



Oregon Zoo Bond Citizens' Oversight Committee

CALENDAR YEAR 2018 REPORT

Presented April 2019 to the Metro Council and the community



Cover:

- Artist renderings of the three Oregon Zoo habitats under construction: Polar Passage, Primate Forest and Rhino Habitat, scheduled to open in 2021. (Renderings by Scott Taylor, Scott Taylor Consulting)
- In 2018, the former Oregon Zoo primate building built in 1957 was demolished to make way for the new Primate Forest project. (photo by Kate Giraud, zoo bond project manager)

April 4, 2019

RE: Oregon Zoo Bond Citizens' Oversight Committee Report for the Calendar Year 2018

Dear Metro Councilors and Residents of the Region:

In 2008 voters in the region 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. To help ensure 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 of the bond program. Each year since 2011, the committee has presented an annual report to the Metro Council and our regional community. This is the committee's report presenting its findings on how the program has progressed during the period from January through December 2018.

In accordance with the bond requirements, the report covers 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 the 2017 report, we include an update on what was done in response to those recommendations, followed by new findings and recommendations from 2018. The new 2018 findings and recommendations are also summarized at the beginning of the report for your convenience.

The committee is pleased to report that in 2018, 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.

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. The 2018 report also includes format changes intended to begin transitioning the annual report to a final bond program report when the remaining projects are completed. Information on completed projects has been moved to a new appendix which also includes background on the bond initiation process and early planning stages. The committee's goal in making these changes is to assemble a complete picture of the zoo bond process and program and to begin identifying key "lessons learned" that may be useful to Metro and other public agencies when undertaking a significant bond-funded construction program.

The committee's main focus in 2018 was on the design and construction planning for the final three projects called for in the bond measure and assuring that the bond program is on solid footing to complete the remaining projects, despite significant cost escalation in the region. Project budgets and scopes, which were first defined in 2011, were analyzed and modified in 2017 to address cost escalation. However, the strength in the local economy and an unprecedented rate of construction activity has continued to create challenges as the final projects are being developed. Of principal concern to the committee is completion of all bond projects within the remaining funding and without sacrificing bond program goals, including as a prime aim the animal welfare objectives.

The committee worked closely with the bond team in 2018 to understand the potential impacts to the final projects and the choices facing the staff. As was the committee's experience in prior years, the bond team and zoo staff consistently present clear, thoughtful and professional information and demonstrate their willingness to engage with the committee on issues and to give serious consideration to the members' thoughts, concerns and ideas. The committee notes that Dr. Don Moore's leadership at the Oregon Zoo has been a significant benefit not only to the bond program, but throughout the zoo's many activities and programs.

The Oregon Zoo Bond Oversight Committee will work diligently to assure that in its final two years of construction, commissioning and celebration of these new habitats, the zoo bond program continues to deliver projects that meet the bond measure goals, including the best conditions possible for the animals. We will also look for ways to support the zoo in providing a first-class experience for zoo visitors.

It is my honor to thank the other 17 members of the Oregon Zoo Bond Citizens' Oversight Committee for their service, and the Oregon Zoo staff and other Metro staff supporting the zoo bond program for their hard work, professionalism and clear answers to the many questions we asked. We present this report as a team effort.

Sincerely,



Susan G. Hartnett, Chair
Oregon Zoo Bond Citizen Oversight Committee

Oregon Zoo Bond Citizens' Oversight Committee Report

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

Presented April 2019 for the calendar year 2018

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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 2019 for the calendar year 2018

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 2018.

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 four times in 2018: February, May, September and November. Currently the committee has 18 members, who bring to the committee skill sets from a diverse set of backgrounds (see Appendix B).

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 Susan Hartnett.

The committee meetings typically involve interactive presentations by the zoo bond staff team and other Oregon Zoo and Metro 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 2018 that covered the calendar year 2017 (2017 Findings and Recommendations), and provides an update on the outcomes of those recommendations as applicable. This report also includes format changes intended to begin transitioning the annual report to a final bond program report when the current projects are completed in 2020. Information on completed projects has been moved to a new appendix, which also includes background on the bond initiation process and early planning stages.

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.

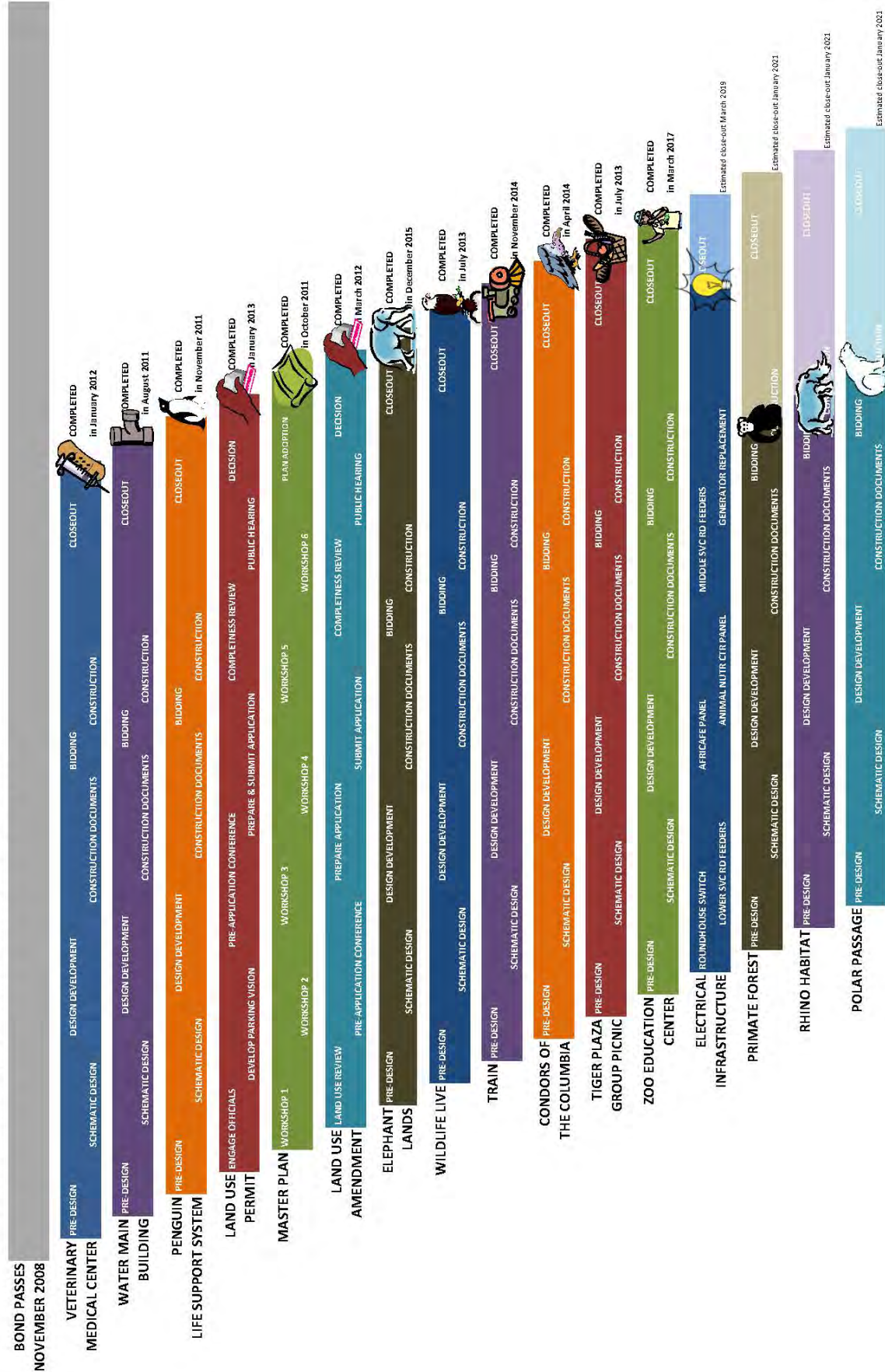
This Oversight Committee annual report includes high level data on diversity in contracting information, but more complete information is available in the [*Oregon Zoo Bond Program Equity in Contracting Quarterly Report*](#), first issued by bond staff in September 2016, and provided to the committee and posted quarterly thereafter on the zoo website (except the latter half of 2018 when it was suspended for six months due to no new data).

This report makes various references to items that were presented to the committee in 2018 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 2018



2018 Findings and Recommendations Summary

The committee's findings and recommendations for 2018 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.

2018 Findings and Recommendations Summary

Conservation Education: Overview (section 1A2, pages 13-15)

- The committee commends the change in the name of two zoo departments: Education became Inspiration, Learning and Action and Living Collections became Care, Connection and Conservation. These changes demonstrate ongoing maturing commitments to conservation, which was a commitment of the zoo bond measure. They also ensure that all interpretive investments reflect conservation action priorities for the zoo.
- The committee carries forward its 2017 recommendation that the remaining bond-funded projects focus conservation education to align with the Integrated Conservation Action Plan.
- The committee recommends that staff report findings from the Education Center interpretive summative evaluations when available in 2019.

Infrastructure and Sustainability: Overview (section 1A3, pages 15-18)

- The committee carries forward its 2017 recommendation 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.
- The committee commends the zoo for adding to its awards for the Education Center. It achieved Leadership in Energy and Environmental Design (LEED) Platinum certification from the US Green Building Council, the highest level of certification available. In addition, the Portland Chapter of American Institute of Architects awarded the Architecture 2030 Award to Opsis Architecture and the Oregon Zoo in recognition of their effort to reduce the use of greenhouse gas-emitting fossil fuels (net-zero operations), and the American Council of Engineering Companies of Oregon bestowed its Engineering Excellence 2018 Grand Award.
- The committee recommends that the Education Center continue data collection on energy use in order to achieve the International Living Future Institute (ILFI) zero energy bond certification.

Diversity in Contracting: Overview (section 1A4, pages 18-22)

- The committee commends Metro for its role in commissioning the Portland Metro Region Construction Workforce Market Study that advanced public agencies' understanding of the challenges facing women and people of color in the regional construction industry, and for its leadership in developing strategies to overcome such challenges.

(continued)

2018 Findings and Recommendations Summary (continued)

Diversity in Contracting: Overview (continued) (section 1A4, pages 18-22)

- The committee commends the zoo bond program for continuing its focus on COBID utilization and its work with its designers and contractors in expanding tools to advance COBID participation.
- The committee recommends that Metro continue to explore additional alternative procurement strategies to further improve COBID participation and workforce diversity.
- The committee recommends that all aspects of the program's COBID utilization efforts be well documented by continuing the Quarterly Reports through the end of the program, for use on future zoo bond programs as well as on other Metro capital programs.
- The committee recommends that Metro continue its leadership role in the Construction Career Pathways Project aimed at increasing diversity in the regional construction workforce.

Program Governance and Structure: Overview (section 1A5, pages 22-23)

- The committee continues to recommend that Metro maintain clarity about roles, responsibilities and lines of authority given the program management and reporting structure transitions.

Polar Passage/Primate Forest/Rhino Habitat (section 1B1-3, pages 24-29)

- The committee carries forward its 2017 recommendation of continued commitment to polar bear conservation and to define how Polar Passage supports this conservation commitment.
- The committee continues its 2017 recommendation that 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 commends the staff and project team for cost-savings generated by value engineering to bring the project into budget, including removal of the maternity den that is not needed at this time and is consistent with animal welfare and conservation goals.
- The committee commends the zoo for maintaining its focus on animal welfare and conservation education while designing and budgeting for Polar Passage, Primate Forest and the Rhino Habitat.
- The committee commends the zoo for its partnership with the Oregon Museum of Science and Industry and the leverage of local knowledge in designing the climate action portion of the interpretives for Polar Passage. The committee recommends that the Oregon Zoo continue to identify and work with local organizations with relevant expertise in alignment with the zoo bond program's goals.
- The committee commends the zoo's ability to keep chimps and orangutans on site during construction with focus on animal welfare.

(continued)

2018 Findings and Recommendations Summary (continued)

Polar Passage/ Primate Forest/ Rhino Habitat (continued) (section 1B1-3, pages 24-29)

- The committee commends the flexibility of the Oregon Zoo Foundation to support the full cost of the Rhino Habitat.
- The committee commends the zoo's proactive planning to reduce disruption and embrace construction as part of the guest experience (e.g., creating windows in fencing to watch construction).
- The committee commends the zoo's significant preparations made in a timely manner to prepare for construction, including complex planning and successful animal transfers. The zoo transferred out 53 individual animals representing 17 species, and transferred in 63 animals representing 14 species, for a net increase of 10 animals.

Interpretive Experience and Wayfinding (section 1B4, pages 30-31)

- The committee commends the zoo on its progress in developing an Interpretive Framework and new governance structure to ensure interpretives remain relevant and current.
- The committee recommends that the Interpretive Framework be completed by mid-2019 and shared with the committee.

