizen review to help ensure the public's money is well spent. The committee's charge is to determine if the zoo improvement program is on the right path in terms of structure, expenditures and achievement of defined goals. This is the committee's annual report to the Metro Council and the community, presenting its findings on how the program has progressed during the period from January through December 2017.

Zoo Bond Ballot Measure:

Bonds to Protect Animal Health and Safety; Conserve, Recycle Water

The zoo bond measure calls for updating and replacing old exhibits and facilities, increasing access to conservation education, and replacing utility systems to reduce water and energy use and lower operating costs.

- Provide more humane care for animals; update four outdated and undersized enclosures with larger, more natural and safer spaces.
- Protect animal health and safety; modernize zoo's substandard 45-year-old animal clinic determined deficient by the Association of Zoos and Aquariums.
- Increase access to conservation education; provide more space for summer camps, classes and hands-on learning for kids, adults and families.
- Improve water quality; replace the zoo's 1950s sewer system, reducing pollution by separating sewage from stormwater, harvesting runoff for reuse.
- Conserve, reuse water; install water recycling filtration systems; replace leaking, worn-out plumbing, irrigation systems, saving 11,000,000 gallons of water annually.

Why the committee exists

The Metro Council first appointed the committee in January 2010. The committee met five times in 2017: February, March, May, September and November. Currently the committee has 15 members, who bring to the committee skill sets from a diverse set of backgrounds (see Appendix A).

The committee operates under a charter that incorporates the governance and reporting requirements of Metro Council Ordinance 10-1232. The Metro Council president appoints the chair of the committee, a position currently held by Ruth Shelly.

The committee meetings typically involve interactive presentations by the zoo bond staff team and other Oregon Zoo staff. Each meeting includes considerable discussion and question/answer time.

The committee operates at a high oversight level, reviewing the zoo improvement program to ensure that structure, expenditures and defined goals are on track. In most cases, the committee does not make specific project decisions. Members look at how decision-making occurs and how business is conducted. The committee seeks to help ensure that the right processes and controls are in place so that the best possible value can be realized from the voter-approved zoo bond funds. The attached organizational chart of the zoo bond program (Appendix B), illustrates the many different levels of interaction and oversight.

The 2008 zoo bond measure titled “Bonds to Protect Animal Health and Safety: Conserve, Recycle Water” (the “zoo bond”) called for a citizen oversight committee to do the following:

1. Assess progress in implementing the Oregon Zoo bond measure project improvements.
2. Report on project spending trends and current cost projections, and review and report on the annual independent financial audit of spending.
3. Consider and recommend project modifications intended to account for increases in construction costs in excess of budget estimates, to ensure that the purpose and promise of the Oregon Zoo bond measure is fully realized.

The committee's reporting requirement

The committee is required to report annually to the Metro Council regarding the progress of the zoo bond measure improvements, spending trends and cost projections, and project modifications. This document satisfies that requirement. This committee helps ensure the best value for the voters' investment and provides this report to the community as part of its oversight and stewardship.

In addition to the bond reporting requirements, the committee reviewed other requirements and goals for the program. These included the state requirement that 1.5 percent of construction cost on eligible projects be used for renewable energy installations. Metro requires that 1 percent of construction cost on projects of a certain size be used for commissioned artwork. Zoo bond-funded construction projects have an aspirational contracting goal of 15 percent participation from minority-owned, women-owned, emerging small business, and service-disabled veteran-owned firms. The committee also strives to maintain a focus on the visitor experience and how its recommendations impact this crucial component.

Starting with the 2015 report, the committee changed the format from previous years by focusing on the three main objectives of the ballot measure – animal welfare, conservation education, and infrastructure and sustainability – and diversity in contracting utilization, for each project. This report includes the committee's recommendations from the report issued in April 2017 that covered the calendar year 2016 (2016 Findings and Recommendations), and provides an update on the outcomes of those recommendations as applicable.

As noted above, this report fulfills the bond measure requirement to report annually to the Metro Council regarding the progress of the zoo bond measure improvements, spending trends and cost projections, and project modifications. Although of interest to the committee, it does not attempt to set measurable operations standards or include an analysis of operations of the new facilities constructed by the bond program. Some of that information is provided in a mid-program report, [Thanks to You, A Better Zoo, 2016 Bond Program Progress Report](#), posted on the zoo website, www.OregonZoo.org. Based on a 2015 request, bond staff is committed to providing a memo outlining the estimated annual operational impacts after one full fiscal year (July to June) of operations in the new bond-constructed facilities completed in 2015 or later.

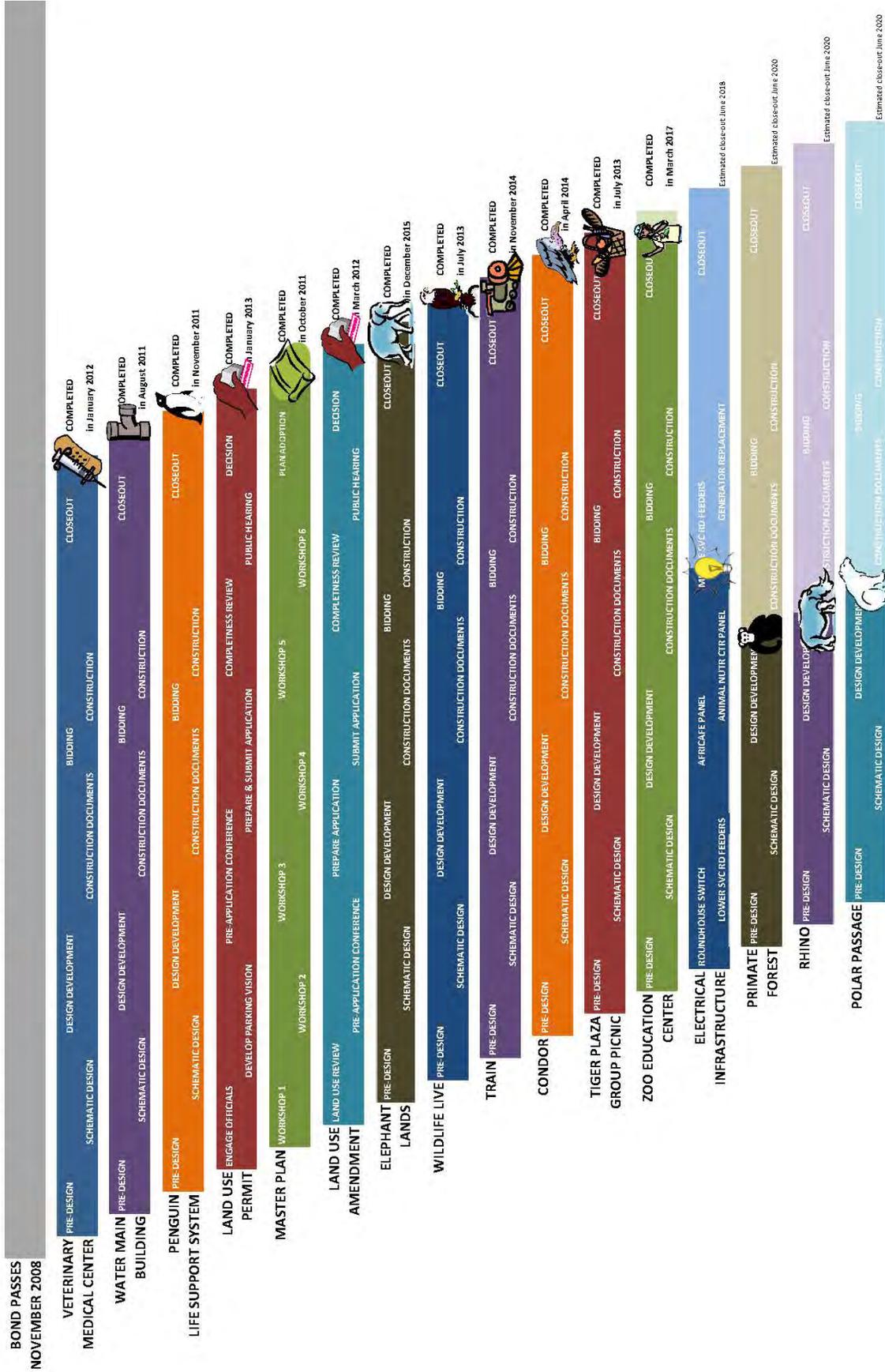
This Oversight Committee annual report includes some general diversity in contracting information, but more complete information is available in the [Oregon Zoo Bond Program Equity in Contracting Quarterly Report](#), first issued by bond staff in September 2016, and provided to the committee and posted quarterly thereafter on the zoo website.

This report makes various references to items that were presented to the committee in 2017 and prior years. The committee's meeting materials, minutes, annual reports, program fiscal audits and *Oregon Zoo Bond Program Equity in Contracting Quarterly Reports* can be found on the Oversight Committee meeting materials pages on the zoo's website: <http://www.oregonzoo.org/discover/new-zoo/oregon-zoo-bond-citizens-oversight-committee/oregon-zoo-bond-citizens-oversight>.

Figure 1

OREGON ZOO BOND PROGRAM

PROJECT SEQUENCE AND PROGRESS, AS OF DECEMBER 2017



2017 Findings and Recommendations Summary

The committee's findings and recommendations for 2017 are compiled here for quick reference. They are listed again under each reporting item later in the report with more complete narrative and updates on the previous year's recommendations.

2017 Findings and Recommendations Summary

Conservation Education: Overview

- The committee commends Oregon Zoo director Dr. Don Moore for his work to illustrate critical conservation issues and to lead the zoo in developing an Integrated Conservation Action Plan.
- The committee recommends that the remaining bond-funded projects focus conservation education to align with the new Integrated Conservation Action Plan.

Infrastructure and Sustainability: Overview

- The committee commends the investment in sustainable infrastructure at the Oregon Zoo as a means to reducing utility and energy costs, which frees funds to support the zoo's core missions, and is in alignment with the zoo's conservation goals.
- The committee recommends that the Oregon Zoo operate, maintain and repair the new facilities to meet the intended water, energy and sustainability performance of the designs and equipment specifications.

Diversity in Contracting: Overview

- The committee commends the zoo bond program for consistently improving their performance in expanding tools to advance COBID utilization.
- The committee commends Metro for the role it's taken to advance the regional work toward supporting women and people of color in the construction industry.
- The committee recommends that Metro continue prioritizing efforts to enhance diversity in the construction workforce and contracting through workforce equity standards.
- The committee carries forward its 2015 recommendation that staff share the general contractor's Diversity in Workforce and Contracting plan with the committee prior to seeking subcontractor bids on the final construction projects.
- The committee carries forward its 2016 recommendation to track and report the contracting of COBID-certified firms used for project design, construction and other services.

(continued)

2017 Findings and Recommendations Summary (continued)

Diversity in Contracting: Overview (continued)

- The committee recommends that staff continue to make best efforts to diversify contracting; the committee considers the demand on the marketplace to be an ongoing challenge for projects in the region based on both limited overall competitive resources as well as the other, primarily publicly funded, construction projects that require reporting of workforce equity.

Program Governance and Structure: Overview

- The committee recommends that Metro continue to maintain clarity about roles, responsibilities and lines of authority given the reporting structure transition.
- The committee commends former deputy chief operating officer Scott Robinson for his dedication and hard work in establishing and maintaining high standards for the zoo bond program over the 10 years since the ballot measure passed. The committee appreciates his oversight encouragement and support of the Zoo Bond Citizens' Oversight Committee.

Polar Passage

- The committee commends the forward thinking of the bond team to identify how to best utilize remaining funds to optimize goals associated with the remaining projects.
- The committee recommends continued commitment to polar bear conservation and to define how Polar Passage supports this conservation commitment.
- The committee carries forward its 2015 recommendation that staff share the general contractor's Diversity in Workforce and Contracting plan with the committee prior to seeking subcontractor bids on a construction project, specifically Polar Passage.
- The committee recommends the Oregon Zoo continue to work with professional networks to optimize the positive result of bears being placed in appropriate habitats, including Polar Passage.
- The committee recommends that staff analyze and apply lessons learned on COBID utilization from the Education Center to Polar Passage, Primate Forest and the rhino habitat.

Primate Forest

- The committee commends the zoo and Metro Council for prioritizing the removal of the old primate building in this phase of construction due to animal welfare priorities and to reduce ongoing costs by no longer operating a dilapidated building.
- The committee commends the zoo for continuing to recognize the need to monitor the impacts of construction and habitat changes on the affected animals.
- The committee commends zoo staff for analyzing the ongoing capacity and conservation priorities of the primate habitat, and supports the decision to reduce the number of species in order to enhance overall animal welfare.

2017 Findings and Recommendations Summary (continued)

Rhino Habitat

- The committee commends the zoo for continuing to recognize the need to monitor the impacts of construction and habitat changes on the affected animals.

Interpretive Experience and Wayfinding

- The committee recommends that the interpretive investments continue to be analyzed and updated to reflect conservation action priorities for the zoo.
- The committee recommends that staff share the outcomes and findings from the Education Center interpretive summative evaluations when they are available.
- The committee requests information about the zoo's ongoing processes and systems to assess the condition and effectiveness of the interpretive elements of completed bond projects, including how funds are budgeted, to ensure they remain relevant, accurate and well maintained.
- The committee recommends that staff continue to investigate interpretive systems that can be easily changed to display current data and conservation updates.

Percent for Art

- The committee commends the integrated effort with the art design and interpretive focus of Polar Passage and recommends the zoo consider this integration in future art investments.
- The committee carries forward its 2016 recommendation that the zoo document the new public art and develop an ongoing maintenance plan to support its commitment to this nonliving collection.
- The committee commends the zoo for being on track to meet Metro's 1 percent for art requirement and pooling art resources to enhance effectiveness in major visitor zones.
- The committee recommends that the zoo document the successful process of the Oregon Zoo Public Art Advisory Committee, as a reference for future art investments.

Education Center

- The committee recommends the Education Center continue to be operated in a way that optimizes net-zero energy goals while achieving other program goals.

Elephant Lands

- The committee commends the zoo for winning the Association of Zoos and Aquariums (AZA) Exhibit of the Year award for Elephant Lands. The project has received 17 awards to date.
- The committee carries forward its 2016 recommendation that staff share publicly the outcomes of the elephant welfare studies when data analysis is complete.

