April 9, 2025

Re: Newhouse LEED Integrative Process Project Team Letter

Project Introduction

The Irving R. Newhouse Building is a 4-story office building on the Washington State Capitol Campus. The building houses members of the senate, their staff and support services. Chapter 332, Laws of 2021 (SHB 1080, Sections 1111 and 6024), defines statutory specifications and set specific requirements for Newhouse Building Replacement including net zero-ready with an energy use intensity (EUI) of no greater than 35. A rooftop photovoltaic installation is included to offset the energy use of the building. The project must meet the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) for New Construction at a minimum of LEED Silver level certification through the process of the Green Building Certification Institute (GBCI).

The Newhouse Building Replacement Project and Legislative Campus Modernization (LCM) Global subproject provides for the demolition of the original Newhouse building, Press Houses, and Visitor Information Center on Opportunity Site 6. Opportunity Site 6 was defined in the State Capitol Development Study from 2017. The original Newhouse Building was replaced with the design of a 64,765 SF, four-story, high-performance building to provide Senate and Caucus offices, the Senate/House Page School, Senate Page Rooms, Production & Design, LSS Admin and Legislative Ethics Offices, Senate Administration, and shared spaces. Additionally, the new building will accommodate energy, sustainability, and security features aligned with current industry standards.

State of Washington and Department of Enterprise Services Sustainability Background

The Newhouse Replacement Project is guided by ambitious but achievable goals for building performance and sustainability. The provisions outlined in Chapter 332, Laws of 2021 (SHB 1080, Sections 1111 and 6024) define specific requirements for this project as "…a high-performance building that meets net-zero-ready energy standards, with an energy use intensity [EUI] of no greater than thirty-five". Additionally, there is a Washington Governor's Executive Order 20-01 for State Efficiency and Environmental Performance requires that all newly constructed, state-owned buildings be designed to achieve zero energy or become zero energy-capable, and to include consideration of net-embodied carbon.

The Washington State Legislature RCW Title 39, Chapter 39.35d High-performance public buildings governs and describes the design intent for the Newhouse Building Replacement project. All major facility projects of public agencies receiving any funding in a state capital budget, or projects financed through a financing contract as defined in RCW 39.94.020, must be designed, constructed, and certified to at least the LEED silver standard.

The Washington State RCW also emphasizes two specific high-performance building intents based on both materials and water use. For materials used on the Newhouse project, the state prefers building materials, products, industries, manufacturers from Washington State. Regarding water efficiency, the RCW requires

water efficient landscaping techniques that may include reducing or eliminating the use of potable water for irrigation. Additionally, our team recognizes that the term high-performance can have varying definitions. In addition to what is described in the RCW and project-specific Proviso, we also value the human health and wellness benefits that proper architectural design with a sustainability focus can have.

Energy Exploration

The state of Washington has a goal to reduce the greenhouse gas emissions by 45% below 1990 levels by 2030. This means all new Capitol Campus buildings should meet potentially be net zero ready for carbon (NZC) performance to avoid increasing campus emissions. Ideally, all new buildings would not only operate as net zero carbon but also act as carbon sinks and energy producers for the campus. For the Newhouse Building, DES has taken a significant step to reduce emissions by avoiding burning fossil fuels on-site or using campus steam. To that end, the building has been designed around an all-electric system approach and will meet the performance requirements set by the 2018 Washington State Energy Code (WSEC). In addition to the code-mandated performance requirements, the building will meet the requirements set by SHB 1080 for state-owned buildings to have an EUI of 35 kBtu/sf or less and the requirements set by State Legislature RCW Title 39 to achieve at least LEED Silver certification. Multiple energy efficiency measures were studied, which included ground-source heat pumps vs air-to-air heat pumps, dedicated outdoor air system with energy recovery, reduced lighting power densities, reduce office equipment power density, fiber telecommunications network to reduce IDF equipment loads, among others. Some of the key characteristics that were incorporated into the final design are:

- Dedicated outdoor air system with heat recovery
- High efficiency heat pumps
- High efficiency domestic heat pump water heaters
- Enhanced indoor air quality
- Reduced lighting power
- Reduced infiltration
- Improved glazing performance
- Improved envelope thermal performance

Envelope

Envelope efficiency is a key project goal. The envelope is designed to be airtight with optimized window placement for daylighting and building loads, minimize thermal bridging, and to meet the requirements for glazing performance, wall and roof insulation set by the stringent local energy code.
Several combinations with varying WWR, glazing U-Value, Wall U-value and Roof U-values were studied to determine a combination that would meet the requirements for enhanced envelope performance with the local energy code. The team decided not to pursue the enhanced envelope performance path and the WWR was decided at 43%.