Percent for Art (section 1B5, pages 32-34)

- The committee commends the zoo staff on its efforts to create a policy framework and mechanisms that ensure the zoo's art collection and other nonliving collections receive adequate and ongoing attention.
- The committee recommends that the project team continue to coordinate the design, fabrication and installation of artwork for the final zoo bond project over the next two years.

Electrical Infrastructure (section 1B6, pages 34-35)

- The committee commends zoo Facilities Management and the zoo bond construction team for working together on the Middle Service Road Feeders and Generator Replacement to improve coordination and reduce costs.
- The committee commends the zoo for including in the bond program such a significant investment in infrastructure (including that contained in each project) that supports safety, animal welfare and facility future growth.
- The committee recommends that zoo staff remain open to creative collaborations such as Portland General Electric's Dispatchable Service Generation partnership; however, staff should engage in an early feasibility study to ensure that resources are not expended on an unrealistic project.

2018 Findings and Recommendations Summary (continued)

Budget and Expenditures (section 2A1, pages 36-40)

- The committee commends zoo staff on careful and strategic value engineering and monitoring of costs during the completion of final projects without sacrificing animal welfare or conservation efforts.
- The committee commends zoo staff for thoughtful planning and discussion around potential bid scenarios for the Polar Passage/Primate Forest/Rhino Habitat project.
- The committee commends the Oregon Zoo Foundation for their support and flexibility with funding the Rhino Habitat and a portion of Polar Passage and Primate Forest.
- The committee commends the zoo bond staff for a continuous history of completing all projects within the allocated budget.
- The committee recommends that the zoo continue to implement alternative food choices for patrons while eateries are closed for construction.
- The committee recommends that the zoo have a plan to offset any reduced cash flow during this final stage of construction.
- The committee recommends staff continue monitoring construction costs and project and program contingencies.

Contracting Methods (section 2A2, page 41)

- The committee commends staff and Metro for being receptive to and implementing the use of alternative contracting methods. The outcomes include cost savings, planning to minimize the construction impact to animals, visitors, and staff, flexibility to support innovation and partner fund contributions, and overall problem solving for constructability.
- The committee recommends that alternative contracting methods be considered for appropriate construction projects at the zoo due to its unique geography, visitor presence and animal habitat needs.

Master Plan Implementation: Cost Projections (section 2B1, pages 42-43)

- The Committee commends staff and the project team on their value engineering efforts to address continuing cost escalation without sacrificing animal welfare efforts or program goals.
- The committee commends Metro for reserving program contingency to ensure the final projects could be completed successfully despite the demand in the region's construction market.

2018 Findings and Recommendations Summary (continued)**Administrative Costs: Cost Projections** (section 2B2, pages 44-45)

- The committee commends Metro for capping central service administrative costs, which provided more certainty to the budget and reallocation process.
- 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.
- The committee recommends that staff complete periodic reviews of other local bond issuance programs to make sure administrative costs continue to be comparable.
- The committee recommends allocation from program contingency for administrative cost projections.

Operating Costs: Cost Projections (section 2B3, page 46)

- The committee carries forward its 2017 recommendation that staff continue to monitor future operating costs of the zoo assuming that as projects mature, costs may change.
- The committee recommends staff provide the operating outcomes from completed projects and the projected cost or revenue impact on the zoo budget from all 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.

Elephant Lands (Appendix A9, pages 57-62)

- The committee commends the Oregon Zoo director and staff for the Elephant Lands Operating Outcomes Report, especially the insights of lessons learned.

Education Center (Appendix A11, pages 62-66)

- The committee carries forward its recommendation that the Education Center continue to be operated in a way that optimizes net-zero energy goals while achieving other program goals.
- The committee recommends that the Education Center continue data collection on energy use in order to achieve the International Living Future Institute (ILFI) zero energy bond certification.

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, habitat 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

Elephant Lands was designed to 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. A four-year research study, beginning before construction began and ending after the first year in the new habitat, monitored animal welfare using three indicators: distance walked (GPS monitoring), reproductive and adrenal hormone analyses, and detailed behavior assessments. Study results show that the elephants in Elephant Lands are walking at least as far, and in some cases farther than elephants in the wild, their movement is more self-directed, and they are using all parts of the new habitat regularly. Hormonal data indicate that the female elephants maintained regular reproductive hormonal patterns throughout the four years, and all members of the herd showed normal adrenal responses to the challenges, excitement and changes of the transition. That is, all showed adaptive responses to real/perceived stressors, including the ability to re-establish physiological equilibrium. The behavioral data show increased activity, increased foraging, and increased choice over how they spend their time and with whom they interact. The report's conclusion is that elephants in Elephant Lands are exhibiting a diverse range of natural behavior and social dynamics of a healthy herd. Zoo staff continues to collect and analyze data as part of their ongoing care for the elephants.

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 had the potential to 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 birds to fly that cannot be released, 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

Design of Polar Passage was completed in 2018. Key elements are intended to provide polar bears with long views, natural substrate, more space, and to meet Association of Zoos and Aquariums and Manitoba standards for polar bear habitats and provide visitors with a close-up view of polar bear care. The old exhibit was almost entirely concrete, generating a very high heat load in the summer, and uniformly failed to address the welfare of the polar bears.

Primate Forest's design was also completed in 2018. The new facility will be home to an expanded number of chimpanzees adjacent to the orangutans in Red Ape Reserve. Chimps thrive when they are in large enough groups to choose with whom to spend time. New construction addresses this need by expanding and significantly improving the space to accommodate a larger group of chimpanzees. The new habitat will provide the chimps with more complex spaces and better visibility so that they can monitor the whole area. Primate Forest will include interchangeable, three-dimensional structures, allowing keepers to enrich the physical environment by changing the arrangement of climbing structures and hammocks.

The rhinoceros habitat, to be completed in 2020, will incorporate the old hippo habitat, providing 50 percent 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 1.5 million annual visitors, and advance conservation education in the region by fostering connection and dialogue among 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 and a tent 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. Visitors to the Education Center can see Western Pond Turtles and learn about local conservation efforts and actions they can take to help. Thanks to Oregon Zoo Foundation support, every third-grader at a Title I school in the region can participate in a zoo field trip and an interactive live animal classroom program presented at the zoo.

Conservation education is an integrated part of the main themes of the interpretive experience in Elephant Lands: a) Being an elephant: the mind, body, and life of an elephant; b) Elephant Lands is the Oregon Zoo's vision for elephant care in practice; and c) Humans and elephants: a shared history. It includes a smart phone app that provides visitors with tools for identifying individuals in the herd. A 2017 evaluation of the Elephant Lands interpretives indicated that messaging about palm oil threats and human-elephant conflicts holds promise as an 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 contain only wildlife-friendly palm oil. When asked about a series of local sustainability actions 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 voluntary 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 in the new Polar Passage project. 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 provides 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 how chimpanzees and orangutans are adapted for life in their forested habitats in Africa and Asia and the devastating impacts of deforestation and habitat loss on these large apes. Interpretives will have a special focus on sustainable palm oil products from these forests and will address how to take action to reduce the human impact on forests and the animals who live in them.

In 2018, the Oregon Zoo finalized 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. ICAP helps prioritize staff resource investments and decisions, maximizes effectiveness of zoo conservation efforts, unifies the education, interpretive messaging and

communication strategies to increase awareness of our conservation efforts and inspire conservation action locally and globally, and aligns sustainability efforts on zoo grounds with conservation priorities. Staff work on the plan continues, with a conservation impact manager to be hired in 2019 to organize and support the implementation of the ICAP and conservation programs and actions.

Conservation Education: Overview

2017 Findings and Recommendations *with updates:*

- The committee recommends that the remaining bond-funded projects focus conservation education to align with the new Integrated Conservation Action Plan.

Update: Zoo staff continues to tie key priorities identified in the ICAP to the messaging of the new habitats. In order to further engage in community conservation and resource sustainability work, a conservation impact manager will be hired in 2019.

2018 Findings and Recommendations:

- The committee commends the change in the name of two zoo departments: Education became Inspiration, Learning and Action and Living Collections became Care, Connection and Conservation. These changes demonstrate ongoing maturing commitments to conservation, which was a commitment of the zoo bond measure. They also ensure that all interpretive investments reflect conservation action priorities for the zoo.
- The committee carries forward its 2017 recommendation that the remaining bond-funded projects focus conservation education to align with the Integrated Conservation Action Plan.
- The committee recommends that staff report findings from the Education Center interpretive summative evaluations when available in 2019.

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 were 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 contributed 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 (approved November 2011), 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 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 Education Center was awarded LEED Platinum, the highest level of certification. 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 sewers, 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 also installed water filtration and circulation systems as part of the Penguin Life Support System project to reuse water in the penguinarium, significantly reducing fresh water consumption. Water filtration and circulation systems were also included in Elephant Lands. 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 62). 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.

Current Projects

Polar Passage is being designed to connect to the geothermal “slinky” system for heat exchange installed with Elephant Lands. This energy-saving feature 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 demolition of the 1950s polar bear and primate buildings and their antiquated systems.

The Rhino Habitat to be newly renovated will expand into the existing hippopotamus area, and the hippos were moved to another zoo in 2018. The outdated hippo pool was eliminated, saving approximately 9.5 million gallons of water annually.

In 2017 the Metro Council approved funding for additional electrical infrastructure upgrades on the zoo campus. Work continues on the final two parts of the project, a new generator and the Middle Service Road Feeders, managed by zoo Facilities staff with oversight from the zoo bond construction manager due to the complexity and scale of the project. Investing in a new generator and supporting electrical infrastructure provides for animal welfare and operational efficiencies.

Infrastructure and Sustainability: Overview

2017 Findings and Recommendations *with updates*:

- 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.

Update: The zoo remains committed to taking full advantage of the new facilities to meet the water, energy and sustainability performance goals. The zoo is already tracking energy production and usage at the Education Center in order to achieve net-zero energy certification.

2018 Findings and Recommendations:

- The committee carries forward its 2017 recommendation 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.

(continued)

Infrastructure and Sustainability: Overview (continued)

2018 Findings and Recommendations: (continued)

- The committee commends the zoo for adding to its awards for the Education Center. It achieved Leadership in Energy and Environmental Design (LEED) Platinum certification from the US Green Building Council, the highest level of certification available. In addition, the Portland Chapter of American Institute of Architects awarded the Architecture 2030 Award to Opsis Architecture and the Oregon Zoo in recognition of their effort to reduce the use of greenhouse gas-emitting fossil fuels (net-zero energy operations), and the American Council of Engineering Companies of Oregon bestowed its Engineering Excellence 2018 Grand Award.
- The committee recommends that the Education Center continue data collection on energy use in order to achieve the International Living Future Institute (ILFI) zero energy bond certification.

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.

A full accounting of the bond program diversity in contracting activities is detailed in a quarterly report, first issued in September 2016. The [Equity in Contracting Quarterly Report](#) is shared with, and reviewed by the committee, posted on the zoo website, and distributed through Metro's community and construction networks. Because there has been no significant contracting activity in 2018, only the April 27, 2018, report covering services through March 31, 2018, was published during the year. Updated reports will be issued in early 2019 as contracting for Polar Passage/Primate Forest/Rhino Habitat is completed.

On the completed Education Center project, the COBID utilization rate as of December 31, 2018, was 29.5 percent – almost double the aspirational goal. Overall as of that date, the bond program has spent approximately \$71.6 million on COBID-eligible construction contracts, and \$11.24 million, or 15.7 percent, of that was on COBID firms. Of that COBID spending, 32 percent (\$3.6 million) went to minority-

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.

owned businesses, 30 percent (\$3.4 million) to women-owned businesses, and 38 percent (\$4.3 million) to emerging small 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 (\$131,509). COBID utilization for the Polar Passage/Primate Forest/Rhino Habitat design team led by CLR Design is 29 percent (\$956,644).

On the final phase of the Electrical Infrastructure project (Generator Replacement and Electrical Feeders), a COBID-certified firm (woman-owned and emerging small business) was awarded a contract for the work valued at \$831,598, and represents 100 percent COBID utilization rate on this project. Work will be completed in 2019.

Subcontractor bids for Polar Passage/Primate Forest/Rhino Habitat construction were received in late 2018. Estimated COBID contracting for construction is 13 percent or \$4 million. Of the 10 COBID certified firms that bid on construction work, seven were low-bid and were awarded contracts. The CM/GC conducted significant outreach in advance of the bid deadline to ensure COBID firms understood the project, had adequate information to develop a bid, and were encouraged to participate.

Subcontract bidding opportunities on the bond program are now effectively exhausted. It is important to recognize and record the program's efforts over the years to increase these numbers by including 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 on site 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 contacted and searched 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 were eligible to perform the specialized work. The outcome of this search was documented in the project Minority Utilization Report. Metro's

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.

procurement manager was required to approve any request for specialized work deemed ineligible to COBID contractors and was responsible for tracking and reporting COBID contractor utilization.