2017 Findings and Recommendations Summary (continued)

Budget and Expenditures

- The committee congratulates and thanks the Oregon Zoo Foundation for its significant financial support of \$3.2 million for Polar Passage, Primate Forest and rhino habitat.
- The committee appreciates the work the budget subcommittee did on the recommended reallocation of remaining funds and appreciates Metro for approving the reallocation.
- The committee recommends that continued rising construction and infrastructure costs be monitored closely during the remaining projects.
- The committee commends zoo staff for the forethought and prudence of combining the three remaining projects to reduce construction costs and time. The committee also commends Metro for being open to and approving this innovative construction plan.
- The committee recommends that the zoo consider alternative ways to provide food choices for patrons while eateries are closed for construction.
- The committee recommends that the zoo have a plan to help offset any reduced cash flow during this final stage of construction.
- The committee recommends careful consideration of the Integrated Conservation Action Plan (ICAP) when completed and adopted to understand how costs will be influenced.
- The committee recommends evaluating options with remaining unallocated funds after the final bond issuance in 2018.

Contracting Methods

- The committee recommends that zoo bond staff continue to document cost savings and efficiencies through the use of alternative contracting methods through the completion of the remaining projects.

Master Plan Implementation: Cost Projections

- The committee recommends staff continue to inform and update the Oversight Committee on cost trends in the construction industry, including materials costs.
- The committee recommends staff continue to review and validate budgets and cost escalation and their implications on the remaining planned projects.
- The committee recommends the staff continue to monitor changes to animal welfare standards that could have an impact on current and future projects.
- The committee recommends continued monitoring of the zoo's conservation priorities for any upcoming changes that could affect project designs, construction or operation.

2017 Findings and Recommendations Summary (continued)

Administrative Costs: Cost Projections

- The committee recommends staff continue to monitor the reasonable assessment of administrative costs and their implications on the overall program budget, and provide a report at least annually to the full Oversight Committee.

Operating Costs: Cost Projections

- The committee believes it is important that staff continue to monitor future operating costs of the zoo assuming that as project planning matures, costs may change.
- The committee recommends staff provide the operating outcomes from completed bond projects.
- The committee recommends that the zoo prioritize preventative maintenance in the ongoing operation of the new facilities to maximize the lifespan of the equipment.

REQUIRED REPORTING ITEM 1 | Assessment of Progress

Assess progress in implementing the Oregon Zoo bond measure project improvements

A. Program initiatives

1. Animal Welfare: Overview

Protecting animal health and safety was a priority in the ballot measure. The zoo is committed to providing its animals with the best care possible. Animal welfare is prioritized during design and monitored during all construction. The sequence and design of the bond-funded projects prioritizes animal welfare.

Animal welfare refers to an animal's collective physical, mental and emotional states over a period of time and is measured on a continuum from poor to excellent. The zoo aims to optimize the welfare potential of each animal through enrichment, enclosure design, nutrition, research programs, veterinary care, husbandry training, population management and staff training. For animals to thrive the zoo takes into account psychological aspects of welfare such as mental, emotional and social health. The zoo conducts continuous welfare assessments of individual animals and the species to analyze behavior, physiology, and physical appearance and health.

The ballot measure called for providing more indoor and outdoor space for elephants; replacing the zoo's 45-year-old animal hospital and quarantine facilities to protect animal health and safety; protecting the health of polar bears by replacing concrete structures and substrate with pools, more space and more humane conditions; and replacing plain and sterile areas for primates with trees, rocks and water.

Completed Projects

The Elephant Lands habitat provides more space, natural substrate and enrichment opportunities for the elephants. Expanded spaces and upgraded facilities will improve elephant health and welfare by providing more options for extending outside access, increasing exercise opportunities and offering a more natural and stimulating environment for elephants. Research outcomes will be available in 2018.

The Veterinary Medical Center offers dramatic improvements in animal holding, climate-controlled spaces, enclosure substrates to increase safety and comfort, reduced stress for animals, options for environmental enrichment and ability to control communicable diseases. The Association of Zoos and Aquariums (AZA) had deemed the zoo's former animal quarantine facility substandard. Built 45 years ago, it had inadequate lighting, heating, ventilation and drainage. The building had been noted for its rusty and crumbling walls and doors. Some surfaces were difficult to sanitize because of degradation and could have provided foreign objects subject to ingestion by animals. The facility's floor could damage the hooves of some animals. The Oregon Zoo is now recognized as having one of the most advanced animal hospitals in the country.

The Condors of the Columbia exhibit offers opportunities for the birds to fly and provides the public with a rare opportunity to see this endangered Northwest native bird, increasing awareness of the need to protect this endangered species.

The Education Center provides improved facilities for the invertebrate collection at the Insect Zoo and western pond turtles at the Species Conservation Lab. In addition, the Center's message of taking small actions on behalf of wildlife will benefit the conservation of animals worldwide.

Current Projects

Polar Passage is currently being designed to provide polar bears with long views, natural substrate, more space, and meet AZA and Manitoba standards for polar bear habitats. The old exhibit is almost entirely concrete, generating a very high heat load in the summer, and uniformly fails to address the welfare of the polar bears. In addition, the old space, both land and pools, does not meet the Manitoba protocols (see Polar Passage, page 22) established for zoo polar bears.

Primate Forest is currently under design and will be home to an expanded colony of chimpanzees adjacent to the orangutans in Red Ape Reserve. Chimps thrive when they are in large enough groups to choose who to spend time with, and when they have the latitude to move between groups. New construction addresses this need by expanding and significantly improving the space to accommodate a larger troop of chimpanzees.

The new habitat will provide the chimps with more complex spaces and better visibility so that they can see who is entering the area. Primate Forest will include interchangeable three-dimensional structures, allowing keepers to enrich the environment by changing the arrangement of climbing structures and hammocks every day.

The rhinoceros habitat will also be expanded into the old hippo habitat to provide more space for the critically endangered black rhinoceros.

2. Conservation Education: Overview

The ballot measure highlighted a need to increase conservation education opportunities for zoo visitors. The zoo aims to inspire visitors to take conservation action, increase its capacity to invite and engage diverse audiences in conservation education, engage other conservation partners in providing resources and programming to the zoo's 1.6 million annual visitors, and advance conservation education in the region by fostering connection and dialogue between different sectors and issues.

Completed Projects

Completed in March 2017, the Education Center creates a dedicated space for education programming at the zoo, allowing the zoo to increase capacity for conservation education. The Education Center is helping the zoo raise the visibility and support the work of more than 30 nature, conservation and sustainability organizations by connecting them with zoo audiences. The center features seven new classrooms and three tent sites, up from just two classrooms previously. New programming in the space has resulted in an increase in summer camp attendance. The Education Center has hosted wildlife lectures, naturalist classes, citizen science trainings, Zoo Teen demonstrations in the insect zoo, and an early childhood pilot program. With new space and new programming, the zoo team is maximizing their opportunity to expand conservation education.

The results of an interpretive evaluation demonstrated that the Oregon Zoo effectively achieved its education goals for Elephant Lands. Messaging about palm oil threats and human-elephant conflicts

holds promise as the most effective way to incentivize conservation action in Elephant Lands. Almost half of all respondents had never heard that these situations threatened elephants. As a result of their visit, 62 percent were more likely or a lot more likely to buy products that they know contain only wildlife-friendly palm oil. Interview respondents confirmed that Elephant Lands effectively or very effectively communicated messages about the zoo's care for, research about, and conservation of elephants. After a visit to Elephant Lands, 83 percent of survey respondents agreed that they felt a stronger connection to the elephants and 84 percent felt their consumer choices made an impact on elephant conservation. Visitors were strongly moved to increasingly act on behalf of elephant conservation causes advocated by the zoo. When asked about a series of local sustainability actions that they could adopt that would benefit elephants, about one-third of survey respondents were more likely to engage in all five actions as a consequence of their visit.

Condors of the Columbia tells the story of condors' historic fall and current rise and the challenges these birds face today from lead and trash in their environment. It also guides visitors through the zoo's decade-long condor recovery effort in conjunction with the United States Fish and Wildlife Service and many other partners. An evaluation of the interpretive messaging and experience at Condors of the Columbia demonstrated that visitors learned about history, threats, recovery efforts under way and what actions they could take to support the condors. Specifically, visitors committed to picking up trash and to support the switch to lead-free ammunition.

Current Projects

As the primary threat to polar bear survival, climate change will be a central theme of the visitor experience. Visitors will learn about the polar bears' amazing adaptations to their Arctic habitat and the best ways to take personal action to reduce the effects of climate change. Because polar bears are hard to study in their natural habitat, the Oregon Zoo has provided an environment suitable for science-based research that contributes to and supports field research aimed at helping wild bears survive. The new zoo habitat will continue this commitment and provide visitors with a fascinating and close-up view into this important conservation science support.

At Primate Forest, visitors will learn about the incredible adaptations chimpanzees and orangutans have developed for life in their forested habitats in Asia and Africa and the devastating impacts of deforestation on these arboreal animals. In particular, visitors will learn about the destruction of forests by the palm oil industry and how each one of us can take action to ensure a future for these remarkable primates.

In 2017, the Oregon Zoo made significant progress on the development of an Integrated Conservation Action Plan (ICAP). This plan establishes the zoo's primary conservation priorities and helps the zoo focus efforts around animals, programs and operations for greater impact.

Conservation Education: Overview

2017 Findings and Recommendations:

- The committee commends Oregon Zoo director Dr. Don Moore for his work to illustrate critical conservation issues and to lead the zoo in developing an Integrated Conservation Action Plan.
- The committee recommends that the remaining bond-funded projects focus conservation education to align with the new Integrated Conservation Action Plan.

3. Infrastructure and Sustainability: Overview

The ballot measure called for the zoo to conserve and reuse water, requiring significant infrastructure upgrades. Most of the zoo's infrastructure dates back to the 1950s and 1960s. Pipes, plumbing and irrigation systems are outdated, leaking and well past their useful lives. The most expensive utility cost at the zoo is water, and leaking pipes, run-off, inadequate filtration systems, and lack of water storage all contribute to wasting water and increasing costs. Literally millions of gallons of water per year and thousands of dollars are being saved through a major rebuilding of the zoo's water distribution system. In addition, new buildings are being designed to capture solar warmth, and provide natural light and ventilation, cutting down on energy usage and cost.

In its Comprehensive Capital Master Plan, the Oregon Zoo detailed its commitment to creating an efficient and sustainable campus constantly striving to increase conservation of resources, and improvement and expansion of services. Through these types of efforts, operating funds needed for utilities and energy are reduced and can be used for support of the zoo's core missions. The bond funds have provided for the replacement of many of the original buildings, antiquated building/operational systems and animal habitats. The Oregon Zoo strives to be an efficient and sustainable campus.

The physical location of the zoo presents development challenges due to natural landforms, steep grades and unstable soil conditions. Projects are shaped using the design team's study of vegetation, geology, hydrology, landforms, topography, circulation, potable water network and existing infrastructure, age of existing buildings and suitability of land for development. Capital improvements, enhancements and sustainable features have been incorporated to improve site infrastructure, including the new train route and trestle, new service road, sanitary sewer line replacement, improved stormwater management, and energy and water saving measures.

Zoo bond projects are designed to achieve or exceed U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Silver certification. The Veterinary Medical Center and Elephant Lands both received LEED Gold Certifications, and the goal has been set for the Education Center also to achieve LEED Gold. LEED is an internationally recognized means to assess the effectiveness of building materials, systems and siting choices to reduce environmental impact through a broad range of energy and resource consumption measures.

Oregon Zoo bond project sustainability and infrastructure goals:

- Achieve LEED Silver or higher certification in each project.
- Reduce zoo-wide greenhouse gas emissions 80 percent below 2008 levels by 2050, from building operations and maintenance and through energy efficiency and resource conservation.
- Produce on-site renewable energy with solar panels generating electricity to meet state requirements to invest 1.5 percent of capital construction cost of eligible projects in renewable energy.
- Reduce zoo-wide water use 50 percent below 2008 levels by 2025.

Completed Projects

On projects to date, the zoo has separated the old combined sewer system into isolated stormwater and sanitary sewer, and built stormwater planters and bioswales to naturally filter and clean stormwater before sending it downstream; this practice will continue on the remaining projects.

The zoo installed an underground stormwater storage facility under the Elephant Lands encounter habitat capable of storing and slowly releasing storm runoff from the entire zoo in a ten-year rain event. In addition, the zoo implemented water reuse or reclaimed water systems for nonpotable water demands (rainwater harvesting) on the Veterinary Medical Center, Elephant Lands and the Education Center. The zoo has installed water filtration and circulation systems as part of the life support systems to reuse water in the penguinarium and Elephant Lands, and will also do so in the Polar Passage pools. The pools at Elephant Lands use 86 percent less water than the old exhibit pools, or a decrease of more than 13 million gallons of water annually.

The zoo has designed landscape areas with native, climate-adaptive plant species on projects to date and will continue to do so on remaining projects.

The new Education Center includes many features to enhance infrastructure and sustainability (see page 33). The LEED-certified building features rainwater reuse in restrooms, solar panels for energy production, bird-friendly glazing, Forest Stewardship Council-certified wood and efficient heating and cooling systems. Funding from Portland General Electric's Renewable Development Fund supported the expansion of the solar panel installation to help achieve net-zero energy operations.

Current Projects

Polar Passage is being designed to connect to the geothermal "slinky" system for heat exchange with Elephant Lands. This energy-saving feature that will capture heat used to cool the polar bear pools and transfer it to help heat the elephant building. New pools at Polar Passage will have water filtration and recovery systems to save significantly on water utility costs. Polar Passage and Primate Forest buildings will be significantly upgraded with a high efficient heating/ventilation/air conditioning (HVAC) system, LED lighting and solar tubes for natural daylighting. The most critical improvement is the deconstruction of the 1950s polar bear and primate buildings and the antiquated systems.

The new rhinoceros habitat will expand into the existing hippopotamus area. This upgrade will remove the outdated hippo pool and save more than 10 million gallons of water annually.

Electrical upgrades are occurring throughout campus to replace outdated generators and associated infrastructure.

In 2017, the Metro Council approved funding for additional electrical infrastructure upgrades on the zoo campus. Investing in a new generator and supporting electrical infrastructure provides for animal welfare and operational efficiencies.

Infrastructure and Sustainability: Overview

2017 Finding and Recommendation:

- The committee commends the investment in sustainable infrastructure at the Oregon Zoo as a means to reducing utility and energy costs, which frees funds to support the zoo's core missions, and is in alignment with the zoo's conservation goals.
- The committee recommends that the Oregon Zoo operate, maintain and repair the new facilities to meet the intended water, energy and sustainability performance of the designs and equipment specifications.

