THE BUREAU OF
PLANNING & SUSTAINABILITY

TO: **Donnie, Oliveira, Deputy City Administrator**

FR: **Andria Jacob, Climate Policy and Program Manager**
Kyle Diesner, Climate Policy Analyst

Cc: **Michael Jordan, City Administrator**
Chariti Montez, Director, Office of Arts & Culture

Date: **Oct. 10, 2024**

Re: **Climate Impact Summary | Future of Keller Auditorium proposal**

Overview

The Bureau of Planning and Sustainability's Climate team was asked to evaluate the climate impacts of a proposed joint venture between the City, Halprin Landscape Conservancy, and Portland State University. Without specific details about the size and scope of the project, a lifecycle carbon analysis cannot be completed. However, there are several considerations in construction, renovation, and long-term operations that would reduce carbon emissions, enhance sustainability, and help meet the City's 2030 and 2050 climate goals.

Carbon-emission analysis in buildings

Carbon emissions are produced during the renovation of existing buildings and during construction of new ones; however, the carbon impact of an individual building can vary depending on two key components:

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- Embodied carbon – carbon emissions associated with the materials used to construct a building.
- Operational carbon – carbon emitted from operating a building, primarily from combusting fossil fuels to generate heat and power.

A building's carbon-emissions impact is generally greater from the operational energy use of a building over its lifetime rather than from the embodied carbon emissions in the building materials. However, as buildings have become more energy efficient and the electrical grid becomes lower carbon, operating emissions are accounting for a smaller percentage of overall emissions. By the year 2050, almost half of the carbon footprint in new construction will come from embodied carbon and half from operational carbon. However, this can shift dramatically depending on the project specifics.

Variables that affect the lifecycle climate impact of buildings

- HVAC requirements: Heating and cooling account for the majority of a building's energy consumption and carbon emissions. Performance venues have unique heating and cooling demands, which can result in substantial carbon emissions unless they are intentionally designed from the beginning with decarbonization or net-zero energy as a priority.
- Seismic requirements: If the renovation requires steel reinforcements to the substructure, this will substantially increase the climate impact/embodied carbon in the building.
- Glazing: As the amount of glass increases, the building's operational efficiency decreases.
- Deconstruction vs demolition: An existing building renovation that complies with the City's deconstruction ordinance will have a lower carbon footprint than one that only sends demolition materials to the landfill.

To accurately analyze the carbon-emission impact of this project, which includes a major renovation of the existing Keller Auditorium and the construction of a new Broadway-capable venue, a full lifecycle analysis (LCA) would be required. LCA is a systematic approach for evaluating the environmental impacts of a building, product, or process over its full life cycle, from raw-material extraction through end-of-life and disposal. Without an LCA, we can only make assumptions and broad generalizations.

Goals and policies related to climate, green building and carbon accounting

Communitywide carbon emissions targets

- Fifty percent reduction over 1990 levels by 2030. The most current greenhouse gas inventory shows that we are 21% below 1990 levels as of 2022. This means we have about five years to reduce emissions another ~30%. Our current trajectory is not going in the right direction.
- Net zero carbon emissions by 2050. This entails not only ceasing to produce any new emissions, but also requires carbon removal/sequestration.

City Green Building Policy

(Resolution No. 37122, ENB-9.01, 2015). Addresses new construction of City-owned or financed buildings as well as major renovations.

All new construction of occupied City-owned buildings over 20,000 square feet and/or with a total construction budget of $5 million will:

- Register and certify for the US Green Building Council's Leadership in Energy and Environmental Design (LEED) Building Design and Construction (BD+C) and the Gold level and/or achieve Living Building Challenge status.
- Achieve 15% energy savings beyond the applicable Oregon Energy Efficiency Specialty Code.
- Incorporate on-site renewable energy systems and meet the State of Oregon's 1.5% for Green Technology requirement.
- Earn or meet LEED's advanced energy metering credit requirements to support ongoing energy monitoring and commissioning.
- Earn or meet LEED's enhanced commissioning credits requirements.

Environmental performance requirements for existing buildings, tenant improvements and leased spaces:

- All interior improvements to occupied, City-owned, City-leased, or leased out spaces will use the Bureau of Planning and Sustainability's guide to creating high-performance workspaces, or "Green TI Guide" and/or register and certify for LEED for Interior Design and Construction (ID+C) at the Silver level.
- All occupied, City-owned existing buildings will register and certify for LEED for Building Operations and Maintenance (O+M) certification at the Silver level.
- All bureaus and offices will use the most current version of LEED O+M to guide product and service specifications, and operations and maintenance best practices. Bureaus and offices will reference the standards or criteria in LEED O+M that support achievements in meeting related

Internal Cost of Carbon

(Resolution No. 37526, ENN-5.11, 2020). City Council adopted an internal cost of carbon policy to ensure major City decisions formally consider the social and environmental costs of carbon emissions in evaluation processes. An internal cost of carbon is applied to cost analyses developed for evaluation of City investment decisions with respect to City buildings, among other considerations. For the purposes

of this project, a decision on any future development and/or renovation should be informed by lifecycle analyses.

Note: The City's Green Building Policy is overdue for an update. It does not reflect current best practices for decarbonization in new buildings. Similar to Multnomah County, all new construction owned or funded by the City should be built to all-electric specifications, so no new fossil-fuel infrastructure is built.

Summary

A comprehensive analysis of the carbon-emissions impact of this proposal cannot be conducted due to insufficient information. More information is needed regarding the project's size and scope, which could be provided with a Market Feasibility Analysis. These steps would be necessary to complete an LCA.