While COBID goals focused 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 increased 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.

In 2017, Metro launched the Construction Career Pathways Project ("C2P2") to identify strategies for providing reliable career pathways for women and people of color in the construction trades. Metro, in partnership with the City of Portland, commissioned 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 diversity across the trades, and the existing opportunities for future workforce growth across the overall regional industry. The zoo bond staff have 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 Portland Metro Region Construction Workforce Market Study was published in July 2018.

In December 2018, an update reported on the C2P2 Public Owner Workgroup, comprised of representatives from sixteen public agencies in the Portland region. The goal of the Workgroup is to create a framework and set of investment strategies to advance workforce equity and support people of color and women to fully realize the benefits of a career in construction. Information on the project is available online at www.oregonmetro.gov/pathways.

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. The committee also recognizes the immediate challenges due to robust local market conditions.

Nonetheless, the committee appreciates and encourages 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

2017 Findings and Recommendations *with updates*:

- The committee recommends that Metro continue prioritizing efforts to enhance diversity in the construction workforce and contracting through workforce equity standards.

Update: Metro's leadership in the Construction Career Pathways Project will directly and positively impact enhanced diversity in the construction workforce. (See 2018 Findings.)

- 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.

Update: The Contractor's Diversity in Workforce and Contracting Plan for the Polar Passage/Primate Forest/Rhino Habitat project was shared with the committee well in advance of subcontractor bidding.

- 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.

Update: Staff continues to track the COBID-certified firms used for project design and other services, and reports the data in the Equity in Contracting Reports (next due in early 2019).

- 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.

Update: To date, the bond program has spent approximately \$71.6 million on COBID-eligible construction contracts, and \$11.24 million, or 15.7 percent, of that was on COBID firms.

Diversity in contracting remained a significant concern as the Polar Passage/Primate Forest/Rhino Habitat project design evolved. Subcontractor bids for construction were received in late 2018. Estimated COBID contracting for construction is 13 percent or \$4 million. Of the 10 COBID certified firms that bid on construction work, seven were low-bid and were awarded contracts. The CM/GC conducted significant outreach in advance of the bid deadline to ensure COBID firms understood the project, had adequate information to develop a bid, and were encouraged to participate.

2018 Findings and Recommendations:

- The committee commends Metro for its role in commissioning the Portland Metro Region Construction Workforce Market Study that advanced public agencies' understanding of the challenges facing women and people of color in the regional construction industry, and for its leadership in developing strategies to overcome such challenges.

Diversity in Contracting: Overview (continued)

2018 Findings and Recommendations (continued)

- The committee commends the zoo bond program for continuing its focus on COBID utilization and its work with its designers and contractors in expanding tools to advance COBID participation.
- The committee recommends that Metro continue to explore additional alternative procurement strategies to further improve COBID participation and workforce diversity.
- The committee recommends that all aspects of the program's COBID utilization efforts be well documented by continuing the Quarterly Reports through the end of the program, for use on future zoo bond programs as well as on other Metro capital programs.
- The committee recommends that Metro continue its leadership role in the Construction Career Pathways Project aimed at increasing diversity in the regional construction workforce.

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.

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.

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.

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

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.

On June 1, 2018, Heidi Rahn, former zoo bond program director since 2013, accepted a new position as Metro's Asset Management and Capital Planning program director. In that new role, she retained oversight of the zoo bond program construction. To manage zoo bond administration at 0.4 full-time-equivalent (FTE), Sarah Keane started on Dec. 1, 2018, as the new zoo finance and administration program director. (Sarah was formerly the zoo finance manager for two years, and will continue overseeing zoo finance and administration at 0.6 FTE.) Together Ms. Rahn and Ms. Keane will work as a team to manage the bond program. The bond program continues to report to the Metro general manager of visitor venues, Scott Cruickshank.

Program Governance and Structure

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.

Update: Additional transitions of bond program management staff have occurred during the year. Bond staffing was adjusted to an appropriate level as the program nears completion and transitions bond project operations to the zoo staff.

2018 Findings and Recommendations:

- The committee continues to recommend that Metro maintain clarity about roles, responsibilities and lines of authority given the program management and reporting structure transitions.

REQUIRED REPORTING ITEM 1 | Assessment of Progress

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 is managing them as a single construction site. This approach is expected to reduce construction time and 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. The Rhino Habitat will open first, followed by Primate Forest and Polar Passage. All are currently scheduled to be open in 2021.

Demolition and site grading began in July 2018. As of November 2, 2018, the existing polar bear, sun bear and wild pig buildings had been removed and selective demolition had begun on the primate building.

Construction documents needed for permitting and bidding were completed in November 2018, and bids were received in December 2018. Zoo staff anticipated that bids may exceed the budget for these final projects and before the bids were received, advised the committee of that possibility and presented potential recommendations that the committee may adopt depending on the amount by which the budget may be exceeded. The bids do exceed the budget, and in January 2019 the committee will review a recommendation for the Metro Council to reallocate existing contingency allowances within the budget to cover the excess without affecting the budget overall.⁵

1. Polar Passage

Zoo director Dr. Don Moore, who has for many years worked closely with international colleagues on polar bear conservation, and the Oregon Zoo polar bear curator and 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. The new exhibit is designed to meet the zoo's multiple goals for animal welfare, conservation and education, creating 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

⁵ On Feb. 7, 2019, the Metro Council considered the Oversight Committee's recommendation and approved Res. 19-4960 allocating \$3,200,000 to the Polar Passage/Primate Forest/Rhino Habitat project and \$1,650,000 to the Program Administration budget, taking the Unallocated Program Contingency to \$0.

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 will have a saltwater system.

Manitoba, Canada's Polar Bear Protection Act and the regulations established under that Act set forth 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, 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.

In evaluating the design of Polar Passage, staff took into account the rapid loss of polar bear habitat in the wild and the anticipated needs of displaced animals, and determined that a maternity den will not be needed at this time. This resulted in considerable costs savings. The space for the den and an outdoor maternity yard remains in the design, in case these facilities are needed in the future. Polar Passage will have capacity for five or six 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 habitat 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 – Subcontractor bids for Polar Passage/Primate Forest/Rhino Habitat construction were received in late 2018. Estimated COBID contracting for construction is 13 percent or \$4 million. Of the 10 COBID certified firms that bid on construction work, seven were low-bid and were awarded contracts. The CM/GC conducted significant outreach in advance of the bid deadline to ensure COBID firms understood the project, had adequate information to develop a bid, and were encouraged

to participate. The approval to utilize CM/GC for this project allowed for more outreach to COBID contractors during the design phase.

Percent-for-Art – The final of three major bond program Percent-for-Art installations is being 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. In 2018, refinement of the concept and fabrication of the artwork were completed.

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. Zoo staff reviewed conservation and animal welfare goals to determine and identify the priority species for the new habitats: chimpanzees and orangutans.

The Oregon Zoo already has an existing group 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 with whom to spend time, 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 group 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 – See Polar Passage Diversity in Contracting for the combined project.

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 was being 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 moved the hippos to a new home (Fort Worth Zoo) in the spring of 2018 and decommissioned the hippo pool.

On the advice of bond counsel, in 2018, bond funds were shifted away from the construction of the expanded rhinoceros habitat. Construction costs for the Rhino Habitat expansion will be fully funded by the Oregon Zoo Foundation, using funds it had previously designated to build the maternity den at Polar Passage (which will not be constructed in this phase). Bond funds that were originally designated for the Rhino Habitat expansion have been redirected back to Polar Passage.

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 approximately 9.5 million gallons of water annually for the zoo.

Diversity in Contracting – See Polar Passage Diversity in Contracting for the combined project.

Polar Passage, Primate Forest and Rhino Habitat

2017 Findings and Recommendations *with updates*:

- The committee recommends continued commitment to polar bear conservation and to define how Polar Passage supports this conservation commitment.

Update: The Committee commends the zoo for aligning its staff-led, value engineering efforts in Polar Passage/Primate Forest/Rhino Habitat with its conservation goals, including the elimination of a polar bear maternity den while retaining space in the design for future construction of the den if required.

- 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 Contractor's Diversity in Workforce and Contracting Plan for the Polar Passage/Primate Forest/Rhino Habitat project was shared with the committee well in advance of subcontractor bidding.

- 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.

Update: The committee commends Oregon Zoo director Dr. Don Moore and animal curator Amy Cutting for their work with the Association of Zoos & Aquariums, among other professional networks, to help conserve bears and house displaced and orphaned animals in appropriate facilities, 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.

Update: Diversity in contracting remained a significant concern as the Polar Passage/Primate Forest/Rhino Habitat project design evolved. Subcontractor bids for Polar Passage/Primate Forest/Rhino Habitat construction were received in late 2018. Estimated COBID contracting for construction is 13 percent or \$4 million. Of the 10 COBID certified firms that bid on construction work, seven were low-bid and were awarded contracts. The CM/GC conducted significant outreach in advance of the bid deadline to ensure COBID firms understood the project, had adequate information to develop a bid, and were encouraged to participate.

2018 Findings and Recommendations:

- The committee carries forward its 2017 recommendation of continued commitment to polar bear conservation and to define how Polar Passage supports this conservation

(continued)

Polar Passage, Primate Forest and Rhino Habitat

2018 Findings and Recommendations (continued):

- The committee continues its 2017 recommendation that 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 commends the staff and project team for cost-savings generated by value engineering to bring the project into budget, including removal of the maternity den that is not needed at this time and is consistent with animal welfare and conservation goals.
- The committee commends the zoo for maintaining its focus on animal welfare and conservation education while designing and budgeting for Polar Passage, Primate Forest and the Rhino Habitat.
- The committee commends the zoo for its partnership with the Oregon Museum of Science and Industry and the leverage of local knowledge in designing the climate action portion of the interpretives for Polar Passage. The committee recommends that the Oregon Zoo continue to identify and work with local organizations with relevant expertise in alignment with the zoo bond program's goals.
- The committee commends the zoo's ability to keep chimps and orangutans on site during construction with focus on animal welfare.
- The committee commends the flexibility of the Oregon Zoo Foundation to support the full cost of the Rhino Habitat.
- The committee commends the zoo's proactive planning to reduce disruption and embrace construction as part of the guest experience (e.g., creating windows in fencing to watch construction).
- The committee commends the zoo's significant preparations made in a timely manner to prepare for construction, including complex planning and successful animal transfers. The zoo transferred out 53 individual animals representing 17 species, and transferred in 63 animals representing 14 species, for a net increase of 10 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.

During the zoo bond program, the planning and development of interpretative materials has transitioned from an individual project approach to a comprehensive approach – like the Percent for Art – and back to an approach where each project integrates the interpretive experience into the project planning, design and implementation. 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.

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.

In December 2018, zoo staff issued an Interpretive Experience Update report that spells out an Interpretive Framework with strategy and processes to inform interpretive design and keep interpretives fresh, relevant to contemporary conservation concerns and integrated with messaging across the zoo. The Framework is scheduled to be completed in June 2019, but is already being used to inform interpretive design. It outlines the zoo's new process for assessing and maintaining effectiveness of interpretive elements across the zoo, including bond projects. This includes an expanded governance structure with more involvement of zoo leadership via a new Strategic Messaging Steering Committee. This group will also ensure that adequate resources are budgeted to support interpretive development.

Based on previous recommendations from the committee, the bond team has focused on designing interpretives for Polar Passage and Primate Forest that are flexible in design and messaging so they can easily be changed out at little cost and remain current. Zoo staff are doing the same for Rhino Habitat interpretives.

Interpretive Experience and Wayfinding

2017 Findings and Recommendations *with updates*:

- The committee recommends that the interpretive messaging continue to be analyzed and updated to reflect conservation action priorities for the zoo.

Update: In December 2018, zoo staff issued an Interpretive Experience Update report that spells out an Interpretive Framework with strategy and processes to inform interpretive design and keep interpretives fresh, relevant to contemporary conservation concerns and integrated with messaging across the zoo. The Framework is scheduled to be completed in June 2019, but is already being used to inform interpretive design.

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

Update: A report will be provided in the spring of 2019 following a full fiscal year of operations.

- 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.

Update: The Interpretive Experience Update issued by zoo staff in December 2018 outlines the zoo's new process for assessing and maintaining effectiveness of interpretive elements across the zoo, including bond projects. This includes an expanded governance structure with more involvement of zoo leadership via a new Strategic Messaging Steering Committee. This group will also ensure that adequate resources are budgeted to support interpretive development.

- The committee recommends that staff continue to investigate interpretive systems that can be easily changed to display current data and conservation updates.

Update: Throughout design of the interpretives for Polar Passage and Primate Forest, the focus has been on flexible messaging and design that can be easily changed over time. For example, the polar bear identification display will be magnetic so items can be easily changed at little cost.