4. Diversity in Contracting: Overview

The zoo continues to demonstrate its commitment to increase contracting opportunities for minority-owned enterprises, women-owned enterprises, emerging small businesses, and service-disabled veteran-owned enterprises that are certified by the State of Oregon Certification Office of Business Inclusion and Diversity (COBID firms).¹ The aspirational contracting goal for the zoo bond-funded construction projects is 15 percent participation from COBID firms. This goal is currently being met by the zoo bond program.

On the nearly complete Education Center project, the COBID utilization rate as of December 31, 2017, was 29.5 percent – almost double the aspiration goal. Overall as of that date, the bond program has spent approximately \$70.8 million on COBID-eligible construction contracts, and \$10.4 million, or 15 percent, of that was on COBID firms. Of that COBID spending, 34 percent (\$3.6 million) went to minority-owned businesses, 41 percent (\$4.3 million) to emerging small businesses, and 25 percent (\$2.5 million) to women-owned businesses.

Starting with the Education Center project, additional tracking is being conducted to assess COBID consultant utilization in the design phase. The Education Center design team led by Opsis Architecture, had a COBID utilization rate of 8 percent. Projected COBID utilization for the Polar Passage/Primate Forest/Rhino design team led by CLR Design is currently at 24 percent.

¹ Metro now refers to MWESB firms as COBID (Certification Office for Business Inclusion and Diversity)-certified firms to align with the state's certification program for minority-owned businesses, women-owned businesses, emerging small businesses and service-disabled veteran-owned businesses.

A full accounting of the bond program diversity in contracting activities is now detailed in a quarterly report, first issued in September 2016. The [Equity in Contracting Quarterly Report](#) is posted on the zoo website, and distributed through Metro's community and construction networks.

Efforts to increase these numbers include evaluation during the procurement of goods and services, outreach to COBID firms to encourage participation, mentoring of COBID firms, and breaking down projects to increase accessibility to bid.

Improved recruitment strategies of COBID firms included:

- General contractor starts recruiting COBIDs earlier to help get them ready by bid day, and hosting workshops either at their office or onsite before bid day.
- Breaking down bid packages for subcontractors so that they are not overwhelming for smaller firms to bid.

Metro's methodology for calculating COBID utilization² deducts the value of the scopes of work deemed ineligible to COBID firms from the total construction contract amount to determine the base for utilization rate calculation. For example, for the Condors of the Columbia project, this methodology resulted in removing the specialized aviary mesh installation scope of work, with a subcontract value of \$157,845, from the base calculation. Only three firms nationwide provide the mesh installation, and none of them was a certified COBID firm.

To determine if a scope of work is ineligible, the Metro project manager and contractor contact and search the Oregon Procurement Information Network (ORPIN), State of Oregon COBID website, Oregon chapter of National Association of Minority Contractors and minority business chambers of commerce to determine if any vendors in the area are eligible to perform the specialized work. The outcome of this search is documented in the project Minority Utilization Report. Metro's procurement manager must approve the request for any specialized work deemed ineligible to COBID contractors and is responsible for tracking and reporting COBID contractor utilization.

While COBID goals focus on business ownership, goals for creating greater labor force opportunities for women and people of color have not been addressed until recently. The committee has raised this topic, which has been well received by zoo bond staff and Metro. With no goals in the original bond language to help measure workforce equity impacts, the committee has encouraged practices that increase opportunities for women and people of color on the final construction projects, including recommending the Metro Council approve alternative contracting methods such as Construction Management by General Contractor (CM/GC) for several zoo bond projects.

Recently, Metro launched the Construction Career Pathways Project to identify strategies for providing reliable career pathways for women and people of color in the construction trades. Metro, in partnership with other public and private institutions, is conducting an assessment of the region's construction workforce supply and demand outlook to better understand its overall capacity to meet growing demand, its current composition as it relates to the increasing demand to provide more

² Early in the bond program, Metro used a different method of calculating COBID utilization (COBID utilization percentage was calculated based on the value of contract dollars available to subcontractors; excluding the value of the general contractor's self-performed work). Metro revised its methodology in 2014 to include the total contract value (including the general contractor's self-performed work and overhead costs), and this report has updated all COBID utilization reporting to be consistent with the current method.

diversity across the trades, and the existing opportunities for future workforce growth across the overall regional industry. The zoo bond staff have also participated in this project to determine meaningful areas of partnership between public sector agencies, community, the trades and industry to invest resources to support living-wage jobs for people of color and women.

The Zoo Bond Citizens' Oversight Committee acknowledges that issues of equity and inclusion in public sector contracting to increase both business ownership and labor force development are complex and will require sustained, long-term actions that extend beyond the zoo bond in scope and time. Nonetheless, the committee appreciates the efforts by Metro, other government units and private sector entities to create sustainable programs that will make meaningful change over time. The committee also appreciates that the bond program staff has worked hard to solicit and retain design and construction teams who are committed to these goals.

Diversity in Contracting: Overview

2016 Recommendations *with updates*:

- The committee carries forward its 2015 recommendation that staff share the general contractor's Diversity in Workforce and Contracting plan with the committee prior to seeking subcontractor bids on a construction project, specifically Polar Passage.

Update: The Diversity in Workforce and Contracting plan for Polar Passage is currently being developed and will be shared with the committee prior to subcontractor bidding.

- The committee carries forward its recommendation that when the 15 percent COBID utilization goal may not be reached because of specialty work, that alternative bidding practices such as those suggested for "2015 improved recruitment strategies of MWESB firms" should be implemented to maximize opportunity.

Update: The bond program has completed alternative procurement for the final three projects and has secured a general contractor for construction management during design and construction (CM/GC) that is committed to Metro's Diversity in Contracting goals.

- The committee recommends tracking and reporting the contracting of COBID-certified firms used for project design and other services on the project, not just construction.

Update: Staff began tracking and reporting the COBID-certified firms used for project design and other services.

2017 Findings and Recommendations:

- The committee commends the zoo bond program for consistently improving their performance in expanding tools to advance COBID utilization.
- The committee commends Metro for the role it's taken to advance the regional work toward supporting women and people of color in the construction industry.
- The committee recommends that Metro continue prioritizing efforts to enhance diversity in the construction workforce and contracting through workforce equity standards.
- The committee carries forward its 2015 recommendation that staff share the general contractor's Diversity in Workforce and Contracting plan with the committee prior to seeking subcontractor bids on the final construction projects.
- The committee carries forward its 2016 recommendation to track and report the contracting of COBID-certified firms used for project design, construction and other services.
- The committee recommends that staff continue to make best efforts to diversify contracting; the committee considers the demand on the marketplace to be an ongoing challenge for projects in the region based on both limited overall competitive resources as well as the other, primarily publicly funded, construction projects that require reporting of workforce equity.

5. Program Governance and Structure: Overview

Prior to the start of the zoo bond construction projects, the Metro Auditor recommended improved accountability through clarity of the organizational structure. The Auditor suggested clearly delineating roles and responsibilities and lines of authority.³ The governance structure set up for the zoo bond program separated bond program project planning and construction activity from zoo operations. The zoo bond program team reported directly to the Metro deputy chief operating officer through November 2017. The zoo bond team transitioned reporting to the Metro general manager of visitor venues at the end of 2017, which still allows a separation of planning, construction and expenditure authority between the zoo bond program and zoo operations.

A follow-up audit demonstrated that separating the bond program from zoo operations created a separate project management function better suited to address financial oversight, scheduling and information sharing.⁴ This robust governance and oversight structure continues to guide the bond program and is proving to be effective in ensuring careful and diligent stewardship of bond funds.

In February 2016, Dr. Donald E. Moore joined the zoo as the new director. Dr. Moore has offered valuable insight in the design and partnerships to support the zoo's bond-funded projects.

Program Governance and Structure

2016 Findings and Recommendations *with updates*:

- The governance structure that guides the bond program is proving to be effective. As it did in 2015, the committee recommends preserving the current governance structure of the bond program reporting to the Metro deputy chief operating officer for appropriate oversight.

Update: In 2017, the zoo bond program transitioned reporting to the Metro general manager of visitor venues. This still allows a separation of planning, construction and expenditure authority between the zoo bond program and zoo operations.

2017 Findings and Recommendations:

- The committee recommends that Metro continue to maintain clarity about roles, responsibilities and lines of authority given the reporting structure transition.
- The committee commends former deputy chief operating officer Scott Robinson for his dedication and hard work in establishing and maintaining high standards for the zoo bond program over the 10 years since the ballot measure passed. The committee appreciates his oversight encouragement and support of the Zoo Bond Citizens' Oversight Committee.

³ Metro audit issued in November 2009 entitled "Oregon Zoo Capital Construction: Metro's readiness to construct 2008 bond projects," p. 21.

⁴ Metro audit issued October 26, 2011, entitled "Zoo Capital Construction Program Audit Follow-up," p. 5.

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B. Ongoing and new bond projects

The final projects – Polar Passage, Primate Forest and expanded rhino habitat – are adjacent to one another in the center of the zoo, so the zoo will manage them as a single construction site. This approach is expected to reduce construction time, construction costs, make the whole undertaking more efficient, and reduce impacts on zoo operations and visitor experience. The construction will be done in phases. The first phase has the largest footprint, encompassing all three future habitats as the zoo demolishes old facilities. As the zoo completes projects, the construction footprint will get smaller. Primate Forest and the rhino habitat will open first, followed by Polar Passage. All are scheduled to open in 2020.

1. Polar Passage

Planning and design work is underway for the new polar bear habitat, Polar Passage, included in the bond. Zoo director Don Moore, who has for many years worked closely with international colleagues on polar bear conservation, and the Oregon Zoo polar bear keepers, who have been recognized internationally for their research on polar bear nutrition and metabolism, have generously shared their knowledge with the Zoo Bond Citizens' Oversight Committee and zoo bond program staff. This was to help assure that decision-making about the design of the new exhibit optimizes the opportunities to meet the zoo's multiple goals for animal welfare, conservation and education, and creates an engaging habitat for the next generations of polar bears at the Oregon Zoo.

Polar Passage will cover approximately two acres, three times the size of the existing space, and will be custom designed to support the needs of polar bears. The new habitat will give the bears greater choice and control, encouraging them to engage in more natural behaviors while providing opportunities for keepers to visually monitor animals, enabling responsive care. Polar Passage will include more open and varied terrain, with hilltops and cliffs offering the bears big views across the zoo and a variety of habitats to patrol, as polar bears do on ice floes and tundra in the Arctic. New shallow and deep saltwater pools will be healthy for skin, fur and eyes. The groundbreaking work the zoo does with bears to support Arctic conservation science will be on display for visitors, who will learn how to personally take meaningful action to reduce their climate change impacts and help create a better future for polar bears.

Animal Welfare – As envisioned, the project will expand the bears' access to natural substrate and habitat, renovate and increase the efficiency of the water-filtration system, reduce temperatures, chill the pool water, and increase both land and pool space. New holding areas will have better lighting and ventilation, allowing for better animal care. As marine mammals, polar bears' eye and coat health is best served with access to saltwater. The original scope included one saltwater pool, but the committee recommended and the Metro Council approved a scope change to ensure all of the pools had a saltwater system.

Manitoba, Canada's Polar Bear Protection Act establishes minimum requirements for facilities that receive an orphaned animal from Manitoba (Western Hudson Bay population/Churchill area). The regulations identify exhibit and off-exhibit space, holding area, maternity den, pools, viewing distance, barrier heights, exhibit complexity, animal care, enrichment and education requirements. The Association of Zoos and Aquariums' Species Survival Plan for polar bears has asked that all polar bear facilities aspire to the Manitoba standards. The Oregon Zoo is designing Polar Passage to adhere to AZA and the Manitoba standards. This will allow the zoo to qualify to receive polar bears from Canada, if available. Polar Passage could be a future home for orphaned or displaced bears.

Conservation Education – Development of this new habitat also provides the Oregon Zoo the opportunity to educate guests about climate change, as well as the conservation research the zoo conducts with polar bears to assess the impacts of such change. A key component of the new polar bear exhibit will be to bring the zoo's research and positive reinforcement training activities to the forefront of the visitor experience. One of the main objectives of the interpretive messaging will be to introduce facts about climate change, polar bear conservation, and actions visitors can take to preserve polar bears and their Arctic habitat. As with all bond projects, the effectiveness of the interpretive exhibits with visitors will be assessed after the project is complete.

Infrastructure and Sustainability – Infrastructure work associated with the polar bear project includes a public plaza with guest amenities, visitor path upgrades, and the final phase of upgrading utilities as part of the bond program implementation. The polar bear project will also connect to the geothermal "slinky" system installed during the construction of Elephant Lands to exchange heat and cooling between the habitats. The geothermal system will help save energy by transferring energy used to cool Polar Passage and use it to help heat Elephant Lands.

Diversity in Contracting – The approval to utilize CM/GC for this project will allow for more outreach to COBID contractors during the design phase.

Percent-for-Art – The final of three major bond program Percent-for-Art installations will be developed in conjunction with the Polar Passage project. The team of Edwin and Veronica Dam de Nogales was selected in November 2016 as the commissioned artists. The Polar Passage design and conservation messages related to the iconic polar bear were a major consideration in artist selection. The Metro Council approved the artists' design concept in 2017.

Polar Passage

2016 Findings and Recommendations *with updates:*

- The committee recommends that staff analyze the use of saltwater for all of the Polar Passage swimming pools and bring the cost and program analysis to the committee for review.

Update: Staff completed an analysis of the operational, construction cost, animal welfare, and research opportunities associated with the use of saltwater in all pools. The project scope was amended to incorporate saltwater per the recommendation of the committee and approval by the Metro Council.

- The committee recommends that the zoo develop a formal commitment to polar bear conservation and define how Polar Passage supports this conservation commitment.

Update: The committee appreciates Dr. Don Moore's letter to the committee outlining the zoo's efforts to prioritizing polar bear conservation and efforts underway to plan for bears coming to Polar Passage.

- The committee carries forward its 2015 recommendation that staff share the general contractor's Diversity in Workforce and Contracting plan with the committee prior to seeking subcontractor bids on a construction project, specifically Polar Passage.

Update: The Diversity in Workforce and Contracting plan for Polar Passage is currently being developed by the general contractor and will be shared with the committee prior to subcontractor bidding.

2017 Findings and Recommendations:

- The committee commends the forward thinking of the bond team to identify how to best utilize remaining funds to optimize goals associated with the remaining projects.
- The committee recommends continued commitment to polar bear conservation and to define how Polar Passage supports this conservation commitment.
- The committee carries forward its 2015 recommendation that staff share the general contractor's Diversity in Workforce and Contracting plan with the committee prior to seeking subcontractor bids on a construction project, specifically Polar Passage.
- The committee recommends the Oregon Zoo continue to work with professional networks to optimize the positive result of bears being placed in appropriate habitats, including Polar Passage.
- The committee recommends that staff analyze and apply lessons learned on COBID utilization from the Education Center to Polar Passage, Primate Forest and the rhino habitat.

2. Primate Forest

Primate Forest will provide vastly improved habitat for an expanded family of chimps. The old primate building, including Flooded Forest, will be demolished to make way for this new habitat. Red Ape Reserve will remain, but with updated displays and information about the effects of deforestation on orangutans, and guidance for visitors on how to take meaningful action.

Animal Welfare – The old primate building was scheduled to be demolished in a future phase of construction (Master Plan Phase II). In 2017, the Metro Council approved the prioritization of removing the primate building in this phase and building a new habitat in that space. The zoo staff reviewed conservation and animal welfare goals to determine the priority species for the new habitats. Focusing on chimpanzees and orangutans improves the welfare of the animals in the habitat and strengthens the impact of information shared with visitors by focusing on a theme – deforestation – with meaningful information, empowering zoo visitors to take action that can bring about real results.

The Oregon Zoo has an existing troop of chimpanzees who will benefit significantly from more complex spaces and better visibility so that they can see who is entering the area. This species thrives in groups large enough for individuals to choose who to spend time with, and with latitude to move between groups. Primate Forest is being planned to address these needs by greatly expanding the space to accommodate a larger troop of chimpanzees. The habitat will include interchangeable, three-dimensional structures, allowing keepers to enrich the environment by changing the arrangement of climbing structures and hammocks. The new chimp habitat will be adjacent to the orangutans in Red Ape Reserve.

Conservation Education – Visitors will learn about the conservation challenges primates face from deforestation, particularly as their habitat is converted to palm oil plantations.

Infrastructure and Sustainability – The project is being designed to meet LEED Silver certification.

Diversity in Contracting – The approval to utilize CM/GC for this project will allow for more outreach to COBID contractors during the design phase. This project is being constructed in conjunction with Polar Passage and the rhino habitat.

Primate Forest

2017 Findings and Recommendations:

- The committee commends the zoo and Metro Council for prioritizing the removal of the old primate building in this phase of construction due to animal welfare priorities and to reduce ongoing costs by no longer operating a dilapidated building.
- The committee commends the zoo for continuing to recognize the need to monitor the impacts of construction and habitat changes on the affected animals.
- The committee commends zoo staff for analyzing the ongoing capacity and conservation priorities of the primate habitat, and supports the decision to reduce the number of species in order to enhance overall animal welfare.

3. Rhino Habitat

The 2008 ballot measure asked for funds to improve the hippo exhibit, primarily the installation of a water-saving filtration system. The hippo pool is currently dumped and refilled several times a week with millions of gallons of water being poured down the drain every year. The zoo began master planning after the ballot measure was approved and analyzed energy use across the entire zoo campus. The pumps and filtration systems use the most power, which meant the zoo was about to install a water-saving hippo pool filtration system that would use a lot of energy.

Unlike hippos, rhinos don't require pools and pose no issues regarding water use or filtration. In addition, rhinos are better suited to the zoo's long-term species plan. The zoo's 20-year master plan calls for construction of an Africa savanna habitat shared by a number of large grassland species. Rhinos can share habitat with gazelles and giraffes, while hippos are more aggressive and cannot share habitat. Upon further analysis, including public opinion surveys, the zoo and Metro Council amended the project to focus on expanded habitat for critically endangered rhinos. This allows for removal of the pool and prioritizing conservation of the endangered black rhino. To prepare for the rhino habitat expansion, the zoo will move hippos to a new home and the hippo pool will be decommissioned.

Animal Welfare – The rhino habitat will expand by more than fifty percent, creating space that can be divided, which will better support future breeding opportunities for this highly endangered animal. The rhinos will have more choices over how and where they spend their day, and visitors will get more intimate views of the animals.

Conservation Education – The new encounter space being designed into the habitat will allow visitors the opportunity to get up close to an endangered rhino with a keeper and learn more about the threats to the species.

Infrastructure and Sustainability – Decommissioning the hippo pool will save millions of gallons of water annually for the zoo.

Diversity in Contracting – The approval to utilize CM/GC for this project will allow for more outreach to COBID contractors during the design phase. This project is being constructed in conjunction with Polar Passage and Primate Forest.

Rhino Habitat

2017 Findings and Recommendations:

- The committee commends the zoo for continuing to recognize the need to monitor the impacts of construction and habitat changes on the affected animals.

4. Interpretive Experience and Wayfinding

The zoo's overall interpretive goals, including both bond project and nonbond project initiatives, are to create a more synergistic experience for guests across the entire campus and to position the zoo itself – its environmental resources and stewardship of those resources, husbandry and animal care practices, and conservation programs – as an essential part of that experience.

Each project has interpretive themes and goals developed via a research-based approach. Visitors are engaged as part of the front-end (goal setting), formative (design) and summative (effectiveness) evaluations. Animal welfare, sustainability/green living, and conservation education are common threads through each project's interpretive elements.

The summative evaluation of Elephant Lands in 2017 demonstrated that the Oregon Zoo effectively achieved its education goals for the project (see page 35). The summative evaluation included six guiding questions and was a multi-modal study with three evaluation methods: a visitor intercept survey, a timing and tracking study, and focus groups. The timing and tracking study looked at how visitors navigate at each main habitat area and the activities of visitors at each habitat.

Before Elephant Lands was completed, 64 percent of respondents agreed or strongly agreed that Oregon Zoo elephants have a good quality of life. After Elephant Lands opened, that perception moved to 91 percent. With regard to appreciation of the new habitat, 93 percent of respondents said the exhibit design effectively or very effectively nurtured natural social behaviors and choices. Most visitors take pride in the Oregon Zoo and what it is doing for elephants at the zoo and in the wild. Ninety-eight percent agreed or strongly agreed that this exhibit shows that the Oregon Zoo is committed to the welfare of elephants. Visitors showed an increased empathy and respect for the elephants as a result of the exhibit, and they indicated their willingness to take actions to help elephants in the wild. Elephant Lands helped visitors see the value of zoos. The interpretive team effectively showed that elephants at the zoo are in good hands, and that the Oregon Zoo makes their lives healthy here and also helps elephants in the wild.

Installation of the campus wayfinding system was substantially complete in 2017. Zoo staff and consultants implemented a system to aid visitor navigation and trip planning on grounds.

Interpretive Experience and Wayfinding

2016 Findings and Recommendations *with updates*:

- The committee recommends that staff share the outcomes and findings from the Elephant Lands and Education Center interpretive summative evaluations when they are available.

Update: Staff shared results from Elephant Lands summative evaluation in May 2017; the committee commends the positive results, which demonstrate that the zoo effectively achieved its education goals.

2017 Findings and Recommendations:

- The committee recommends that the interpretive messaging continue to be analyzed and updated to reflect conservation action priorities for the zoo.
- The committee recommends that staff share the outcomes and findings from the Education Center interpretive summative evaluations when they are available.
- The committee requests information about the zoo's ongoing processes and systems to assess the condition and effectiveness of the interpretive elements of completed bond projects, including how funds are budgeted, to ensure they remain relevant, accurate and well maintained.
- The committee recommends that staff continue to investigate interpretive systems that can be easily changed to display current data and conservation updates.

5. Percent for Art

The zoo's public art program goal is to present art that complements and enhances the zoo's award-winning education programs and animal habitats, and inspires visitors to be aware of the zoo's inherent role in creating a better future for wildlife. The zoo bond program has contributed to the zoo's collection through the acquisition of art under Metro's 1 percent for art requirement. The zoo bond program has engaged the Regional Arts and Culture Council (RACC) to help administer the selection of art for all the major art pieces commissioned under the bond program.

In 2011, the Metro Council approved a programmatic approach to art spending, which allowed the art appropriation for the remainder of the construction projects to be pooled for the whole program to fund three major commissions at three plazas, in addition to the initial zoo bond art commission for the Veterinary Medical Center. At the same time, the Council created an Oregon Zoo Public Art Advisory Committee (OZPAAC) and defined the process and criteria for the committee to select art. OZPAAC was directed to advise Metro on the selection of artists and/or works of art in accordance with Metro's percent-for-art program and to develop a long-term public art strategy dealing with the zoo's existing public art collection. OZPAAC includes a member of the Zoo Bond Citizens' Oversight Committee.

Since 2012 when the committee was formed, volunteer members have met several times each year and spent many hours developing artist solicitations, reviewing hundreds of artist proposals, interviewing finalists, selecting artists to recommend, and working with artists to refine the art concepts. OZPAAC has played a key role in successfully selecting art of high quality that represents the best in artistic skills, encourages public dialogue and understanding of art, enhances the aesthetic quality of the zoo site, and fulfills the zoo's public art program goal.

The first commissioned art acquired under the zoo bond program was installed at the Veterinary Medical Center. Two artists, Steve Gardner and Margaret Kuhn, were selected and produced *Inside/Outside* (Gardner), a series of fused glass and acrylic pieces, and *Outside/Inside* (Kuhn), a series of mosaic floor tiles.

The second art installation commissioned through the zoo bond program was created by artist Catherine Widgery. Ms. Widgery created *Forest Lights* for Elephant Lands and the east plaza, which opened in December 2015. She used dichroic glass and wood on the Elephant Lands Forest Hall façade to welcome visitors, and a related series of reflective vertical towers demarcating the concert lawn/Elephant Lands edge to help weave a sense of continuity between different elements on the site.

The third art commission was awarded to Rob Ley, a public artist from Los Angeles, to create art for the Education Center and west plaza project. Mr. Ley's art, titled *Ambiguous*, was installed in 2016 in Discovery Plaza, in front of the Education Center. His conceptual approach is based on the Education Center's interpretive theme that "small things matter," particularly how many small parts contribute to a whole., Mr. Ley created a sculpture composed of 2,500 triangles with 10,000 unique-angled bends and 15,000 rivets that turn all of these separate pieces into a singular, monolithic form.

The final major art commission selection process was completed in 2016 in coordination with the design of the new Polar Passage. Given the connection between polar bears and North American native populations, OZPAAC asked RACC to extend its outreach to native artists in Alaska. In addition to its routine outreach efforts, RACC contacted arts organizations based in Canada and Alaska and directly contacted a number of native artists, but did not receive any proposals from them. OZPAAC selected the

artist team of Edwin and Veronica Dam de Nogales of Ontario, Canada, out of 179 responses to the request for qualifications. The selected artists demonstrated significant personal knowledge of the plight of polar bears, and their proposed *Melting Ice Bear* sculpture will capture and convey both the majestic qualities of the polar bear and the precarious state of their survival. The cast aluminum sculpture will stand 11 feet tall and be complemented by two cast aluminum benches that capture the playful side of polar bears.

In 2017 staff provided a report on the public art expenditures associated with the bond program. It showed that the program is on track to achieve Metro's requirement to invest 1 percent of direct construction costs in public art. These investments further the zoo's public art program goal.

OZPAAC has encouraged the zoo to enhance its art condition assessment and maintenance program for its entire art collection, along with the newly commissioned artworks.

Percent for Art

2016 Findings and Recommendations *with updates*:

- The committee recommends that the next commissioned art installation process be appropriately integrated with the Polar Passage and Central Plaza design.

Update: The third major art commission for Melting Ice Bear by Edwin and Veronica Dam de Nogales of Ontario, Canada, was carefully sited adjacent to the Polar Passage interpretive building, and design of the work underscores Polar Passage's educational theme that global climate change is reducing polar bear habitat.

- The committee recommends that the zoo document the new public art and develop an ongoing maintenance plan to support its commitment to this nonliving collection.

Update: The collection documentation and maintenance plan are in process.

2017 Findings and Recommendations:

- The committee commends the integrated effort with the art design and interpretive focus of Polar Passage and recommends the zoo consider this integration in future art investments.
- The committee carries forward its 2016 recommendation that the zoo document the new public art and develop an ongoing maintenance plan to support its commitment to this nonliving collection.
- The committee commends the zoo for being on track to meet Metro's 1 percent for art requirement and pooling art resources to enhance effectiveness in major visitor zones.
- The committee recommends that the zoo document the successful process of the Oregon Zoo Public Art Advisory Committee, as a reference for future art investments.

6. Electrical Infrastructure

In March 2017 when the Metro Council reallocated the remaining bond funds, it created a new Electrical Infrastructure project to replace two outdated emergency power generators and associated electrical infrastructure critical to servicing animal areas and supporting animal and guest safety. It includes six subprojects – each with its own scope, schedule and budget – that are being managed by zoo Facilities Management and paid with zoo bond funds, per a signed Memorandum of Understanding with the zoo bond program:

1. Lower Service Road Feeders
2. Roundhouse Automatic Transfer Switch
3. AfriCafé Panel Replacement
4. Animal Nutrition Center Panel Replacement
5. Middle Service Road Feeders
6. Generator Replacement

As of December 31, 2017, the first four projects were substantially complete. The Middle Service Road Feeders and Generator Replacement are in progress and scheduled to be completed in 2018.

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C. Completed bond projects

1. Education Center, 2017

The Education Center design offers a highly interactive, engaging facility that provides multiple avenues for learning about nature and conservation. Key features of the site include the Nature Exploration Station (NESt), the Backyard Habitat, Insect Zoo, a species recovery lab raising western pond turtles, classrooms, a flexible events space, a café and offices. More than 3,600 people in the metro region influenced key interpretive themes and potential activities at the Education Center via online and site surveys. Construction began in September 2015, with the grand opening on March 2, 2017.

The construction had a significant impact on the visitor experience, zoo classes and camps, and zoo operations. Access in and out of the project site onto busy Washington Park roadways was a safety challenge and concern. Close coordination between construction and facility operations was required. The Metro Council approved an alternative procurement for construction management by a general contractor, which helps address these risks, as well as encouraging more minority-owned, women-owned and emerging small business contractor participation. The design team and construction contractors worked closely with zoo staff and stakeholders to minimize the negative impacts to visitors and surrounding neighbors during construction.