2018 Findings and Recommendations:

- The committee commends the zoo on its progress in developing an Interpretive Framework and new governance structure to ensure interpretives remain relevant and current.
- The committee recommends that the Interpretive Framework be completed by mid-2019 and shared with the committee.

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, approved to proceed by the Metro Council in 2017, will stand 11 feet tall and be complemented by two cast aluminum benches that capture the playful side of polar bears. Fabrication of the artwork was completed in December 2018. Delivery of the sculpture and accompanying benches is anticipated in 2019; the pieces will be stored locally until their installation toward the end of the construction on Polar Passage.

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 encouraged the zoo to enhance its art condition assessment and maintenance program for its entire art collection, along with the newly commissioned artworks. In December 2018, the zoo issued its Secondary Collections policy that outlines the basic policies guiding the development and care of the zoo's secondary collections – which includes its art collection – in a manner that is consistent with the missions of the Oregon Zoo, Metro and the Association of Zoos and Aquariums (AZA), and modern philosophy and practice of managing such collections in accredited zoo, aquarium and museum environments. The policy addresses the acquisition, care, and use of the secondary collections, and is designed to be both a practical guide for zoo staff and a public document explaining how the Oregon Zoo exercises stewardship of the secondary (non-living) collections assets in its care. A zoo Secondary Collections Steering Committee with zoo leadership has been established to oversee the zoo's art collection and ensure that the artworks are assessed and maintained over time.

OZPAAC held its last meeting in March 2018 and was ended after the Polar Passage commissioned artwork design was complete and in fabrication, a draft of the zoo's Secondary Collections policy was reviewed, and the committee's work had been completed. In December 2018, staff documented the successful OZPAAC and public art process in a draft report: *Oregon Zoo Public Art Advisory Committee Summary Report*. The report is scheduled to be finalized in 2019 and can serve as a model to inform other zoo and Metro public art processes.

Percent for Art

2017 Findings and Recommendations:

- 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.

Update: The zoo completed a Secondary Collections Plan in 2018 that outlined the basic policies guiding the development and care of the zoo's art collection and other nonliving collections, and established a Secondary Collections Steering Committee with zoo leadership to ensure ongoing assessment and maintenance of all the zoo's artwork.

- 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.

Update: The zoo bond staff documented the public art process in a draft report issued in December 2018: Oregon Zoo Public Art Advisory Committee Summary Report. The report is scheduled to be finalized in 2019.

2018 Findings and Recommendations:

- The committee commends the zoo staff on its efforts to create a policy framework and mechanisms that ensure the zoo's art collection and other nonliving collections receive adequate and ongoing attention.
- The committee recommends that the project team continue to coordinate the design, fabrication and installation of artwork for the final zoo bond project over the next two years.

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 were combined into one project and are in progress and scheduled to be completed in 2019. High Point Construction, a woman-owned and COBID certified firm, was contracted to do the work for \$831,598, and represents a 100 percent COBID utilization rate on this project. Zoo Facilities Management continues to direct this work but, due to its complexity and necessary coordination with the Polar Passage/Primate Forest/Rhino Habitat project, oversight is being provided by the zoo bond construction manager.

In 2017 the zoo entered into a contract with Portland General Electric for a Dispatchable Service Generation partnership. PGE agreed to contribute \$576,000 to fund upgrades to the zoo's backup generation system. Unfortunately, the actual cost of upgrading the generators exceeded the PGE contribution, so the plan was abandoned in early 2018 and the planned contribution was removed from the bond program resources.

Electrical Infrastructure

2018 Findings and Recommendations:

- The committee commends zoo Facilities Management and the zoo bond construction team for working together on the Middle Service Road Feeders and Generator Replacement to improve coordination and reduce costs.
- The committee commends the zoo for including in the bond program such a significant investment in infrastructure (including that contained in each project) that supports safety, animal welfare and facility future growth.
- The committee recommends that zoo staff remain open to creative collaborations such as Portland General Electric's Dispatchable Service Generation partnership; however, staff should engage in an early feasibility study to ensure that resources are not expended on an unrealistic project.

REQUIRED REPORTING ITEM 1 | Assessment of Progress

C. Completed bond projects — See Appendix A (page 50)

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, 2018, the allocated resources for all program activities total \$148,378,306. Forecasted revenues total \$152,073,317.

Figure 2

Oregon Zoo Bond Program Budgets and Expenditures

as of December 31, 2018

Project	Project Budget	Project Expenditures	Forecasted Expenditures	% Complete
Master Plan/Land Use Permits	\$ 3,304,011	\$ 3,197,675	\$ 3,197,673	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	\$ 117,863	\$ 117,863	100%
Education Center	\$ 17,699,157	\$ 17,413,724	\$ 17,482,791	100%*
Interpretives/Wayfinding	\$ 2,766,640	\$ 2,523,352	\$ 2,766,640	91%
Percent-for-Art	\$ 843,154	\$ 737,297	\$ 843,154	87%
Program Administration	\$ 7,200,000	\$ 6,119,575	\$ 7,200,000	85%
Electrical Infrastructure	\$ 2,076,600	\$ 1,029,447	\$ 1,500,000	67%
Close-out Contingency	\$ 1,000,000	\$ 27,097	\$ 1,000,000	27%
Polar Passage/Primate/Rhino	\$ 43,802,256	\$ 7,906,859	\$ 43,802,256	18%
Totals		\$ 109,540,818	\$ 148,378,306	
Unallocated Program Contingency			\$ 3,695,011	
Zoo Bond Program Forecasted Revenues			\$ 152,073,317	

*Net-zero energy certification for the Education Center will be completed in 2019 after one full year of operations data is available.

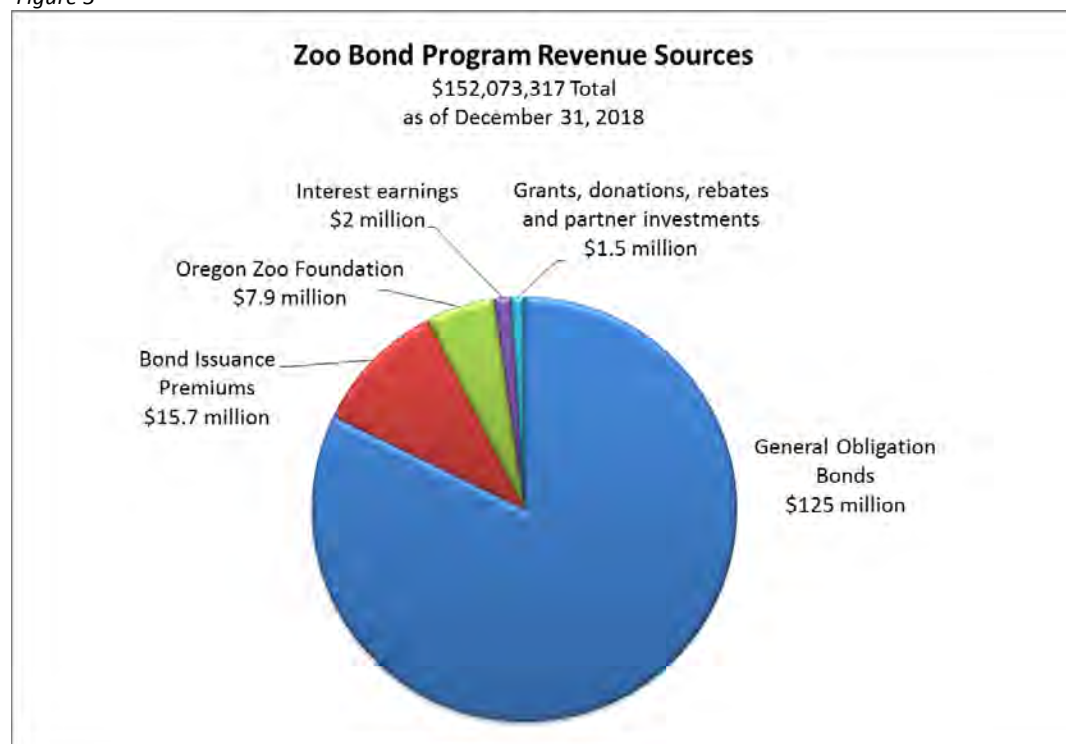
The Comprehensive Capital Master Plan process is complete, as well as construction of the Veterinary Medical Center, the Penguin Life Support System Upgrade project, the Water Main Building, Condors of the Columbia, Elephant Lands, Education Center and the major land use approval processes. These projects and expenditures on the remaining projects in process represent \$109.5 million (72 percent) of the \$152 million total resources. The completed projects were finished on time and within budget.

The planned projects for 2019-2020 include the construction of the new Polar Passage and related infrastructure, and the construction of the new Primate Forest and Rhino Habitat. Following the recommendation of staff and the committee with approval from the Metro Council, these three final projects – Polar Passage, Primate Forest and Rhino Habitat – have been combined to reduce expenditures and are referred to as “PPR” in this section of the report. In addition, the program will complete the final art installation, install the final wayfinding kiosk and upgrade campus electrical infrastructure.

On the advice of bond counsel, in 2018, bond funds were shifted away from the construction of the expanded black rhinoceros habitat. Construction costs for the Rhino Habitat expansion will be fully funded by the Oregon Zoo Foundation, using funds it had previously designated to build the maternity den at Polar Passage (which will not be constructed in this phase). Bond funds that were originally designated for the Rhino Habitat expansion have been redirected back to Polar Passage.

Funding sources total approximately \$152 million and include \$125 million from general obligation bond measure proceeds, \$7.9 million from the Oregon Zoo Foundation, an expected \$1.5 million in grants, donations, and partner contributions, approximately \$2 million in anticipated investment earnings and \$15.7 million from bond sale premium proceeds.

Figure 3



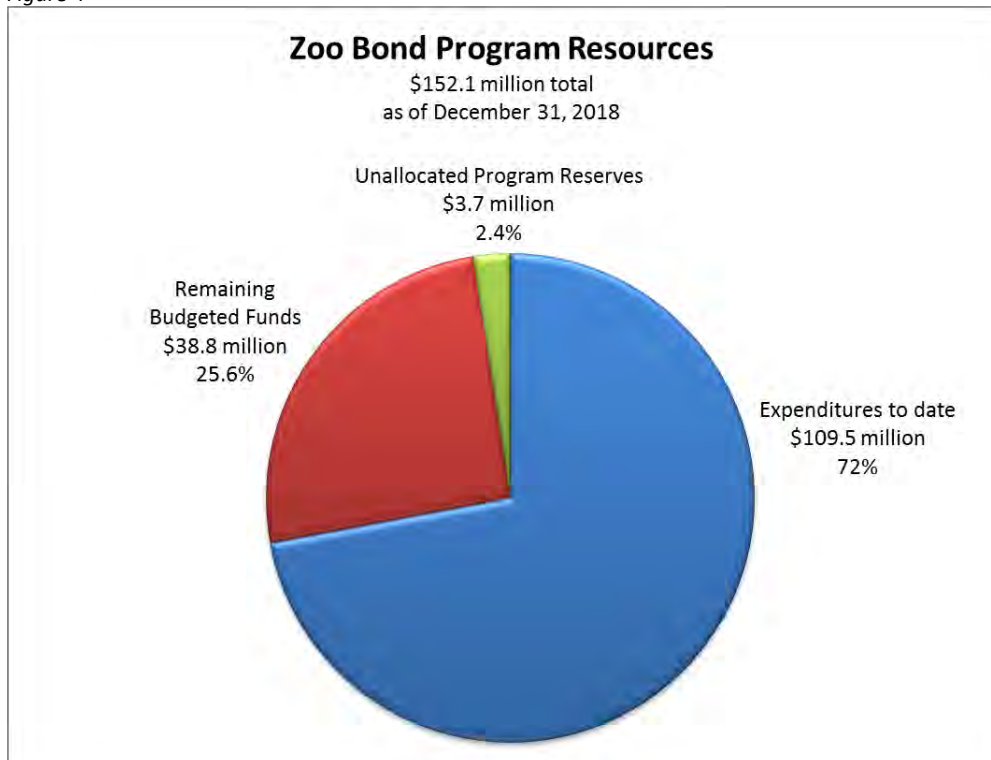
After 2017, \$2.3 million remained that was not budgeted to a specific project and was considered an additional program contingency. In 2018 that grew to nearly \$3.7 million. This program contingency is above and beyond the individual project contingencies, which are built into each project budget. In addition, the program has nearly \$1 million budgeted for close out contingency needs. It is expected that most of the unallocated and close out contingency will be required to complete the Polar Passage/Primate Forest/Rhino Habitat projects.

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 goals, including animal welfare objectives.

Given the construction cost escalation in the region toward the end of the zoo bond program, PPR is the most impacted of all the zoo's projects funded by the bond and is expected to exceed its currently allocated budget even after significant value engineering. The existing PPR project budget is \$43.8 million and the construction portion of that budget is \$33 million.

PPR construction documents needed for permitting and bidding were completed in November 2018, and bids were received in December 2018. Based on the final cost estimate, zoo staff anticipated that bids may exceed the budget for these final projects and before the bids were received, advised the committee of that possibility and presented potential recommendations that the committee may adopt depending on the amount by which the budget may be exceeded. The committee was notified in December that the bids did exceed the budget, but the cost to deliver the project could be addressed with program contingency allowances. Thus, the committee will propose a budget allocation recommendation to the Metro Council that aligns with previously adopted guiding principles for budget decisions.⁶

Figure 4



⁶ On Feb. 7, 2019, the Metro Council considered the Oversight Committee's recommendation and approved Res. 19-4960 allocating \$3,200,000 to the Polar Passage/Primate Forest/Rhino Habitat project and \$1,650,000 to the Program Administration budget, taking the Unallocated Program Contingency to \$0.

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." The committee monitors changes to the cost and budget on an ongoing basis. As of year-end 2018, there were \$4.7 million in unallocated program contingency and close out contingency. These funds are available to support completion of the final projects, as needed.

In December 2017 staff reported that the bond program is on track to meet Metro's requirement to invest 1 percent of direct construction costs in public art. At the time of that report, the eligible direct construction costs through the end of the bond program totaled \$84,955,960, making the 1 percent for art requirement \$849,560. At that time, the zoo bond program forecasted to spend \$991,691 on art commissions and relocation. The investments the zoo bond program will make were expected to 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 were forecast to be \$1,054,532.

Budget and Expenditures

2017 Findings and Recommendations *with updates*:

- The committee recommends that continued rising construction and infrastructure costs be monitored closely during the remaining projects.

Update: Costs continued to rise in 2018, and staff worked diligently to develop contingency plans to ensure projects are completed without sacrificing animal welfare.

- The committee recommends that the zoo consider alternative ways to provide food choices for patrons while eateries are closed for construction.

Update: Food carts have been brought in to provide a variety of dining options for patrons.

- The committee recommends that the zoo have a plan to help offset any reduced cash flow during this final stage of construction.

Update: The zoo's fiscal year 2019-2020 budget is balanced based on conservative attendance estimates. In addition, financial results are monitored throughout the year and operations are adjusted as necessary.

- The committee recommends careful consideration of the Integrated Conservation Action Plan (ICAP) when completed and adopted to understand how costs will be influenced.

Update: The ICAP will help to guide decisions regarding how the zoo prioritizes resources through the annual budget process.

(continued)

Budget and Expenditures (continued)

2017 Findings and Recommendations *with updates*: (continued)

- The committee recommends evaluating options with remaining unallocated funds after the final bond issuance in 2018.

Update: Due to increased construction costs it is likely that any unallocated funds will be utilized to complete the PPR project.

2018 Findings and Recommendations:

- The committee commends zoo staff on careful and strategic value engineering and monitoring of costs during the completion of final projects without sacrificing animal welfare or conservation efforts.
- The committee commends zoo staff for thoughtful planning and discussion around potential bid scenarios for the Polar Passage/Primate Forest/Rhino Habitat project.
- The committee commends the Oregon Zoo Foundation for their support and flexibility with funding the Rhino Habitat and a portion of Polar Passage and Primate Forest.
- The committee commends the zoo bond staff for a continuous history of completing all projects within the allocated budget.
- The committee recommends that the zoo continue to implement alternative food choices for patrons while eateries are closed for construction.
- The committee recommends that the zoo have a plan to offset any reduced cash flow during this final stage of construction.
- The committee recommends staff continue monitoring construction costs and project and program contingencies.

2. Contracting Methods

The program received Metro Council approval to use an alternative general contractor procurement method called the Construction Management by General Contractor (CM/GC) 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 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.

In 2018, the zoo bond team reported on the outcomes of the use of CM/GC for the Education Center. The highlights include the following:

- During the design process and cost estimating, more than \$2.7 million of cost reductions were identified and implemented to align project scope with the budget.
- The CM/GC phased the project to effectively work around the zoo's scheduled activities, reduce impacts on revenue opportunities, and limit overall disruption to visitors (especially given the location at the entrance to Washington Park).
- Metro distributed nearly \$4.3 million to COBID contractors (29.5 percent of the eligible contract dollars), exceeding the zoo bond program's goal of 15 percent utilization.
- This project was a true collaboration with external stakeholders, and the funding sources reflect that. CM/GC provided more flexibility when new funding sources came in (e.g., Portland General Electric funded the increase in solar panels). Ultimately, the additional sustainability investments allowed the zoo to achieve LEED Platinum certification on the project. The Education Center is now generating more energy than it consumes, allowing the zoo to benefit from the additional generation on campus.

Contracting Methods

2017 Findings and Recommendations *with updates*:

- 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.

Update: Alternative contracting methods continue to be a successful and positive use of the zoo's resources.

2018 Findings and Recommendations:

- The committee commends staff and Metro for being receptive to and implementing the use of alternative contracting methods. The outcomes include cost savings, planning to minimize the construction impact to animals, visitors, and staff, flexibility to support innovation and partner fund contributions, and overall problem solving for constructability.
- The committee recommends that alternative contracting methods be considered for appropriate construction projects at the zoo due to its unique geography, visitor presence and animal habitat needs.

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 goals, including animal welfare objectives.

Master Plan Implementation: Cost Projections

2017 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: The cost of construction continues to rise. Staff continues to monitor this closely and provide timely updates to the committee.

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

Update: Staff continues to monitor construction budgets and provide timely updates to the committee.

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

Update: Zoo staff continues to monitor animal welfare standards to ensure compliance. In addition, zoo leaders are actively engaged in planning for future needs.

- The committee recommends continued monitoring of the zoo's conservation priorities for any upcoming changes that could affect project designs, construction or operation.

Update: Conservation priorities were taken into account when completing the final design for the PPR projects.

2018 Findings and Recommendations:

- The Committee commends staff and the project team on their value engineering efforts to address continuing cost escalation without sacrificing animal welfare efforts or program goals.
- The committee commends Metro for reserving program contingency to ensure the final projects could be completed successfully despite the demand in the region's construction market.

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 \$6.1 million (5.6 percent) of the zoo bond program's total expenditures through December 31, 2018. 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 2018 the Oversight Committee was notified that the total administrative costs would increase from a projected \$7.2 million in 2017 to an expected \$8.85 million through the completion of the project – an increase of \$1.65 million. Part of the increase is due to the program running longer than planned and part is due to imprecise projections of administrative costs at the start of the bond program. In preparation for the end of the program, Metro agreed to cap any additional central services transfer increases at \$5.85 million total, which means it will not exceed \$2.2 million going forward from November 2018 when the committee was notified. This agreement provides a high level of confidence that the administrative costs will not exceed \$8.85 million.

Administrative Costs: Cost Projections

2017 Findings and Recommendations *with updates*:

- 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 provided detailed information to the Committee regarding the administrative cost escalation and forecasted budget.

2018 Findings and Recommendations:

- The committee commends Metro for capping central service administrative costs, which provided more certainty to the budget and reallocation process.
- 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.
- The committee recommends that staff complete periodic reviews of other local bond issuance programs to make sure administrative costs continue to be comparable.
- The committee recommends allocation from program contingency for administrative cost projections.

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

2017 Findings and Recommendations *with updates*:

- 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.

Update: Staff continues to monitor costs and provides updates to the committee.

- The committee recommends staff provide the operating outcomes from completed bond projects.

Update: Staff updated the committee on the preliminary operating outcomes of the Education Center following its one-year anniversary. A final operating outcomes report will be provided in the spring of 2019, when one full year of accurate energy monitoring and operations data is available.

- The committee recommends that the zoo prioritize preventative maintenance in the ongoing operation of the new facilities to maximize the lifespan of the equipment.

Update: Contractors provide specialized training on bond-installed equipment, and that training is videotaped for future reference and zoo Facilities staff ongoing training. The zoo Facilities department has instituted a program prioritizing preventative maintenance aimed at maximizing the lifespan of all zoo equipment and reducing emergency repair requests.

2018 Findings and Recommendations:

- The committee carries forward its 2017 recommendation that staff continue to monitor future operating costs of the zoo assuming that as projects mature, costs may change.
- The committee recommends staff provide the operating outcomes from completed projects and the projected cost or revenue impact on the zoo budget from all 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 19, 2018. 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 19, 2018, in the Daily Journal of Commerce, and the audit report was posted on the zoo website. The audit report was also provided to members of the Oversight Committee.

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

As the bond projects reach their final years, modifications from the master plan are occasionally required. In 2018, the modifications were related to cost increases in both the administration and construction areas.

- Due to cost escalation, additional resources will need to be allocated to the Polar Passage/Primate Forest/Rhino Habitat project budget. Exact amounts required will be determined in 2019 after a thorough review of construction bids.⁷
- Add \$1.65 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

⁷ On Feb. 2, 2019, the Metro Council considered the Oversight Committee's recommendation and approved Res. 19-4960 allocating \$3,200,000 to the Polar Passage/Primate Forest/Rhino Habitat project and \$1,650,000 to the Program Administration budget, taking the Unallocated Program Contingency to \$0.

Appendices

A. Background information and completed projects

B. Committee membership

C. Zoo bond program organization structure

Appendix A – Background information and completed projects

As the zoo bond program moves towards conclusion, the committee decided the time was right to make format changes intended to begin transitioning the annual report to a final bond program report when the current projects are completed in 2020. To that end, information about the bond's inception and early planning stages has been added. In addition, information on completed projects has been moved to this new appendix. The committee's goal in making these changes is to assemble a complete picture of the zoo bond process and program and to begin identifying key "lessons learned" that may be useful to Metro and other public agencies when undertaking a significant bond-funded construction program.

1. Introduction: How the zoo bond program started

In 2008, the Portland Metro region voted to invest \$125 million in the zoo to protect animal welfare, increase access to conservation education and improve sustainability. The bond projects were ambitious and extensive, with nearly half the zoo grounds getting an upgrade. Construction spanned a decade, with initial projects taking off in 2010. The last three habitats – Polar Passage, Primate Forest and Rhino Habitat – are scheduled to open in 2021.

Even an undertaking of this magnitude starts as a small spark. For two years the 21-member volunteer Oregon Zoo Foundation Board worked with zoo leadership, the Metro Council, zoo veterinarians, animal biologists and scientists, and community leaders to develop a plan for the future of the zoo. The Oregon Zoo Future Committee, led by a Metro councilor and the zoo director, dug deep to conduct strategic plans, commissioned early opinion polling and conducted interviews and briefings with key constituents.

This early work turned up a consistent theme – the people of the Portland region wanted animals at the zoo to have the best habitats possible. And this theme was well-grounded. The zoo had many ageing facilities that reflected decades-old standards of care or required unsustainable levels of maintenance.

- At nearly 50 years old, the Association of Zoos and Aquariums had noted the zoo's veterinary hospital and quarantine facilities were substandard and deficient.
- Built in 1959, the elephants' indoor and outdoor spaces were worn, cramped and out-of-date.
- The Polar Bear habitat was built when the primary objective was containment of the bears. As a concrete bowl, it became scorching hot in summer and did not provide a sufficient amount of enrichment opportunities.
- Similarly, the Primate area was originally designed to be easy for the keepers to clean and no longer met current standards for primate engagement or a stimulating environment.
- Out-of-date water filtration capabilities for the hippo and penguin habitats wasted more than 11 million gallons a year, and were woefully out of sync with the sustainability values and financial stewardship responsibilities of Metro.

In November 2008, Measure 26-96 was approved by voters: Yes 195,652 (59.72 percent); No 131,985 (40.28 percent).

The following sections describe each of the completed zoo bond projects and an early advisory group's role.

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2. Oregon Zoo Bond Advisory Group

The Oregon Zoo Bond Advisory Group (OZBAG), though not a bond-funded project, played a pivotal role in early planning. Following passage of the zoo bond measure in November 2008, OZBAG was established to make recommendations to the zoo bond program manager regarding planning and implementation surrounding the planning, permitting, contracting and construction activity reflected in the zoo bond measure. The group consisted of five external members, eight staff and two Metro Councilors, and were appointed by the Metro deputy chief operating officer. Members were recognized experts in their fields, including real estate law, financial management, facility management, and facility planning and construction management.

OZBAG provided professional, prospective guidance regarding how to move forward with specific project issues, especially related to land use and the Comprehensive Capital Master Plan preparation. The legal land use expertise on OZBAG proved critical in advising the bond program on the best way to negotiate the land use process. OZBAG helped the program develop a successful strategy that resulted in no appeals and no delays to construction. The group met 18 times over four years from July 2009 to June 2013, when it had completed its work advising on the land use process.