The Education Center has received several awards, including the 2017 DJC TopProjects Energy Trust of Oregon High Performance Building for New Construction Award, 2017 DJC TopProjects People's Choice for Public New Construction, and the American Council of Engineering Companies of Oregon Engineering Excellence 2018 Grand Award.

Animal Welfare – In addition to new improved facilities for the invertebrate collection at the Insect Zoo and western pond turtles at the Species Conservation Lab, the NESt's message of taking small actions on behalf of wildlife will benefit the conservation of animals worldwide.

Conservation Education – The Education Center facilitates the development of Metro's environmental literacy framework and is a place where regional conservation education partners connect with each other and the community. Working with partners, the framework outcomes have been molded into the overarching themes for the Education Center, including the big idea that "Small Things Matter":

Small animals matter. While visitors to the zoo care about many larger animals such as elephants, orangutans and polar bears, Education Center exhibits and experiences – like the new, improved Insect Zoo – ensure they don't forget the smaller and often underappreciated inhabitants of our world including insects, turtles and microorganisms which are critical to a functioning and healthy natural system.

Small habitats matter. Small habitats found in gardens, stormwater basins, highway medians, parks, and natural areas all over the region are important to a well-functioning ecosystem.

Small actions matter. Small individual actions and choices can make a big difference. An exhibit in the Education Center's Nature Exploration Station highlights "wildlife heroes" – everyday people

who have taken action on behalf of wildlife and wild places. An adjacent "Take Action Now" exhibit encourages visitors to follow these heroes' example and pledge to do more to help.

The zoo developed partnerships with more than 30 conservation organizations to deliver collaborative educational programs and access to office space in the new facility. Key partners include the U.S. Fish and Wildlife Service, which has dedicated staff and resources to provide ongoing year-round programming; the Intertwine Alliance, which uses the space to convene and plan among regional conservation education organizations; and Metro's Property and Environmental Services and Parks and Nature divisions, which will provide content and resources for programs and exhibits on natural gardening, waste reduction and sustainability. Oregon State University Master Gardeners support the demonstration garden to foster awareness about backyard habitats. Dozens of additional partners participate in a partnership and programming advisory group. An update on the operation of the Education Center was provided to the Oversight Committee at the November 13, 2017, meeting.

Infrastructure and Sustainability – This project includes the completed demolition of the Tiger Plaza structures, a portion of infrastructure work identified in the Master Plan to address stormwater and site utilities, and visitor and revenue-generating amenities for Discovery Plaza. The Education Center is a "building that teaches" with sustainable elements prominently on display and interpreted through an interactive sustainability dashboard exhibit. The LEED-certified building features rain water reuse in restrooms, solar panels for energy production, bird-friendly glazing, Forest Stewardship Council-certified wood and efficient heating and cooling systems. The Oregon Zoo Foundation and zoo staff have developed a new partnership with SolarWorld, the largest U.S. manufacturer of solar panels and a leader in solar technology, to provide solar panels at cost. With the goal to produce as much energy that is consumed, the zoo aims to achieve a net-zero energy operations certification for the NEST building. Funding from Portland General Electric's Renewable Development Fund supported the expansion of the solar panel installation to help achieve this goal. Green Living signs and a sustainability dashboard will interpret the resource conservation efforts and outcomes of the new facility.

Diversity in Contracting – The zoo bond program greatly exceeded its 15 percent target for contract expenditures awarded to COBID firms. As of December 31, 2017, the project had a 29.5 percent COBID utilization rate, based on COBID-eligible construction contract spending, and represents \$4.26 million paid to COBID-certified firms.

Education Center

2016 Findings and Recommendations *with updates:*

- To date, utilization of COBID-certified firms exceeded the 15 percent goal for the Education Center, and the committee recommends sharing final data in 2017.

Update: The project is in the post-construction phase with minimal work remaining to be complete. The COBID utilization at the end of 2017 was 29.5 percent of all contract value, surpassing the aspirational goal.

- The committee recommends that staff analyze and share lessons learned on the Education Center contracting of COBID-certified firms.

Update: Staff reviewed the COBID contracting outcomes and determined that the use of CM/GC enhanced COBID outreach opportunities during the design process. Staff also noted that the expansion of solar panels with the PGE Renewable Development Fund increased COBID participation as the electrical subcontractor was a COBID-certified firm. The most significant lesson learned is that the Education Center was a more typical construction and not as specialized as other zoo construction projects given that the habitat space was a minor component of the project. Thus, more firms were available to provide services.

2017 Findings and Recommendations:

- The committee recommends the Education Center continue to be operated in a way that optimizes net-zero energy goals while achieving other program goals.

2. Remote Elephant Center, deemed not feasible and cancelled February 2016

While a Remote Elephant Center was not included among the list of projects approved by voters when passing Measure 26-96, zoo and Metro staff conducted feasibility analyses of potential sites, operational plans and financials, per the Metro Council's direction as stated in Attachment A of Resolution No. 08-3945, approved in 2008.

In February 2016 the Metro Council unanimously approved a formal resolution to suspend pursuit of the Remote Elephant Center project due to lack of financial viability, difficulty securing suitable property and the ability to achieve the zoo's vision for elephants through the new onsite Elephant Lands. Metro informed the public by issuing a press release and posting the decision on the zoo and Metro websites, and it was covered by local media as well. In March 2017, the Metro Council reallocated the unspent Remote Elephant Center funds to the remaining bond projects, based on the recommendation from the committee.

3. Elephant Lands, 2015

In recognition that elephants are the Oregon Zoo's signature species, Metro prioritized the onsite Elephant Habitat (known as "Elephant Lands") project in terms of timing and the financial resources dedicated to it. The project was substantially complete in December 2015, within its approved schedule and budget. The grand opening to the public was held on December 15, 2015, with several hundred people attending.

As part of the elephant habitat expansion, a number of related subprojects were also completed. These include: 1) relocation of the train loop, 2) a new perimeter service road, 3) relocation of the Wild Life Live! program and 4) water and energy sustainability measures, including Leadership in Energy and Environmental Design (LEED) Gold certification for the elephant buildings and site, and a new campus geothermal loop to reduce the use of fossil fuels for heating and cooling. The Elephant Lands project was completed using a Construction Management/General Contractor (CM/GC) alternative procurement approach.

Of particular note, the low percentage of cost for change-order work for this large project is to be commended. A project of this size and scope would generally average change orders that increase costs by around 10 percent of the construction cost. The Elephant Lands number was particularly low, around 5 percent of the guaranteed maximum price, which shows one of the benefits of utilizing CM/GC.

Two totem poles were displaced in the construction of Elephant Lands, which created an opportunity for a complete restoration by the Lelooska tribe and artist Ray Losey prior to relocating the poles. With significant engagement of the Native American community, the zoo hosted a well-attended totem pole rededication event to celebrate the Native American culture, history and meaning of the poles.

Elephant Lands also includes the second art installation commissioned through the zoo bond 1 percent-for-art program, created by Catherine Widgery, whose artwork welcomes guests to Forest Hall, the elephants' new indoor habitat.

The Wild Life Live! facility was displaced due to the construction of Elephant Lands. The bond program renovated an under-utilized animal holding facility at the zoo and successfully relocated the Wild Life Live! program. The relocation resulted in improved living quarters for the program animals, and Wild Life Live! staff are pleased with the new headquarters.

Elephant Lands has been awarded 17 different awards for design, construction and sustainability, including the 2016 TopProject of the Year award from the Daily Journal of Commerce. In 2017, the Associated General Contractors selected it for its Skill, Integrity and Responsibility award, a top honor, and the Association of Zoos and Aquariums recognized it for its Excellence in Exhibit Design award, a significant recognition from zoo peers.

Animal Welfare – The Elephant Lands project significantly expands the elephant habitat, allowing for an evolution in the way the elephants use their space in support of the zoo's vision for elephants to live in family herds. The design of the habitat sought every opportunity to encourage natural behaviors and nurture family dynamics. The project elements include Forest Hall and the Elephant Barn, the North Meadow Habitat, Encounter Habitat and the South Habitat on a six-acre site.

Throughout the habitat, feeding stations, mud wallows, and water features including a 160,000-gallon pool provide many activity choices and encourage the elephants to be active 14 to 16 hours a day, just as they would in their natural environment. Deep sand groundcover blankets the entire habitat, including most of the indoor areas. State-of-the-art heating and ventilation systems with open doors allow the herd to move inside and out as they please.

In planning for Elephant Lands, the zoo hired a consultant team that included architects expert in the design of animal habitats who drew upon the best features of state-of-the-art elephant facilities around the world. Working with elephant care staff, the design team crafted Elephant Lands to meet the psychological and social requirements of the elephant herd as well as its physical needs.

The zoo's research staff has been monitoring the zoo's elephant herd for more than four years, from September 2012 to December 2016, to study the effect of Elephant Lands on the herd. Researchers started monitoring in the old habitat to establish baseline data on the herd's general health, hormone levels and behavior. They continued monitoring as the herd transitioned into the new Elephant Lands habitats. Their findings are expected to provide scientifically credible documentation of the effects of the new habitat on the elephants' welfare and quality of life, findings that will likely prove valuable to other elephant care facilities.

Samples collected measured the elephants' behavior diversity and how they spent their time (7,446 video clips totaling 250 hours), distance walked and recumbence (154 sessions with GPS bracelets), and stress and reproductive hormones (1,493 fecal samples). The zoo also has 20 prior years of hormone data. Dedicated zoo volunteers did most of the videotaping. Processing the data and samples will take an estimated 3,000 hours. Analysis of the data will look at standard welfare variables of housing features and management practices, as well as additional variables for this study: construction and moves, life events (births, deaths and transfers), and reproductive status and cycle phase.

Staff shared preliminary results of the elephant welfare study in November 2017. The researchers are observing some great changes as a result of Elephant Lands. Anecdotal observations show the elephants are using their resources – such as feeders and food delivery locations, habitat features and enrichment elements – more than they did before Elephant Lands. The animals are walking and foraging for food throughout the habitat by checking all the feeders, which are programmed to deliver food unpredictably. This is a change from the old habitat where keepers delivered the food on a schedule. The elephants are also showing a greater variability in social interactions since the new habitat allows them to choose where to be, who to be with, or whether to be alone. The new habitat complexity appears to be correlated with the elephants vocalizing more with each other when out of view of one another. Researchers noted that the elephants at the Oregon Zoo are utilizing the many new resources available to them. The committee looks forward to receiving the final results of the study in 2018.

Conservation Education – Art, interpretive signs and other displays installed with the project provide the public with many opportunities to understand the impacts of human activities on wild elephant habitat and to get an up-close experience with these amazing creatures. The Elephant Lands interpretive experience has three main themes:

- **Being an elephant: the mind, body and life of an elephant.** This natural history content helps enrich guests' understanding of elephants as remarkable, unique creatures.

- **Elephant Lands is the Oregon Zoo's vision for elephant care in practice.** These highlights show how elements in and around the habitat enrich the lives of the zoo's elephant herd.
- **Humans and elephants: a shared history.** This exploration of the long, complex history that elephants and humans have shared includes current conservation issues and celebrates more than 60 years of elephants at the Oregon Zoo.

A life-sized wall graphic of Packy, the former senior male elephant, allows visitors to appreciate the height and size of an elephant, while a model of an elephant trunk allows them to experience its feel and texture. The Elephant Lands interpretive experience also includes the zoo's first smart phone application. Features of the app, released in December 2015, provide visitors with tools for identifying individual elephants in the herd.

In 2017 staff shared the outcomes of the Elephant Lands interpretives evaluation (see page 27). Results of this summative evaluation demonstrate that the Oregon Zoo has effectively achieved its education goals for Elephant Lands.

Focus group participants and survey respondents perceived the overall design of the habitat as beneficial to elephant welfare and conducive to family fun. Elements throughout the habitat such as the feeding tower, the sand substrate, and the shift doors, intrigue visitors and impress upon them how much attention was given to detail during the construction phase. Ninety-eight percent agreed or strongly agreed that this exhibit shows that the Oregon Zoo is committed to the welfare of elephants. Public spaces that are designed to facilitate comfortable viewing and accommodate resting areas contribute to a positive visitor experience. The most engaging action for visitors to Elephant Lands was watching elephants as they moved, ate and interacted with each other, as measured by frequency of occurrence, duration and favorable comments throughout all of the studies.

Focus group participants who voted to support the bond measure that funded Elephant Lands are satisfied that their taxes were well-spent. Everyone agreed that Elephant Lands met or exceeded the expectations of the public. Whether comparing it to the old Oregon Zoo elephant habitat or exhibits at other zoos, there was consensus that Elephant Lands was superior. They are willing to continue making financial contributions to support additional habitat improvements.

Infrastructure and Sustainability – Completion of the six-acre Elephant Lands project exemplifies the zoo's commitment to sustainability through the incorporation of a variety of elements including energy efficiency, sustainable building materials, solar preheating hot water, use of daylighting, stormwater management and the first portion of a new geothermal "slinky" system that will redistribute heat created from cooling the polar bear exhibit and move it to Elephant Lands where it is needed to warm the elephants. The zoo received technical assistance and nearly \$150,000 in rebates and incentives from the Energy Trust of Oregon for energy efficiency investments at Elephant Lands. The zoo received LEED Gold certification for Elephant Lands.

In 2015 the Portland Business Journal staff nominated Elephant Lands for a PBJ Better Bricks award, primarily for the project's focus on sustainability and use of cross-laminated timber (CLT) for the roof of the Elephant Plaza restroom. This is the first commercial building in Oregon to use CLT, a new engineered wood product made of 2-by-6s glued together in huge sheets and crosshatched in three to nine layers. Made of a naturally renewable resource, CLT is considered a greener choice since it takes

less energy to produce than steel and concrete and can be made of smaller, lower-grade timber that avoids cutting old-growth trees.

Infrastructure improvements as part of Elephant Lands include a new service road, which provides a safer environment for visitors by removing most service and construction vehicles from pedestrian paths and by improving emergency vehicle access. In addition, the zoo train tracks were rerouted to provide more space for the elephants and offer better views of the animals.