Oregon Zoo Bond Advisory Group

Lessons Learned:

- OZBAG assisted greatly in steering Metro on land use decisions related to the conditional use master plan (CU MS) and was valuable in weighing various land use strategies. Because land use actions are often complex, a lesson was learned about the benefit of engaging an expert group like OZBAG early in the process to navigate the land use permit process.

3. 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.

4. Comprehensive Capital Master Plan, 2011

Developing a Comprehensive Capital Master Planning (CCMP) was a crucial element in helping to ensure efficient and effective use of bond proceeds. Metro issued a Request for Proposals in April 2010 for an

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interdisciplinary consulting team to complete a CCMP for the remaining zoo bond improvements⁸ funded by the \$125 million bond. Bond program staff received compliments from external parties on a well-written RFP, and their hard work paid off. A multidisciplinary team was selected for this work:

- SRG Partnership (prime consultant; architecture and management)
- CLR Design (zoo planning and exhibit design)
- Atelier Dreiseitl (landscape, planning and sustainability)

The consultant team was charged with developing a 20-year campus plan encompassing bond-funded projects as well as future phases that did not have an identified funding source. Metro expected the consultant team to balance schematic designs for the specific bond projects, sustainability initiatives and infrastructure improvements with available bond resources.

In addition to a sweeping scope, one challenge for the consultant team was to develop a plan within the realities of the site itself. The zoo campus slopes and unstable soils are important considerations. The consultant team mitigated the soil concern by working with geotechnical engineers that had a 20-year history of work on the zoo campus.

Primary consultant team work with Metro staff occurred at six CCMP workshops, each scheduled for three days duration. Metro established zoo stakeholder teams for each major bond project to test the consultant team's concepts and draft plans. Following the workshops, the consultant team reviewed and advanced the top-most siting and concepts. To provide public outreach and an opportunity for comment on the CCMP, the program held five open houses in April and August 2011.

In addition, the program used Metro's innovative online opinion panel, Opt In, to communicate draft plans and to seek opinion on various planning options and received more than 4,400 responses. Respondents indicated they were in favor of implementing the bond construction over a longer period of time, keeping animals on site, and maintaining the zoo guest experience, rather than doing the construction in a shorter period that would hinder the guest experience and require more animals to be moved offsite. Respondents also indicated they were in favor of substituting improvements to the rhino habitat instead of the hippo habitat as listed in the bond measure, since it would save large amounts of water and energy and promote conservation of the endangered black rhino.

As a major stakeholder in the future of the zoo, the Oregon Zoo Foundation (OZF) director and key staff were directly involved in the CCMP process. In addition to attending master planning sessions, OZF staff contracted for a development plan that relied on information from the CCMP.

Several significant changes and challenges included:

- **Removal of hippo project:** Through careful assessment of zoo capacity, funding and animal welfare needs, the zoo decided to remove hippos from the zoo collection and therefore remove the hippo filtration project, and instead added the Rhino Habitat project.
- **Train Route:** The expansion of the elephant exhibit necessitated changes to the zoo train route. As a favorite experience for zoo guests, this project necessitated careful planning. The consultant team proposed five alternate route options.

⁸ The Penguin Filtration and Veterinary Medical Center (VMC) projects were begun before the new Conditional Use Master Plan and the Comprehensive Capital Master Plan were complete because the VMC land use was approved under the zoo's prior Conditional Use Master Plan and the Penguin Filtration project is a mechanical upgrade that was not dependent on a land use decision.

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In the end, the CCMP provided:

- Analysis, recommendations and a strategy for Metro to implement the specific bond projects, as well as sustainability initiatives and infrastructure improvements. This included refining project scopes through schematic design.
- An overall schedule for all projects based on the optimal project sequencing, timing and estimated duration. This plan included a schedule for each project.
- An overall bond budget and financing plan with cost estimates for each project based on schematic designs.
 - Contingencies were included based on the proposed site and complexity of each specific project. The plan included direct, indirect and overhead costs; construction cost inflation; and assumed timing for cash in- and out-flows.
 - The financing plan assumed no outside funding sources and was developed from a conservative mindset. This allowed any outside funds to be used for scope enhancements and not critical (base) project elements

The CCMP was completed and approved by the Metro Council in September 2011. The CCMP development expenses totaled \$1.7 million, or just under the established budget. The CCMP provided a clear blueprint for the process to realize bond goals.

Comprehensive Capital Master Plan, 2011

2018 Lessons Learned:

- The Comprehensive Capital Master Plan process was a deeply engaging process drawing on the expertise of zoo and other Metro staff and visitors' experience to envision a new zoo for people and animals. The CCMP took ideas and made them themes, then took themes and made them into schematics. Decisions made through the CCMP effort have direct land use implications. The lesson learned is to conduct a CCMP first; running the CCMP and Conditional Use Master Plan/Land use permit efforts concurrently created some delays in the land use permit work.

5. Land Use, 2012-2013

The Oregon Zoo operates as a conditional use within the City of Portland's Open Spaces zoning designation. Conditional uses are uses that may be allowed by the city in a base zone in which they are otherwise not permitted, so long as certain conditions are met. As an institution that is more or less continually redeveloping, the Oregon Zoo must obtain a longer-term process approval through the City of Portland's 10-year conditional use master plan (CU MS). The conditional use CU MS serves as the guiding land use and development master plan for the Oregon Zoo. The city originally approved a CU MS for the zoo in 1997, which remained in effect until 2013. By 2010, all of the projects originally identified

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in the 1997 plan had been completed or were in the process of being completed, thus necessitating a new conditional use master plan.

Early in the land use application process in 2010, Metro staff requested that the city consider other land use approaches, such as re-zoning the property to a less restrictive base zone or creating a Plan District, but after several meetings with city commissioners and senior city staff, it was determined those alternatives were unacceptable or infeasible.

The CU MS effort was led by Metro staff and the Office of Metro Attorney, and was supported by a multidisciplinary consulting team. An aggressive timeline estimate of two years was initially set to complete the process. Several known nonconforming land uses and high-priority issues were identified early on, including multimodal access and parking (including bicycle parking and parking lot landscaping), environmental impacts, and stormwater management. Given the complexity of these issues, staff recognized that timing of land use approvals could pose a threat to project construction schedules.

Concurrent with the CU MS process, a consultant team prepared the Oregon Zoo's new Comprehensive Capital Master Plan (CCMP) (additional context provided about the Master Plan in the next section). The Master Plan provided increased detail around project scope, sequencing, sustainability initiatives, and general campus infrastructure improvements and served as the basis for the final CU MS application for City of Portland approval.

Though the work of the CU MS and CCMP planning process, Metro decided to address land use requirements in three distinct phases to reduce risk to project timelines from possibly delayed land use decisions and, in the case of the West Parking Lot, to seek approvals with appropriate property owner partners. The three phases were:

- **Phase I Amendment to the prior CU MS:** To maintain the program's construction momentum, Metro asked the city to allow work to proceed on the Elephant Lands project and the Condors of the Columbia project under the prior CU MS. One challenging aspect of this amendment was the Elephants Lands expansion into the environmental zone on the northeast side of the exhibit. Though filed three months behind schedule, this amendment was approved in March 2012.
- **Phase II New Conditional Use application for the West Parking Lot:** Up to this point, the West Lot did not have legal land use standing with the city. The West Lot land use application was for permanent use of the area as parking. This separate West Lot application allowed for the zoo and its neighbors to focus on this discrete topic without jeopardizing timelines for other zoo bond projects. This application was approved November 2012.
- **Phase III New CU MS:** The new Conditional Use Master Plan laid out the growth plan for the next 10 years - for the remainder of the specific bond projects and the overall master plan improvements. The CU MS reflected the needs of the bond projects as articulated in the Comprehensive Capital Master Plan and encompasses site planning and boundaries, current and future uses, development standards, and projected transportation and parking impacts. Though originally expected to be submitted the fourth quarter of 2011, the application for the new CU MS was submitted August 2012 and approved January 2013.

Concurrently with the CU MS process, the zoo was faced with the pending expiration of the zoo's 30-year lease of the Washington Park parking lot. Though the zoo attempted several times to negotiate

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a revival of the parking lot lease, the city was unwilling to do so. The confluence of the CU MS process with the return of the management of the parking lot to the City of Portland Parks & Recreation department had ramifications for institutions beyond the zoo itself. Extensive partner and public engagement by the zoo resulted in the following changes:

- Parking management responsibilities were turned over to Portland Parks & Recreation
- 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.

The CU MS was a necessary but time-consuming effort: Metro assessed and changed tactics early on in the process, the city replied to each application with questions and seeking additional information and the consultant team facilitated extensive engagement with other entities present in Washington Park, adjacent neighborhood associations, and city and state partners. In the end, the land use process built a good working relationship with neighbors, established a whole new way of working with Portland Parks & Recreation, and prioritized improvements to Washington Park guest experience through the specific focus on coordinated access and parking. This process became a way to think systematically about all of Washington Park.

Throughout, the Oregon Zoo Bond Citizens' Oversight Committee took a keen interest in this project to ensure the risk-appropriate level of resources were dedicated to achieving the necessary approvals.

Land Use, 2012-2013

Lessons Learned:

- The Conditional Use Master Plan and land use permit was a necessary but time-consuming effort. This was in part due to the change in approach from creation of a Plan District to a zoo-specific Conditional Use permit. The lesson-learned is to have the land use strategy more concretely understood or decided before entering the bond implementation window.
- The Conditional Use Master Plan process became a way to think systematically about all of Washington Park. Through the zoo's leadership, many long term changes began to take shape that not only improved the experience of all Washington Park visitors, but brought benefit to and strengthened the ties between all the institutions housed in the park. This foundation of collaboration and mutual support will serve the zoo and other Washington Park entities well as they consider future development and growth.

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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.

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

7. 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 percent⁹ COBID utilization rate. Five percent were emerging small businesses, 4 percent were women-owned businesses, and 1 percent were minority-owned businesses.

8. Condors of the Columbia, 2014

Condors of the Columbia officially opened to the public in May 2014. Construction was completed on an 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.

⁹ Metro'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 Equity in Contracting report.

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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.

9. Elephant Lands, 2015

Elephant Lands is the largest project the Oregon Zoo has ever developed. Construction of Elephant Lands and associated projects covered approximately 35 percent of the zoo grounds and lasted approximately three years. Associated projects included: 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 a new campus geothermal loop to reduce the use of fossil fuels for heating and cooling. In recognition that elephants are the Oregon Zoo's signature species, Metro prioritized the on-site 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.

Two totem poles were displaced in the construction of Elephant Lands, creating 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 in October 2014 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.

The Elephant Lands project was completed using a Construction Management/General Contractor (CM/GC) alternative procurement approach. 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 5 percent of the guaranteed maximum price, due to the CM/GC working with the design team to fill in any gaps in the drawings prior to bid. The project was divided into four distinct phases, which allowed each phase to be designed, permitted and competitively bid out to subcontracting firms early in the design process rather than waiting for the whole design to be complete. An early phase included the construction of a new service road that enabled contractor teams to access the area without navigating trucks and construction equipment through congested visitor areas. Early bidding produced substantial savings in the robust construction cost escalation market. It also shortened the construction schedule. Hiring the CM/GC early in the process helped to set up the work so that visitor interactions and other revenue-generating events proceeded without construction interference. The most beneficial aspect of phasing was allowing the elephants into the first new habitat to test design

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features prior to construction of the other habitats. This saved time and money by identifying structural design changes, prior to material being ordered and additional structures being erected.

Elephant Lands has been awarded 17 awards for design, construction and sustainability, including the 2016 TopProject of the Year award from the Daily Journal of Commerce, the Associated General Contractors' Skill, Integrity and Responsibility award in 2017, and the Association of Zoos and Aquariums' Excellence in Exhibit Design award, a significant recognition from zoo peers. The elephant buildings and site earned Leadership in Energy and Environmental Design (LEED) Gold certification. The primary funding source for the Elephant Lands project is from general obligation bonds approved by voters as part of the Oregon Zoo's bond measure in 2008. The Oregon Zoo Foundation also contributed \$3.4 million to the project.

Animal Welfare – The Elephant Lands project significantly expanded the elephant habitat, from 1.5 acres to six acres. The site includes Forest Hall and the Elephant Barn, the North Meadow Habitat, Encounter Habitat and the South Habitat. It is designed to encourage activity, promote a diverse range of natural behaviors, offer increased opportunities for choice and social interaction, and provide biologically meaningful challenges for Asian elephants at the Oregon Zoo. Elephant Lands offers flexible space with a variety of features to seek out and interact with, more choice, an increased level of self-directed control over their daily lives, and the opportunity to live in multigenerational matrilineal groups, which bulls can join occasionally as they would in free-ranging populations. The elephants cannot see the entire space from any one vantage point and get exercise simply by maneuvering through it.