Diversity in Contracting – Elephant Lands achieved a COBID utilization rate of 10 percent of the COBID-eligible contract value, with \$4.4 million going to COBID-certified firms. Due to the project's complexity, scale and specialization, the 15 percent COBID goal was harder to reach. Also, 25 percent of the subcontractors that bid on the project were COBID firms, but not all of them had the lowest bid, so some were not awarded the work. The scopes of work deemed ineligible for COBID firms, and deducted from the total construction contract amount to determine the base for the utilization rate calculation, include: elephant doors and gates, crane, elevators and specialty rock work.

Elephant Lands

2016 Findings and Recommendations *with updates*:

- The committee recommends publicly sharing, when complete, the outcomes of the studies currently underway that are assessing the impact of the new habitat on the elephants' well-being and health. The committee would also like to be aware of the research dissemination strategy.

Update: Staff shared preliminary results of the elephant welfare study in November 2017. Study period and data collection are complete and analysis is underway. Preliminary findings are positive, showing that the elephants have adapted well to their new habitat with an increase in exploratory behaviors, behavior diversity and resource use/choices; foot health has also improved.

- The committee recommends publicly sharing the outcomes of summative evaluations of the interpretive exhibits and how a resulting change in public perception and behavior may help elephants in the wild.

Update: Staff shared results from Elephant Lands summative evaluations in May 2017; the committee commends the positive results, which demonstrate that the zoo effectively achieved its education goals.

2017 Findings and Recommendations:

- The committee commends the zoo for winning the Association of Zoos and Aquariums (AZA) Exhibit of the Year award for Elephant Lands. The project has received 17 awards to date.
- The committee carries forward its 2016 recommendation that staff share publicly the outcomes of the elephant welfare studies when data analysis is complete.

4. Condors of the Columbia, 2014

Condors of the Columbia officially opened to the public in May 2014. Construction was completed on amended schedule and *under* budget by \$412,983. The construction completion date was later than the estimated schedule in the Comprehensive Capital Master Plan, but approved and updated due to the need for a longer design and construction period and the discovery of hidden underground challenges on site. Condors of the Columbia highlights the Oregon Zoo's successful condor breeding program and aims to inspire visitors to learn more about the conservation of these iconic birds.

The interpretative features at the Condors of the Columbia exhibit were designed to illustrate the zoo's role in California condor conservation and to inspire audiences to take conservation action. To validate the efficacy of the interpretive experience, an evaluator was contracted to analyze visitor tracking studies and intercept surveys. The evaluator concluded that Condors of the Columbia was highly successful in meeting the intended outcomes.

The exhibit was not a candidate for LEED certification because it did not meet minimum square-footage requirements.

Diversity in Contracting – The project accomplished a COBID utilization rate of 26 percent; 19 percent were emerging small businesses and 7 percent were minority-owned businesses. The specialty netting scope was deemed ineligible for COBID firms, and the value was deducted from the calculation.

5. Veterinary Medical Center, 2012

The grand opening of the VMC was celebrated in January 2012. The Veterinary Medical Center replaced the substandard veterinary and quarantine buildings with a new facility that meets standards set by the Association of Zoos and Aquariums. The Veterinary Medical Center was prioritized as the first bond project for animal health and safety.

Diversity in Contracting – Of the total contract value, the project achieved a 10 percent⁵ COBID utilization rate. Five percent were emerging small businesses, 4 percent were women-owned businesses, and 1 percent were minority-owned businesses.

6. Penguin Life Support System Upgrade, 2012

The penguin water filtration project was completed in 2012. The goal of the upgrade was to conserve water and improve water quality. Zoo staff estimates that water use has decreased by more than 90 percent as the pool water is filtered versus frequently dumped.

⁵Metro's calculation methodology at the time of this project was to exclude the cost of prime contractor self-performed work. Out of the \$4,214,163 available in subcontracts (*i.e.*, work not performed directly by the prime contractor), 17 percent of the dollars went to contractors certified as a MBE, WBE or ESB. This number was previously reported in Metro's annual MWESB report.

Diversity in Contracting – The project accomplished an MWESB utilization rate of 6 percent; all 6 percent were emerging small businesses.

7. Comprehensive Capital Master Plan, 2011

The Comprehensive Capital Master Plan was completed and approved by the Metro Council in September 2011. It addresses project sequencing, scope, programming and budgeting for bond projects.

8. Water Main Building, 2011

The Water Main Building was completed in 2011 and prevents nonpotable water from entering the water system. It was a crucial upgrade to save water at the zoo, including the capture and reuse of rainwater at the Veterinary Medical Center.

9. Land Use, 2011

Metro completed and received approval for three land use applications with the City of Portland: (1) an amendment to the existing Conditional Use Master Plan to allow work to proceed on the Elephant Lands project and the Condors of the Columbia project, (2) West Lot land use application and (3) an application for a new Conditional Use Master Plan for the next 10 years for the remainder of the specific bond projects and some of the overall master plan improvements.

Parking management responsibilities were turned over to Portland Parks & Recreation as part of the land use process. Impacted parties formed the Washington Park Transportation Management Association (WPTMA). Paid parking for the shared lot and throughout Washington Park was implemented in January 2014. In 2015 the WPTMA was renamed Explore Washington Park with a new website and branding.

REQUIRED REPORTING ITEM 2 | Spending Considerations

Report on spending trends, current cost projections and independent financial auditors' report

A. Overall program spending

1. Budget and Expenditures

The zoo bond program is divided into four main areas: construction projects, planning projects, land use processes and program administration. As of December 30, 2017, the allocated resources for all program activities total \$148,852,307. Forecasted revenues total \$151,122,161.

Figure 2

Oregon Zoo Bond Program Budgets and Expenditures

as of December 31, 2017

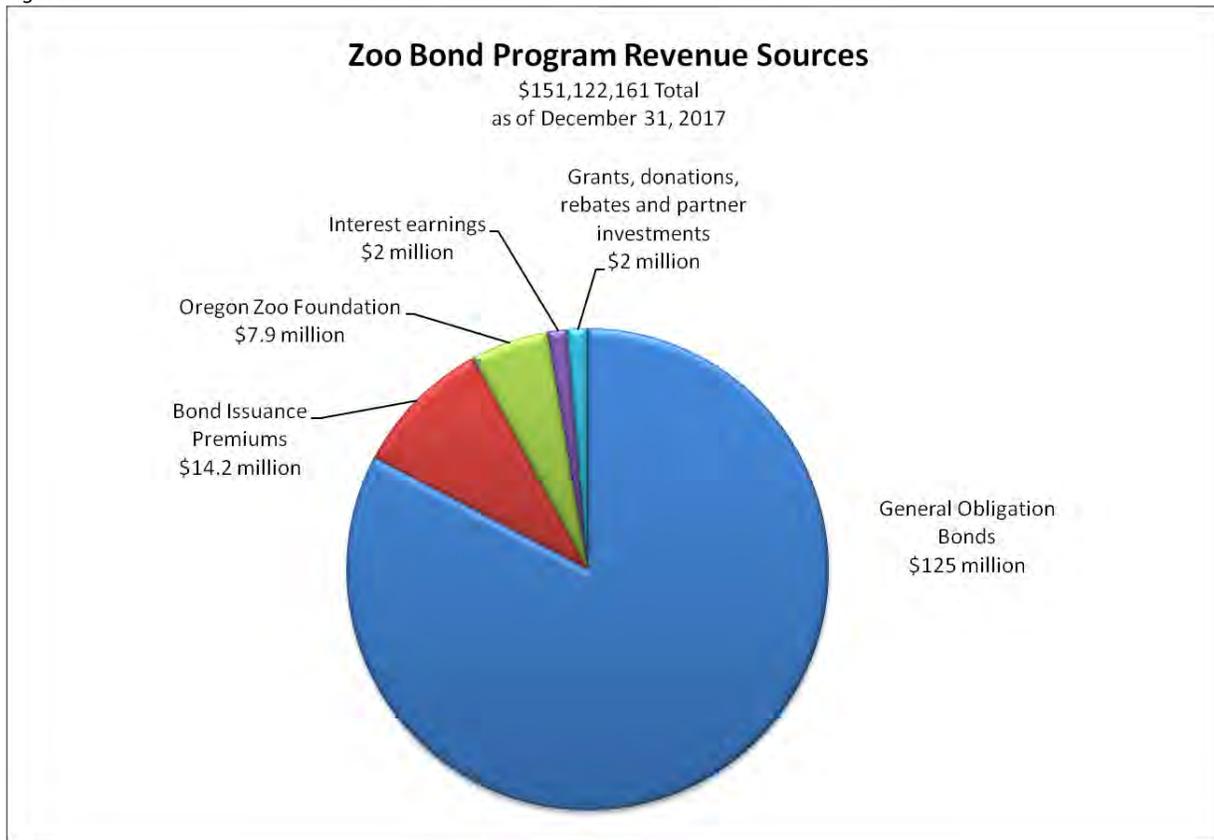
Project	Project Budget	Project Expenditures	Forecasted Expenditures	% Complete
Master Plan/Land Use Permits	\$ 3,304,011	\$ 3,197,675	\$ 3,197,675	100%
Veterinary Medical Center	\$ 9,464,299	\$ 8,840,329	\$ 8,840,329	100%
Penguin Life Support System	\$ 1,800,000	\$ 1,762,250	\$ 1,762,250	100%
Water Main Building	\$ 267,459	\$ 242,495	\$ 242,495	100%
Condors of the Columbia	\$ 2,628,592	\$ 2,215,609	\$ 2,215,609	100%
Elephant Lands	\$ 57,561,443	\$ 57,407,246	\$ 57,407,246	100%
Remote Elephant Center	\$ 117,864	\$ 117,864	\$ 117,864	100%
Education Center	\$ 17,699,157	\$ 17,392,986	\$ 17,482,791	99%
Interpretives/Wayfinding	\$ 2,766,640	\$ 2,501,240	\$ 2,766,640	90%
Percent-for-Art	\$ 843,154	\$ 672,470	\$ 843,154	80%
Program Administration	\$ 7,200,000	\$ 5,423,990	\$ 7,200,000	75%
Electrical Infrastructure	\$ 2,076,600	\$ 525,967	\$ 1,974,000	25%
Polar Passage/Primate/Rhino	\$ 43,802,256	\$ 1,812,179	\$ 43,802,256	4%
Close-out Contingency	\$ 1,000,000	\$ 5,010	\$ 1,000,000	1%
Totals		\$ 102,117,307	\$ 148,852,307	
Unallocated Program Contingency			\$ 2,269,854	
Zoo Bond Program Forecasted Revenues			\$ 151,122,161	

The Comprehensive Capital Master Plan process is complete, as well as construction of the Veterinary Medical Center, the Penguin Life Support System Upgrade project, the Water Main Building, Condors of the Columbia, Elephant Lands, Education Center and the major land use approval processes. These projects and expenditures on the remaining projects in process represent \$102.1 million (68 percent) of the \$151.1 million total resources. The completed projects were finished on time and within budget.

The planned projects for 2018-2020 include the design and construction of the new Polar Passage and related infrastructure, and the design and construction of the new Primate Forest and rhino habitat. In addition, the program will complete the final art installation, install the final wayfinding kiosk and upgrade campus electrical infrastructure.

Funding sources total approximately \$151.1 million and include \$125 million from general obligation bond measure proceeds, \$7.9 million from the Oregon Zoo Foundation, an expected \$2 million in grants, donations, and partner contributions, approximately \$2 million in anticipated investment earnings and \$14.2 million from bond sale premium proceeds.

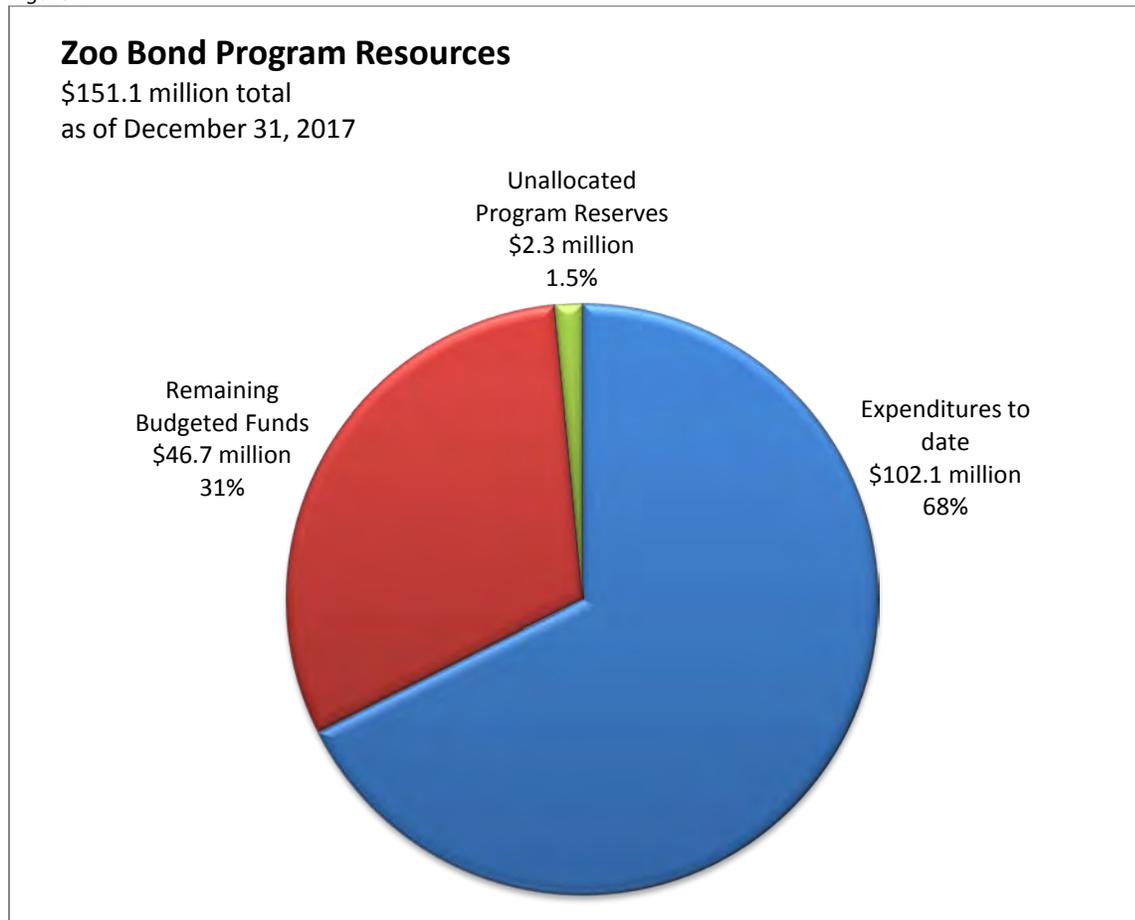
Figure 3



The remaining \$2.3 million that is not budgeted to a specific project as of year's end is considered additional program contingency. All of this program contingency is above and beyond the individual project contingencies, which are built into each project budget.

Metro's conservative fiscal policy and excellent AAA bond rating from S&P and Aaa from Moody's have resulted in premiums on the sale of the bonds. This has put the program in a solid position to complete the remaining projects, despite significant cost escalation in the region. Project budgets and scopes were first defined in 2011 and were analyzed and modified in 2017 to address cost escalation. Of principal concern to this committee is completion of all bond projects with the remaining funding without sacrificing bond program and animal welfare objectives.

Figure 4



The Oversight Committee charter outlines the committee’s role to “consider and recommend project modifications if inflationary increases in construction costs exceed current budget estimates.” In 2017, the committee set up a budget subcommittee to review construction cost escalation and project modifications. The subcommittee made the following recommendation to the full committee regarding the allocation of remaining bond funds, and the full Oversight Committee made a recommendation to the Metro Council:

Primate/Rhino cost escalation	\$2.6 million
Polar Passage cost escalation	\$1.0 million
Polar Passage OZF enhancements	\$1.3 million
Electrical infrastructure	\$1.5 million
Contingency for bond close out	\$1.0 million
Program administration	\$3.3 million

In March 2017, the Metro Council via Resolution 17-4780 reallocated bond program resources to the combined Polar Passage/Primate Forest/rhino habitat, program administration and two newly defined projects, Electrical Infrastructure and Close-out Contingency. Any funds remaining after this allocation are eligible for implementation of the master plan.

In December 2017 staff provided a memo summarizing the investments made in public art as part of the bond program. It showed that the bond program is on track to meet Metro's requirement to invest 1 percent of direct construction costs in public art. The eligible direct construction costs through the end of the bond program total \$84,955,960, making the 1 percent for art requirement \$849,560. At this time, the zoo bond program forecasts to spend \$991,691 on art commissions and relocation. The investments the zoo bond program will make exceed the public art requirement by \$142,131.

In addition to the zoo bond investments in art commissions and historic art relocation, the Oregon Cultural Trust, Oregon Zoo Foundation and zoo operations have invested \$62,841 in restoration of three sets of historic artwork that were moved to accommodate bond construction projects. These include the Willard Martin mosaic, two totem poles and the Warren Iliff sculpture garden. With restoration added, the total art expenditures are forecast to be \$1,054,532.

Budget and Expenditures

2016 Findings and Recommendations, *with updates*:

- The Oversight Committee found that careful attention to allocation of remaining bond funds was needed, and launched a budget subcommittee in fall 2016 for this detailed analysis. The Oversight Committee asks the budget subcommittee to recommend in 2017 a prioritized strategy for allocation of the remaining bond and other funds for construction and improvements at the Oregon Zoo.

Update: The committee's budget allocation recommendations were approved by the Metro Council in March 2017.

- The committee congratulates and thanks the Oregon Zoo Foundation for its significant financial support of \$6 million to date, \$4 million of which supported the Education Center and Elephant Lands projects. The committee recommends that staff seek the Foundation's input on allocation of the remaining \$2 million.

Update: The Oregon Zoo Foundation recommended the allocation of \$1.3 million to enhance the Polar Passage project, utilizing unallocated Foundation funds previously provided to the bond program. The Foundation will also provide an additional \$1,900,000 to support project enhancements at Polar Passage, Primate Forest, and the rhino habitat, for a total of \$3.2 million.

- The committee recommends staff monitor code changes at the City of Portland, standards for animal welfare, and cost escalations that may have financial and other impacts on the program.

Update: In November 2017, staff presented cost escalation data running 4.5 to 5 percent. Construction start on Polar Passage, Primate Forest, and rhino habitat was extended a month to mid-May 2018, mostly due to projected delays in permitting; staff will update estimated escalation due to this delay. Dr. Moore shared Manitoba Protocol staff discussions regarding saltwater being a future polar bear habitat requirement. Staff is working closely with Portland Bureau of Development Services to prepare for permit review and approval.

(continued)

Budget and Expenditures (continued)**2017 Findings and Recommendations:**

- The committee congratulates and thanks the Oregon Zoo Foundation for its significant financial support of \$3.2 million for Polar Passage, Primate Forest and rhino habitat.
- The committee appreciates the work the budget subcommittee did on the recommended reallocation of remaining funds and appreciates Metro for approving the reallocation.
- The committee recommends that continued rising construction and infrastructure costs be monitored closely during the remaining projects.
- The committee commends zoo staff for the forethought and prudence of combining the three remaining projects to reduce construction costs and time. The committee also commends Metro for being open to and approving this innovative construction plan.
- The committee recommends that the zoo consider alternative ways to provide food choices for patrons while eateries are closed for construction.
- The committee recommends that the zoo have a plan to help offset any reduced cash flow during this final stage of construction.
- The committee recommends careful consideration of the Integrated Conservation Action Plan (ICAP) when completed and adopted to understand how costs will be influenced.
- The committee recommends evaluating options with remaining unallocated funds after the final bond issuance in 2018.

2. Contracting Methods

The program received Metro Council approval to use an alternative general contractor procurement method called the Construction Management by General Contractor approach for Elephant Lands, Education Center and Polar Passage/Primate Forest/rhino habitat. This approach worked well for the Elephant Lands and Education Center projects and, given the complexity of the zoo bond-funded projects and the possibility of simultaneous construction projects, the committee continues to support the consideration of alternative contracting methods such as this in order to reduce risk and achieve the most cost-effective and efficient use of the zoo bond funds.

Contracting Methods

2016 Findings and Recommendations *with updates*:

- The committee recommends that Zoo Bond staff continue to document cost savings and efficiencies through use of alternative contracting methods to inform future projects.

Update: The use of CM/GC with Elephant Lands was evaluated and shared with the Metro Council (October 2017) and Oversight Committee (November 2017). The five-year, \$57 million project concluded at \$157,000 under budget, and those funds were added to the bond program's unallocated contingency. One of the main outcomes of using CM/GC was effective budget management. A similar evaluation will be conducted for the Education Center in 2018.

2017 Findings and Recommendations:

- The committee recommends that zoo bond staff continue to document cost savings and efficiencies through the use of alternative contracting methods through the completion of the remaining projects.

REQUIRED REPORTING ITEM 2 | Spending Considerations

B. Cost projections

1. Master Plan Implementation

The Comprehensive Capital Master Plan describes the zoo's vision and goals, the purpose and intent for each facility, and includes a budget, sequence and timeline of construction projects that will bring the future vision to reality. This representation of the zoo's future is an essential tool to coordinate the development of the zoo's separate facilities into a coherent, effective and unique institution with a clear and recognizable theme and mission.

The Metro Council approved the master plan in 2011, which included the budgets for the bond-funded projects. The CCMP has been and will continue to be a crucial element to ensure efficient and effective use of bond proceeds. As part of the CCMP process, each project budget was developed with a contingency fund for both design and construction. Annual cost escalation due to inflation was also incorporated into each project budget. In addition, the overall program has a contingency fund.

The committee commends the economy and efficiency with which the program has been run, and recommends its continuance. Of principal concern to this committee is completion of all bond projects with the remaining funding without sacrificing bond program and animal welfare objectives.

In March 2017, Metro approved the committee's recommendation (as referenced in the table on page 43) that any remaining funds be available for capital improvements identified in the master plan. At the end of 2017, \$2.3 million remained unallocated.

Master Plan Implementation: Cost Projections

2016 Findings and Recommendations *with updates*:

- The committee recommends staff continue to inform and update the Oversight Committee on cost trends in the construction industry, including materials costs.

Update: In November 2017, staff presented cost escalation data running 4.5 to 5 percent.

- The committee recommends staff continue to review and validate budgets and cost escalation and their implications on the remaining planned projects.

Update: In 2017, the committee set up a budget subcommittee to review construction cost escalation and project modifications. The Oversight Committee provided a recommendation regarding the allocation of remaining bond funds to the Metro Council. Upon analyzing the committee's recommendation and staff analysis, the Metro Council approved budget and scope amendments to address cost escalation and project priorities.

- The committee recommends the staff continue to monitor changes to animal welfare standards that could have an impact on current and future projects.

Update: The zoo bond design team continuously monitors animal welfare standards to ensure compliance. In addition, zoo leaders are actively engaged in planning for future standards and advising the design process with future needs in mind.

- The committee recommends staff assess and monitor the zoo's draft conservation priorities (to be finalized in the Integrated Conservation Action Plan (ICAP)) for any upcoming changes that could affect project designs, construction or operation.

Update: Staff presented ICAP goals and principles to the committee in September 2017. Staff continues to track the ICAP development to ensure alignment in conservation focus and messaging. The interpretive messaging for Polar Passage and Primate Forest is aligned with the draft ICAP conservation action priorities.

2017 Findings and Recommendations:

- The committee recommends staff continue to inform and update the Oversight Committee on cost trends in the construction industry, including materials costs.
- The committee recommends staff continue to review and validate budgets and cost escalation and their implications on the remaining planned projects.
- The committee recommends the staff continue to monitor changes to animal welfare standards that could have an impact on current and future projects.
- The committee recommends continued monitoring of the zoo's conservation priorities for any upcoming changes that could affect project designs, construction or operation.

2. Administrative Costs

Metro's central services support the zoo bond program with budget management, bond sales, legal support, procurement of goods and services, and information services.

Administration costs and the actual costs of issuing the bonds total \$5.4 million (5.3 percent) of the zoo bond program's total expenditures through December 31, 2017. This percentage is comparable to other local public bond-funded construction projects. An analysis of the Beaverton School District, Portland Public School District and Portland Community College bond programs resulted in a range of administrative costs between 3.8 percent and 7.2 percent of the total program budget.

Originally staff projected that total administrative overhead costs for the zoo bond program would be \$3.9 million, about 3 percent of total expenditures. Metro adopts a cost allocation plan in which costs for centralized services are allocated on a reasonable basis. The same methodology for allocation is applied and charged to all Metro programs. The Oregon Department of Transportation reviews Metro's cost allocation plan for compliance with federal rules.

In 2016 and 2017 the Oversight Committee received an update on the revised numbers and a detailed explanation about how Metro allocates resources for central services. These updates made it clear that Metro and zoo staff have taken steps to control these overhead costs to ensure voter-approved funds are spent efficiently to achieve the bond program objectives, while maintaining proper controls and providing needed administrative support.

In March 2017 when the Metro Council reallocated the remaining bond program funds, the administrative budget was increased to \$7.2 million based on expenditures to date and updated cost allocations.

Administrative Costs: Cost Projections

2016 Recommendation *with update*:

- The committee recommends staff continue to monitor the reasonable assessment of administrative costs and their implications on the overall program budget, and provide a report at least annually to the full Oversight Committee.

Update: Staff reported to the committee on administrative costs in January 2017. The budget was amended to address revised administrative costs. Assumptions and updates will be provided in 2018 once the remaining construction schedule is set.

2017 Findings and Recommendations:

- The committee recommends staff continue to monitor the reasonable assessment of administrative costs and their implications on the overall program budget, and provide a report at least annually to the full Oversight Committee.

3. Operating Costs

The Oregon Zoo staff anticipates that some future operating costs of the zoo will increase upon completion of the bond-funded projects, but will be offset by additional revenue-generating opportunities and the enhancements and efficiencies gained through new technologies and the modernization of zoo infrastructure. The committee believes it is important that staff continue to monitor this assumption as project planning matures, to allow reasonable financial planning by zoo staff.

Operating Costs: Cost Projections

2016 Findings and Recommendations *with updates*:

- The committee recommends staff provide the operating expense data and revenue from Elephant Lands by December 2017, following the completion of one fiscal year of operation ending June 30, 2017.

Update: Staff compiled information regarding the operations of Elephant Lands in 2017 and will share with the committee in 2018.

- The committee recommends staff provide by December 2017 a preliminary report on the impact of the Education Center on operating costs and revenue.

Update: Staff provided a preliminary Education Center operating report in 2017. The report covered four of the Education Center goals, and showed that the new facility is fulfilling those goals. In 2018, staff will share a complete report.

2017 Findings and Recommendations:

- The committee believes it is important that staff continue to monitor future operating costs of the zoo assuming that as project planning matures, costs may change.
- The committee recommends staff provide the operating outcomes from completed bond projects.
- The committee recommends that the zoo prioritize preventative maintenance in the ongoing operation of the new facilities to maximize the lifespan of the equipment.

C. Independent financial audit

Moss Adams issued the annual independent financial audit report of the zoo bond program on November 15, 2017. The auditors reported that nothing came to their attention that caused them to believe that Metro failed to comply with the provisions of the bond measure. No specific management letter comments were made. Notice of the audit report was published on December 13 and 20, 2017, in the Daily Journal of Commerce, and the audit report was posted on the zoo website.

REQUIRED REPORTING ITEM 3 | Project modifications in excess of budget

Consider and recommend project modifications intended to account for increases in construction costs in excess of budget estimates

A. Project Modifications

In September 2016, the Oversight Committee launched a budget subcommittee charged with recommending in spring 2017 a prioritized strategy for project modifications and allocation of the remaining bond funds. Several project modifications were proposed by staff, recommended by the committee and approved by the Metro Council in March 2017 (also see chart on page 43):

- Use saltwater in all pools in Polar Passage. Saltwater is beneficial for animal welfare and adheres to the standards of the Association of Zoos and Aquariums. Although saltwater is harder on equipment and could raise costs, it is an integral part of best practice worldwide polar bear conservation efforts.
- Due to cost escalation, allocate an additional \$3.6 million to the project budgets to address cost escalation on the three remaining projects: Polar Passage, Primate Forest and rhino habitat.
- Allocate \$1.3 million to enhance the Polar Passage project, utilizing unallocated Oregon Zoo Foundation funds previously provided to the bond program. The Foundation will also provide an additional \$900,000 to support project enhancements.
- Combine the final three projects – Polar Passage, Primate Forest and rhino habitat – to save an estimated \$1.3 million in construction costs and construction time.
- Tear down the existing primate structure as part of the Primate Forest project, and replace it with new habitats for the safety and welfare of primates.
- Add a \$1.5 million electrical infrastructure project to replace two outdated emergency power generators and associated electrical infrastructure critical to servicing animal areas and supporting animal and guest safety.
- Allocate \$1 million to support the close out of the bond program, address newly discovered needs on previously completed bond projects (e.g., changing animal welfare standards, facility challenges, etc.), and hold for program contingency. Any remaining contingency at the end of the program will be available for capital improvements identified in the master plan.
- Add \$3.3 million to the program administration budget. The additional funds will maintain appropriate staffing levels and pay for the necessary level of legal, accounting, procurement and other services provided by Metro shared services.