A diversity of feeding methods provides foraging opportunities 14-16 hours per day, which more closely mimics the grazing habits of free-ranging elephants. Throughout the habitat, timed feeders release food at programmable intervals, overhead feeders require elephants to stretch and sometimes climb on logs, concrete herd feeders require reaching down, and other puzzle feeders demand manipulation to acquire food. The expanded habitat size allows for increased walking distances, and the hilly terrain, climbing features, and varied surfaces – including deep sand, hills of dirt, patches of grass and clay – provide stimulation and physical challenges. The habitat includes a 160,000 gallon pool big enough for the whole herd, a wading pool and a water cannon, which makes mud wallows. State-of-the-art heating and ventilation systems with open doors allow the herd to move inside and out as they please.

In order to evaluate the effectiveness of Elephant Lands in promoting animal welfare, the zoo research staff designed a four-year study, beginning in September 2012 before construction began, and ending in December 2016, one year after the new exhibit opened. Comparing the elephants' behavior and hormones in the old habitat, during the transition, and then in the new habitat allowed the zoo to monitor the welfare of the herd during the process and measure the impact of the new environment. Welfare indicators included distance walked through global positioning system (GPS) monitoring, reproductive and adrenal hormone analyses, and detailed behavior assessments.

Distance walked was measured with GPS data loggers worn as anklets on two females and two males for 24-hour periods, approximately every two weeks from June 2014 to December 2016. The results show that in Elephant Lands, elephants walk at least as far and possibly farther than their wild counterparts on a daily basis, and are utilizing the entire habitat regularly. In their new habitat, their movement is more self-directed; they have more choice and control.

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The study also monitored adrenal activity, an adaptive response to a real or perceived stressor in which a suite of physiological and behavioral changes occur to help deal with the stressor and re-establish equilibrium. In addition, the on-going monitoring of reproductive hormones in both males and females continued during the study. All adult females in the herd continued regular cycling throughout the construction phase and in the new Elephant Lands habitat, indicating normal reproductive health for the herd in all phases of the project. All individuals exhibited the greatest variability in their adrenal activity during the periods of major changes, suggesting adaptive and normal adrenal responses to life changes, challenges and excitement.

The behavior study assessed Elephant Lands' effectiveness in providing increased opportunities for choice (social, food source and resource use), increased activity and increased opportunity to express natural behaviors. Measurements of behavior included activity budgets (proportion of time spent performing behaviors), proportion of time performing active vs. inactive behaviors, proportion of time in proximity of other elephants, and relative usage of resources in their habitat. Data was collected by video using a team of volunteers and coded onto data sheets.

Results of the behavioral study show increased activity; increased foraging; and increased choice and control over their environment, including with whom they spend time and how they interact socially. The elephants in Elephant Lands are exhibiting a diverse range of natural behavior and social dynamics of a healthy herd.

The ultimate goal for Elephant Lands is for each elephant to exhibit a full range of natural behaviors, living in a social, stable, multigenerational, matrilineal herd that is regularly integrated with bull elephants in a manner that meets or exceeds their biological, social, physiological and psychological needs. The results of the animal welfare study are gratifying. The zoo is achieving its goals with Elephant Lands.

Conservation Education – Artwork, 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

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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 14). Results of this summative evaluation demonstrate that the Oregon Zoo is effectively achieving 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, 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 contribute to a positive visitor experience. Forest Hall gives visitors an up-close look at elephants through visuals, sound and even odor, while offering an inviting space to warm up, dry off or have a snack. Interpretives about conservation issues such as elephant-friendly palm oil and the ivory trade invite visitors to become engaged. Sixty-six percent of those surveyed said they were more likely to urge companies to switch to wildlife-friendly palm oil. Focus group participants who voted to support the bond measure that funded Elephant Lands are satisfied that their taxes were well-spent and said they are willing to continue financial contributions to support additional habitat improvements. Whether comparing it to the old Oregon Zoo elephant habitat or exhibits at other zoos, there was consensus that Elephant Lands was superior.

Conservation education is also provided through the daily keeper talks at Elephant Lands, which are extremely popular. Volunteer Zoo Guides and Zoo Teens also provide interpretive talks. Finally, camp experiences that feature Elephant Lands have proved extremely popular in the Zoo Camp programs.

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 the 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 Portland Business Journal 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 was 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 in the Elephant Lands project 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

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more space for the elephants and offer better views of the animals. Local food carts are featured in Elephant Plaza, contributing to the local economy, increasing revenue and providing visitors with more diverse food offerings. A souvenir outlet is located at the top of the concert lawn, and restrooms plus a modern nursing room were added to Elephant Plaza, with additional restrooms in Forest Hall.

The Elephant Lands Operating Outcomes Report, May 2018, discussed some challenges, highlights, and lessons learned in the first two years of operating Elephant Lands. In order to properly maintain Elephant Lands' new mechanical and electrical systems, the zoo's Facilities division added a new position – controls engineer – to handle the complex building automation systems. This provided the chance to tune up the operation of life support systems and modify some processes to save energy. The zoo has also recognized the value of standardizing equipment across the zoo in new projects and in the replacement of assets.

Elephant Lands was constructed with a number of sustainable features. The pools are on target to use 86 percent less water than the old pools – a decrease of over 13 million gallons of water annually. Water use and conservation are being managed by the automated backwash recovery system. The solar photovoltaic array on Forest Hall's roof generates around 34,000 kilowatt-hours a year. A solar hot water system preheats water for elephant bathing and other uses. Louvers on the walls and roof of Forest Hall reduce the energy needed for fans by about 75 percent.

The Elephant Lands project provided many lessons for the remainder of the bond-funded projects. One lesson learned is the recognition that some of the features that achieve water conservation require significant energy to operate. Another is the importance of designing for flexibility in anticipation of change in operating needs over the life of the facility. And new systems have implications for staffing.

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.

The General Contractor performed extensive outreach to Minority, Women, and Emerging Small Business (MWESB at the time, now referred to as COBID¹⁰) firms. The General Contractor also mentored numerous minority and women individuals through apprenticeship and office intern programs. One minority subcontractor, R&R General Contractors, was mentored through the RFP response and interview process for Elephant Lands. R&R was subsequently selected to construct the zoo's temporary picnic area valued at approximately \$500,000, and through the bid process, R&R was awarded the train track relocation scope of work valued at \$1.2 million. Mentoring R&R proved to be successful in that they have responded to and have been awarded projects from other agencies through the RFP process on their own accord.

¹⁰ 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.

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Elephant Lands

2017 Findings and Recommendations *with updates*:

- The committee carries forward its 2016 recommendation that staff share publicly the outcomes of the elephant welfare studies when data analysis is complete.

Update: The outcomes of the four-year elephant welfare study were shared with the committee and the public in 2018. The ultimate goal for Elephant Lands is for each elephant to exhibit a full range of natural behaviors, living in a social, stable, multigenerational, matrilineal herd that is regularly integrated with bull elephants in a manner that meets or exceeds their biological, social, physiological and psychological needs. The results of the animal welfare study are gratifying. The zoo is achieving its goals with Elephant Lands.

2018 Findings and Recommendations:

- The committee commends the Oregon Zoo director and staff for the Elephant Lands Operating Outcomes Report, especially the insights of lessons learned.

10. 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 other 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 on-site 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.

11. Education Center, 2017

The Education Center opened on March 2, 2017. It is the fifth project to be completed under the \$125 million bond measure approved by voters in 2008 to enhance animal welfare, conservation education and sustainable infrastructure. It is a highly interactive facility that provides multiple avenues for learning about nature and conservation. The new buildings provide much-needed dedicated spaces for educational activities and programs that engage thousands of Oregon Zoo visitors each year. The Education Center includes the Nature Exploration Station (NESt), the Backyard Habitat, Insect Zoo, the

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Species Conservation Lab where western pond turtles are being raised for release, classrooms, teen space, a flexible events space, a café, offices and tent pods. More than 3,600 people in the metro region were involved through online and site surveys in determining key interpretive themes and potential activities.

Construction began in September 2015 and 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 (CM/GC). The CM/GC allowed zoo staff and the project architect to work with the general contractor early in the design phase, reducing both construction costs and the project timeline, as well as mitigating negative impacts to visitors and surrounding neighbors during construction. The CM/GC contract with Fortis Construction included Early Work Amendments (EWAs) for two purposes: to manage construction cost escalation and to expedite the construction schedule by approving early site work while the building permits were under review with the City of Portland. The first two EWAs included the construction of a new underground storm line (80 percent funded by the City of Portland) and the remaining bond-funded project-specific work (demolition, grading, utilities, asphalt paving, etc.). The third EWA was executed to begin construction of the Nature Exploration Station, the classroom building and train station based on the building construction bid package. Phasing construction allowed the CM/GC to effectively work around the zoo's scheduled activities, reduce impacts on revenue opportunities and limit overall disruption to visitors.

The primary funding source for the Education Center project was the general obligation bond approved by voters as part of the Oregon Zoo's 2008 bond measure. However, one goal of the project was to leverage the bond investment for the public by creating partnerships. The train station, which was built as a part of the Education Center project, was funded by Oregon Zoo operations. The City of Portland primarily funded the design and installation of the South Entry underground storm water pipe. A PGE Renewable Development Fund grant provided the zoo an opportunity to expand the solar array system onto all three buildings: The Nature Exploration Station, the classroom building, and the train station. The project was a true collaboration with external stakeholders and the funding sources reflect that. The Oregon Zoo foundation contributed \$488,000 for interpretive elements installed throughout the Nature Exploration Station and \$170,000 for the Species Conservation Lab. Metro Parks & Nature contributed \$65,000 for the development and installation of the Metro Parks Finder touch screen monitor in the Nature Exploration Station. Metro Solid Waste provided \$129,294 for the Backyard Habitat interpretive elements and the Wildlife Garden sculptures.

The Education Center has earned several sustainable design accolades. It achieved Leadership in Energy and Environmental Design (LEED) Platinum certification from the US Green Building Council, the highest level of certification available. And in November 2018, the Portland Chapter of American Institute of Architects awarded the Architecture 2030 Award to Opsis Architecture and the Oregon Zoo, in recognition of their effort to reduce the use of greenhouse gas emitting fossil fuels (net-zero energy operations) in the Education Center design. Other awards, include the 2017 DJC TopProjects Energy Trust of Oregon High Performance Building for New Construction Award, the 2017 DJC TopProjects People's Choice for Public New Construction, and the Engineering Excellence 2018 Grand Award from the American Council of Engineering Companies of Oregon.

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Animal Welfare – The Education Center provides new improved facilities for the invertebrate collection at the Insect Zoo and western pond turtles at the Species Conservation Lab. In addition, the Nature Exploration Station's message of taking small actions on behalf of wildlife benefits animal conservation and welfare worldwide.

Conservation Education – The new zoo educational curriculum, developed in alignment with Metro's environmental literacy framework, was launched with the opening of the Education Center. The Metro framework is connected to national science education standards and is the source of the interpretive vision for the Education Center, "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.

Each year, 95,000 kindergarten through 12th-grade students visit the zoo, and many attend zoo classes, which meet state science standards. Every third-grade student in our region's Title I schools is invited to participate in a zoo field trip and an interactive live animal classroom program presented at the zoo (ZooSchool) and funded by the Oregon Zoo Foundation. In 2018, 6,000 third-grade students participated. The Education Center also accommodates the 3,500 students that attend zoo day camps, one of the largest day camps in the metropolitan area.

The Education Center added seven new classrooms (four dedicated rooms and three spaces within Conservation Hall). These include an early-childhood space and a dedicated lab space for middle and high school students. Classroom garage doors open to provide a connection to the outdoors. Two new tent pods were also added. Conservation Hall, with seating capacity for 150 people and state-of-the-art audio-visual equipment, hosts lectures and documentary screenings. People attending events are able to access the adjacent Nature Exploration Station, the main interpretive space. The sustainable features of the building are evident on Green Living Signs, as well as visible through the interactive sustainability dashboard exhibit.

The Education Center is a place where regional conservation education partners connect with each other and the community. Oregon Zoo has 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 provide content and resources for

Appendix A – continued

programs and exhibits on natural gardening, waste reduction and sustainability. Oregon State University Master Gardeners support the Wildlife Garden to foster awareness about backyard habitats. Dozens of additional partners participate in a partnership and programming advisory group. The Education Center design process included input from a variety of sources. Metro Sustainability Center provided feedback on addressing diverse audiences in messaging and visitor experiences. Thirteen local school districts and more than 14 conservation education groups gave feedback on the design. Zoo visitors were invited to give feedback on early design plans, and 3,600 people responded to a public Opt In online survey on how to best connect with and benefit nature.

In the first seven months of operation, 10,000 zoo visitors visited the Wildlife Garden for tips on making backyards more wildlife-friendly, partner organizations engaged with more than 20,000 guests at the Education Center, and a number of regional associations held meetings and symposia there. Camp enrollments and revenues were up and café sales and catering revenues exceeded projections by \$200,000. The results of a summative evaluation of the Education Center will be shared in Spring 2019.