How to learn more

We encourage you to learn more about the Oregon Zoo's bond program by visiting www.oregonzoo.org/newzoo.

We also welcome your feedback about what you would like to hear from us next year. Would you like us to focus on specific areas of concern or processes? Please contact us with any ideas, suggestions or questions.

Email: zoobond@oregonzoo.org

Phone: 503-914-6028

Appendix A – Committee Membership

Ruth Shelly – Committee Chair

Ruth Shelly, executive director of Portland Children's Museum, leads a learning complex that consists of a children's museum, private preschool, public K-5 charter school, and research center with a total staff of 35 full-time and 34 part-time employees; \$4.3 million annual budget; and almost 300,000 visitors annually. Shelly is a lifelong museum professional who started in exhibit design and moved to administration, serving in art, history, natural history, and science museums – as well as an aquarium – before entering the children's museum field. She has served on museum association boards at the state, regional and national level. In her present role, Shelly is at the nexus of informal, formal and professional learning, and she is particularly interested in the role that museums can play in shaping the future of educational systems in the United States. Prior to moving to Portland in 2013, Shelly served as executive director of the Madison Children's Museum during its move to a renovated historical building, which became the first LEED-certified museum in Wisconsin, and a 2011 recipient of the IMLS National Medal for Museum and Library Service.

Susan Hartnett – Committee Vice Chair

Susan Hartnett has more than 26 years of experience in urban planning and development. Her career includes more than 21 years with City of Portland bureaus, including planning, transportation and water; she currently serves as the spectator venues program manager in the Office of Management and Finance. Hartnett has also worked for the City of Tigard, Oregon Health & Science University, the City of Chicago and several private sector companies. She earned her Bachelor of Science in criminalistics from the University of Illinois and her master's in urban and regional planning from Portland State University, and is an active member of the American Institute of Certified Planners.

Daniel Aja

Daniel Aja is the senior vice president and chief medical officer at Banfield Pet Hospital, where he leads internal and external medicine initiatives at the world's largest veterinary practice. Prior to joining Banfield in 2014, Dr. Aja served as director of U.S. professional and veterinary affairs at Hill's Pet Nutrition. Previously, he owned and directed the Cherry Bend Animal Hospital in Traverse City, Michigan. Dr. Aja earned his veterinary medical degree from the college of Veterinary Medicine at Michigan State University, and has more than 33 years of experience, credibility and commitment to delivering the highest quality of veterinary medicine. He is a past president of the American Animal Hospital Association and served on the Michigan State Board of Veterinary Medicine. He is also the founding board member of Partners for Healthy Pets, a committee of the American Veterinary Medical Foundation created to ensure pets receive the preventative health care they deserve.

Noah Bishop

Noah Bishop is an attorney and the proud father of two young zoo enthusiasts. A graduate of Lewis and Clark Law School, he has focused his practice on debtor-creditor law, and now runs his own law firm, Bishop Bankruptcy Law. He volunteers at The Bankruptcy Clinic, a free service provided by the lawyers of the Oregon State Bar.

Appendix A – continued

Heidi Goertzen

Heidi Goertzen is the chief compliance officer for Ferguson Wellman Capital Management, overseeing the company's regulatory and compliance matters. Prior to joining the firm, she worked for RVK, Inc. as an investment analyst for several years before serving as investment associate for seven years. She earned a B.S. in finance from Linfield College and holds a MBA with a concentration in finance from the University of Portland's Pamplin School of Business.

Deborah Herron

Deborah Herron is the director of public affairs and government relations for Walmart in Oregon and several other Western states. Walmart has been a strong supporter of the Oregon Zoo, and Herron has been instrumental in ensuring this connection, including serving on the Oregon Zoo Foundation's Board of Trustees. Previous to her work at Walmart, she was a principal at Vox Public Relations in Portland. She is well known and connected in the public affairs community, bringing collaboration, curiosity, careful thinking, passion, enthusiasm and a solution-oriented approach to engage audiences.

Jill Mellen

Jill Mellen is a research biologist whose areas of expertise include animals, animal welfare and enhancing guest experiences in informal learning settings such as zoos and aquariums. Dr. Mellen has worked in the zoo and aquarium field for more than three decades. Most recently she was the education and science director at Disney's Animal Kingdom, where she researched a range of topics from elephant welfare to inspiring children to conservation action. Within the Association and Zoos and Aquariums, Dr. Mellen has held many leadership positions. Her current projects include coordinating studies on marine animal welfare. Early in her career, Dr. Mellen worked at the Oregon Zoo, and has moved back to Portland after her retirement from the Disney Company.

Mickey Lee

Mickey Lee is an energy advisor with NW Natural working with construction contractors and clients to ensure new service is effective and efficient, and utilizing her background in workforce equity, construction and relationship management. Prior to that, she was a project manager at MPower Oregon, where she oversaw the rehab development of energy and water efficiency in the multifamily affordable housing market across the state of Oregon. She has a background in project development and management, working with clients across the US to mitigate carbon emissions. Her work has a strong emphasis on environmental and social equity. She has been recognized nationally for helping to bridge the gap between private and public entities. She holds an MBA in sustainable development from Bainbridge Graduate Institute at Pinchot University and is accredited through the national Building Performance Institute.

Appendix A – continued

Daniel Morris

Dr. Daniel Morris is principal of Daniel Morris Research, LLC. He received his doctorate in public health from Saint Louis University and a master's degree in physics from the University of Michigan. As the research director for Our Oregon, Dr. Morris helped raise Oregon's minimum wage, win paid sick leave for hundreds of thousands of Oregon workers, advocate for funding for schools and public services, and create a state-run retirement savings plan. While working as an epidemiologist for the Oregon Public Health Division, he pioneered techniques for tracking obesity with driver license data, and blew the whistle on a multi-billion dollar tobacco tax evasion scheme. Dr. Morris lives in Portland with his family.

Robyn K. Pierce

Robyn K. Pierce is a professional consultant with Pierce, Bonyhadi & Associates. She assists colleges, universities and school districts with planning, development, design and construction of academic, research, housing and student service facilities. She served eight years as the director of facilities and planning at Portland State University (PSU), where she managed a department of 160 staff and had an active role in more than 1.5 million square feet of campus growth and development, including nine LEED-certified buildings and three public-private and public-public partnership projects. She managed annual budgets exceeding \$100 million, including construction budgets. Pierce remains dedicated to supporting women and minority contractors in all facets of project development. She completed her undergraduate degree at the University of Oregon and master's degree at PSU.

Katherine A. Porras

Katherine A. Porras is an investment associate at Meyer Memorial Trust, responsible for monitoring and analyzing the foundation's investments, while researching environmental, social and governance factors on portfolio holdings to inform the alignment of the investment strategy to the organization's mission. Ms. Porras has experience working in finance, legal services, and performing arts. She earned an MBA with a focus in finance from Willamette University's Atkinson Graduate School of Management. She looks forward to contributing to the zoo, its staff and the Oregonian community at large.

Kevin Spellman

Kevin Spellman is a business consultant and trainer for construction contractors and industry professionals, following a 28-year career with commercial contractor Emerick Construction, including 18 years as president. In his Spellman Consulting, Inc. practice, he works with contractors on business strategies, development of contract management tools and techniques, and effective operational procedures. He has been an adjunct instructor in the Civil Engineering Department at Oregon State University, and at Portland Community College. He has served on several local boards, including Multnomah Education Service District, and currently chairs the Bond Accountability Committee for Portland Public Schools' bond program.

Appendix A – continued

Dick Stenson

Dick Stenson retired in 2014 after 22 years as Tuality Healthcare president and chief executive officer. He was previously administrator of Straub Clinic & Hospital and Straub Health Plan in Honolulu, after working in San Francisco as administrator of Harkness Community Hospital and Upjohn Medical Group. He has a BS degree from the University of California, Berkeley and master's degrees in healthcare and business administration from Tulane and Loyola Universities in New Orleans. Stenson is a Fellow of the American College of Healthcare Executives and the American College of Medical Practice Executives. He currently serves on the boards of the Portland Community College Foundation, Pacific University Oak Tree Foundation, Native American Rehab Association, SW Community Health Centers, Intel Community Advisory Panel, Vision Action Network of Washington County, Washington County Public Health Advisory Panel, Hillsboro Community Foundation, Tuality Healthcare Foundation and Tuality Health Alliance.

Christine L. Taylor

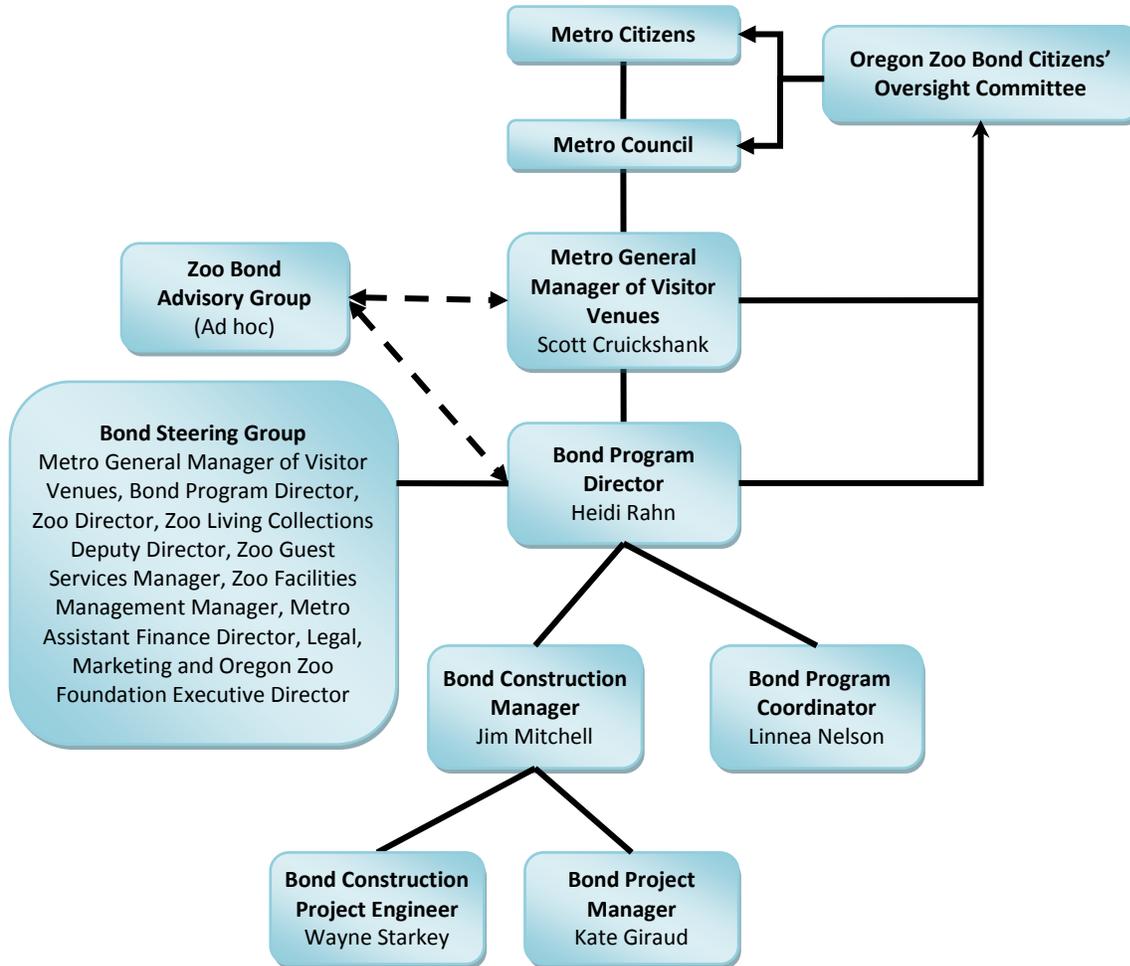
Christine Taylor is an attorney with Miller Nash Graham & Dunn's business practice team and focuses on construction and general business law. She also has a particularly strong interest in energy law. In her construction practice, she assists clients through the process of building complex projects, including drafting and negotiating contracts for construction. In her general business practice, she assists clients with entity formation, contract drafting and review, corporate governance, and sales and acquisitions. Before transitioning to Miller Nash's business team, she spent three years practicing with the firm's commercial litigation group and focused on disputes involving construction claims and defects, corporate governance and insurance recovery. Ms. Taylor is also a huge polar bear fan!

Karen Weylandt

Karen Weylandt retired in March 2018 from Providence Health & Services after serving more than 25 years, most recently as the chief planning and design officer for the five-state health system. She has worked in the building, construction and improvement of Providence hospitals, outpatient clinics, surgery centers and educational facilities from Alaska to California. Her leadership for the planning and construction of Providence Newberg Medical Center resulted in the first hospital in the country to earn a LEED Gold designation. She also directed the planning and construction for the Providence Cancer Center in Portland. Weylandt's recent projects include a major expansion of services for Providence's downtown Seattle facilities, and a master plan for the south campus expansion at St. John's Hospital in Santa Monica, California. Weylandt earned a degree as a registered nurse and a master's degree in health care administration. For the past seven years she has served on the Oregon Facility Authority Board, and she also served several years on the Oregon Humane Society Board.

Appendix B

Zoo Bond Program Organization Structure



External Consultant and Contractor Contributions

Bond Construction Projects: Design consultants and construction contractors managed by bond construction and project managers.

Zoo Staff Contributions

Animal Welfare, Guest Experience, Facilities Impacts, Conservation Education, Grant Administration, Finance, Procurement, Marketing, and Public Relations and Involvement.

Oregon Zoo Foundation Contributions

Financial, Grant Administration, Donor Management and Communications.

Metro Contributions

Governance, Civil Engineering, Real Estate, Planning/Permitting, Program Delivery, Historical Investigations, Legal, Finance, Procurement, Human Resources, Sustainability, Diversity/Equity/Inclusion, and Risk Management.

Solid Lines = Primary responsibility for or relationship to

Dashed Lines = Secondary/support for or relationship to