In November 2018, the zoo Secondary Collections Management Policy was approved. It outlines the basic policies guiding the development and care of the zoo's secondary (non-living) collections in a manner consistent with the missions of the Oregon Zoo, Metro and the Association of Zoos and Aquariums, and the philosophy and practice of managing such collections in accredited zoo, aquarium and museum environments. The Educational Collection, which is used in on-site programs including volunteer interpretive stations, camps, and classes is covered by this policy, ensuring these items will be properly managed, protected and preserved.

Infrastructure and Sustainability – One of the goals of the Education Center project was to improve zoo operations, and to that end the Tiger Plaza structures were demolished. This is a portion of infrastructure work identified in the Master Plan to address stormwater and aging site utilities. Another goal was to generate revenue to offset operation costs through retail food sales and catering and to provide additional revenue generating space. The Education Center includes the new Discovery Plaza, with train ticket sales, Coffee Crossing Café and infrastructure connecting Elephant Plaza and Central Plaza. Zoo catering shares new space in the Education Center.

The Education Center is a “building that teaches” with sustainable elements prominently on display. Green Living signs and a sustainability dashboard interpret the resource conservation efforts and outcomes of the new facility to visitors. 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 developed a partnership with SolarWorld, the largest U.S. manufacturer of solar panels and a leader in solar technology, to provide solar panels at cost. Funding from Portland General Electric's Renewable Development Fund supported the expansion of the solar panel installation to help seek a net-zero energy operations certification for the NEST building, along with visitor and revenue-generating amenities for Discovery Plaza. Offsets from solar arrays went to the project contingency fund. Net-zero energy operations certification requires twelve months of data collection; results will be available in 2019.

Diversity in Contracting – The zoo bond program greatly exceeded its 15 percent target for contract expenditures awarded to COBID firms. The project closed with a 29.5 percent COBID utilization rate,

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based on COBID-eligible construction contract spending, and represents \$4.26 million paid to COBID-certified firms. The Education Center design team led by Opsi Architecture had a COBID utilization of 8 percent. Some of the success can be attributed to the use of CM/GC procurement. With CM/GC, the contractor can begin recruiting COBID-certified firms earlier and have more time to help them be ready by bid day. Breaking down the bid packages for subcontractors makes the packages more suitable for smaller firms to bid. And additional recruitment techniques can be used. For example, Fortis Construction, the Education Center CM/GC, hosted two recruitment workshops on site before bid day.

Education Center

2017 Findings and Recommendations *with updates*:

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

Update: Zoo staff are operating the Education Center in a way consistent with conserving electricity. As an example, an operational decision was made to keep the doors of the NEST closed to conserve electricity used for heating and cooling. Additionally, the classrooms open the garage doors when the passive cooling lights come on indicating it is efficient to do so.

2018 Findings and Recommendations:

- The committee carries forward its recommendation that the Education Center continue to be operated in a way that optimizes net-zero energy goals while achieving other program goals.
- The committee recommends that the Education Center continue data collection on energy use in order to achieve the International Living Future Institute (ILFI) zero energy bond certification.

Appendix B – Committee Membership

Susan Hartnett – Committee 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 but is planning partial retirement in early 2019. 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.

Emma Stocker – Committee Vice Chair

Emma Stocker is an emergency management professional with more than 10 years of experience in multihazard emergency management, specializing in higher education and campus environments. She developed a background in natural hazards planning, public policy, public involvement and social research through consulting and public sector positions in Portland and Eugene, including one year as an interim policy coordinator in the Metro Council Office. Stocker currently serves as director of emergency management at Portland State University. She has a master's in public administration (University of Oregon) and a bachelor's in sociology (Reed College).

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.

Naomi Bishop

Naomi Bishop is a professor *emeriti* of anthropology at California State University, Northridge. A physical anthropologist with a specialization in primate behavior and ecology, Bishop's research focuses on the behavior and adaptations of both langur monkeys and humans to the high altitude environment in the Nepal Himalaya. Zoo observation projects have been an essential element in her teaching. Bishop has been a department chair and interdisciplinary program leader at both the University of Massachusetts Boston and California State University, Northridge, and has written and directed multimillion dollar grant projects in teacher education. She received an American Council on Education Fellowship in academic leadership for 2003-4, which was spent at Portland State University. She has a Ph.D. in anthropology from the University of California, Berkeley.

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Laurel Brown

Laurel Brown has served as the assistant director of property management and zone maintenance at Portland State University since 2013, overseeing facility operations and maintenance of 29 buildings, including housing residences, a hotel, a student union and parking structures. She develops and administers 10 separate operational budgets totaling \$16 million and average annual capital expenditures of \$4.6 million. Previously she was a project manager with Ellis Ecological Services in Estacada, Oregon where she led environmental monitoring during construction activities for diverse clientele. Earlier, she was a front desk manager at Hart Road Animal Hospital in Beaverton and prior to that, managed her own property maintenance company in Portland for multiple property owners. She earned a B.A. in biology from Drury College in Springfield, Missouri.

Heidi Goertzen

Heidi Goertzen is a financial planner at Becker Capital Management providing comprehensive wealth management and financial planning to clients. She previously worked as a wealth advisor at Confluence Wealth Management doing financial planning and investment management for clients. Prior to that, she served as chief compliance officer for Ferguson Wellman Capital Management, overseeing all company compliance policies and procedures. Goertzen began her career at RVK, Inc. working with large institutional clients. She earned a B.S. in finance from Linfield College and holds an MBA with a concentration in finance from the University of Portland's Pamplin School of Business.

Cynthia Johnson Haruyama

Cynthia Johnson Haruyama joined the Portland Japanese Garden in 2012 as Deputy Director, working with the CEO and Board of Trustees to plan and implement major strategic initiatives, including the Cultural Crossing project that opened in 2017 with five acres of new gardens and four buildings designed by world-renowned architect Kengo Kuma. Previously, Haruyama served as Executive Director of Lan Su Chinese Garden and Hoyt Arboretum. Prior to that, she practiced corporate and business law with Davis Wright Tremaine. She currently serves as Board President of Explore Washington Park and was a founding member of the Washington Park Alliance. She received her undergraduate degree from Princeton University and her law degree from Columbia University.

Daniel C. Hauser

Daniel C. Hauser is a policy analyst for the Oregon Center for Public Policy where his research and advocacy addresses tax and housing policies. Throughout his career, Hauser has often focused on how various revenue structures, from income taxes to bonds, can be designed to address efficiency, adequacy and progressivity. He was previously selected as a Hatfield Resident Fellow at Portland State University's Center for Public Service and has worked at the Association of Oregon Counties as a Transportation Policy Analyst. Hauser holds a master's degree in Public Policy from Oregon State University. He also serves as the vice chair of Washington County's Urban Roads Maintenance District Advisory Committee.

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Nan Heim

Nan Heim has more than thirty years of experience in association management and lobbying for a variety of clients. She has also managed several statewide ballot measure campaigns. Heim currently serves on the Oregon Zoo Foundation Board and the Oregon State Capitol Foundation Board.

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.

Javier Mena

Javier Mena serves as the affordable housing manager at the City of Beaverton. To ensure the City continues being the most diverse city in the state, he focuses on ensuring affordable rental and homeownership housing opportunities are available to all, especially marginalized communities and communities of color. Until July 2018, he was the assistant director of the Portland Housing Bureau at the City of Portland, where he had worked since 2010 in various roles, and most recently was implementing a \$258 million affordable housing bond measure program. He worked with the more than 40 nonprofits and service providers that partnered with the housing bureau to ensure the city's housing and rent-assistance programs were fulfilling their mission. Mena also has an extensive record in the finance industry, working for Wells Fargo until 2006 as an assistant vice president.

Chin See Ming

Chin See Ming is an attorney at the law firm of Gilbert Levy Bennett where he practices in the areas of construction defect and general business litigation, and insurance coverage law. A long-time resident of Portland, Oregon, he is a graduate of the University of Oregon School of Law and has previously served as Vice Chair of the Oregon Board of Bar Examiners. As the father of two adult children, he knows from first-hand experience the central role the zoo plays in the lives of young children and their parents in the Metro area! Ming enjoys riding his bicycle on the weekends.

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

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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. 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.

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. In 2018 he was appointed Entrepreneur in Residence for the Berglund Center for Innovation at Pacific University. He currently serves on the boards of the Portland Community College Foundation, Pacific University Oak Tree Foundation, Native American Rehab Association, 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. In her practice, she works with public entities on matters including public contracting, construction contracting, and public meetings and records. In her spare time, she enjoys hiking with her dog and visiting the Oregon Zoo. She is also a huge polar bear fan!

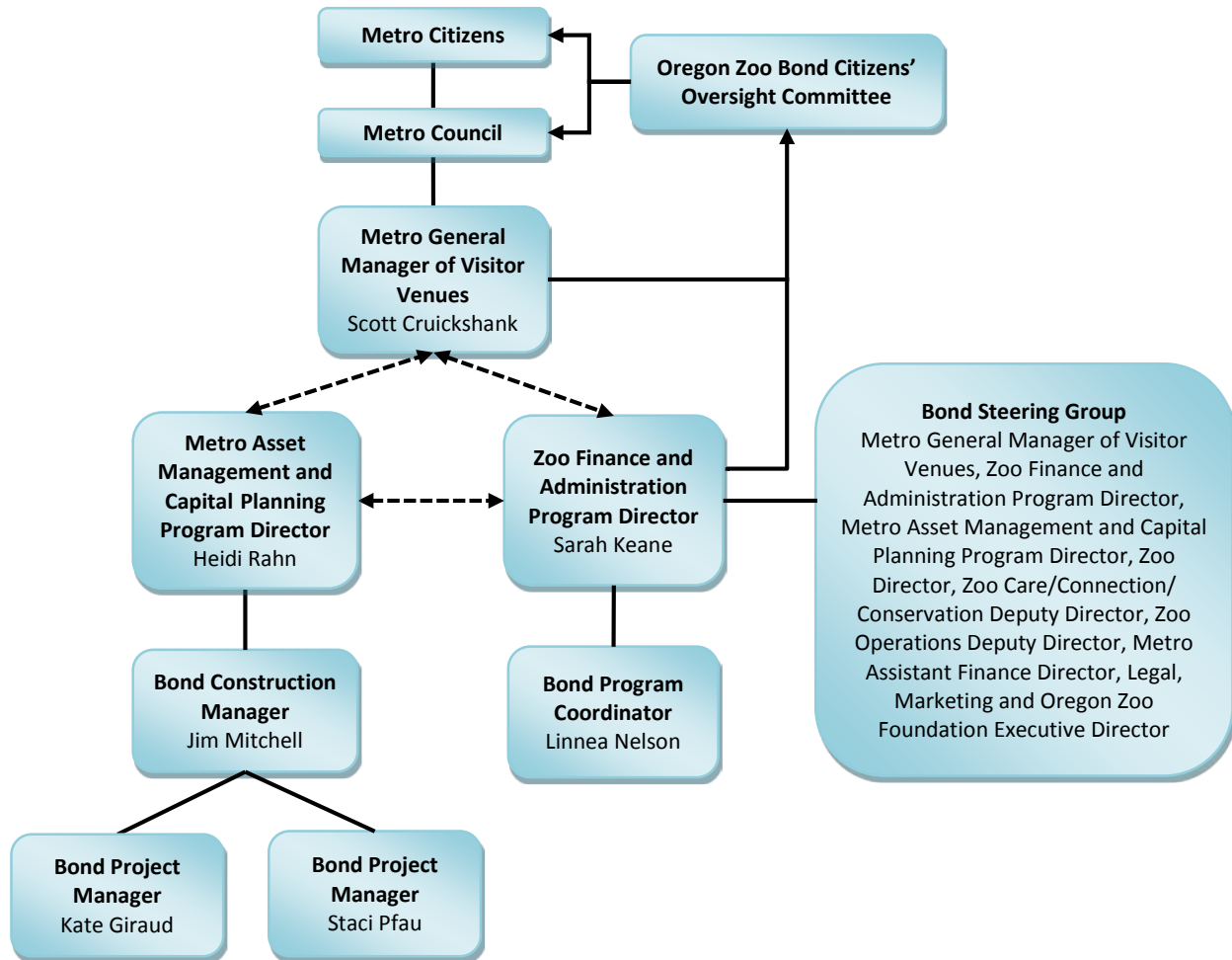
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Karen Weylandt

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. She currently serves on the Bond Accountability Committee for Portland Public Schools and the Building Committee for the Oregon Humane Society. Until July 2018 she served on the Oregon Facility Authority Board, and she also served several years on the Oregon Humane Society Board.

Appendix C

Zoo Bond Program Organization Structure



External Consultant and Contractor Contributions

Bond Construction Projects: Design consultants and construction contractors managed by zoo 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