Lighting

The State of Washington energy code requires highly efficient lighting to begin with. To comply with the 2018 Washington State energy code, the state requires that all new projects choose additional energy efficiency packages from an array of available options. For this project and considering the possible strategies for energy code compliance, PAE studied the impact of reduced lighting power density by 10% and 20% compared to minimum requirements. The team decided on a path of compliance with the code

that includes achieving 10% reduction on lighting power densities compared to the energy code's minimum requirements.

The use of LED fixtures will reduce overall install lighting density and lighting energy use. Occupancy sensors are mandatory per Washington code and will be place in all spaces other than restrooms, stairwells, and elevator vestibules. Additionally, at least two zones of automatic daylighting control are required by code. The project has been modeled to meet the daylighting and views requirements in LEED.

Primary Energy Systems

The design team identified 3 options for HVAC systems:

1. Connecting to the campus steam and chilled water plants.
2. On-site ground source heat pumps.
3. On-site electric air-source heat pumps.

The three options were studied extensively to determine EUI, carbon emissions, cumulative capital cost and utility cost. The Legislative Campus (LCM team) together with representatives from the Washington State Senate's approved the on-site air source heat pump option with the goal of achieving a highly sustainable and high-performance building and help the Washington State Capitol Campus achieve its state mandated carbon emissions reduction goals.

Water Exploration

Landscape Irrigation - WE Credit Outdoor Water-Use Reduction

The baseline water budget assumes medium to high water demand for landscape plants like turfgrass and non-native ornamental plantings. By using very low water demand native and adapted plantings, and reducing lawn to street right-of-way plantings, we were able to reduce water demand by 59%, according to the WaterSense Water Budget Tool. We utilized rotors and high-efficiency spray nozzles on the ground, and rooftop drip irrigation to minimize run-off and maximize water absorption. After the new native plants have established over the next 3-5 years, some zones may be turned off or significantly reduced without adversely affecting the health of the plants.

Many of the planning and analysis documents were not issued with the IP Letter due to the in-depth and lengthy documentation process used throughout Design Development (DD). However, they were presented to large stakeholder groups during the sustainability planning meetings and follow up.

- All baseline assumptions and updates throughout the design process are captured and communicated with ongoing reports, memos, and tool updates. Several examples are appended to the letter package and added in uploads.
- Documents are now listed in the updated letter and are available to stakeholders and general public.
- The research process during the discovery phase formed a foundation for considering highly sustainable water use strategies in design development. The early quantitative analysis of very high-performance options included vacuum flush toilets and various water harvesting/reuse scenarios. This led to the introduction of these concepts to stakeholder groups. The combination of public project cost constraints and newness of the technologies meant they were not included into this project; however, the investigations led by educated team members should lead to greater familiarity and increased consideration for future projects.

- Please see water balance analyses posted in uploads demonstrating all the applicable water demand and sources were considered through the design development and decision-making. The only meaningful water using systems are the indoor flush and flow fixtures and the irrigation for the green roof located on the third level.

Target water use intensity (WUI) is 6 gallons/SF/yr.
Early in design, several water efficiency measures were analyzed for this project:

- Low flow fixtures: dual-flush toilets along with low-flow faucets and shower heads significantly reduced water consumption in the building. The project incorporated low flow flush and flow fixtures in the final design.
- Waterless toilets: vacuum-assist toilets and waterless urinals were found to significantly reduce non-potable water consumption, but do not necessitate the use of specialized waste processing equipment.
- Rainwater harvesting: rainwater collected off the roof using a treatment skid and storage cistern and then used for non-potable applications like toilet flushing were studied. It was estimated that it would be possible to harvest almost 150k gallons of rainwater per year. However, fully leveraging this resource would require a large cistern and ultimately, the team did not include this measure in the final design.
- Landscape was designed using drought tolerant plants (native and adaptive plants) and a high efficiency irrigation system to significantly reduce landscape water requirements.
- Grey water recycling: it was estimated that the building would produce roughly 60k gallons of grey water each year. During the summer months, this water could be directly used for irrigation purposes, reducing both demand and waste. Due to the high cost and low impact, this measure was not included in the final design.

For domestic water heating, electric water heaters and heat pump water heaters were studied to determine the energy savings associated with the high efficiency heat pump water heaters. The team decided to incorporate high efficiency water heaters in the final design because they would produce no on-site emissions and save energy.

Renewable Energy

With Washington state goals to reduce greenhouse gas emissions and the project requirement to be Net-Zero Energy ready in mind, PAE conducted an analysis to estimate the potential for future photovoltaic energy generation on the building's roof and the amount of additional off-site generating capacity that would be necessary to achieve overall net-zero performance.

The proposed roof design supports approximately 76 kW of PV generation; the actual system size and performance will vary pending final design and product selection. After analyzing potential shading obstructions from other building elements and a nearby tree, PAE estimated that this system would produce ~70,150 kWh annually, equivalent to an EUI offset of 4.2 kBtu/sf. An additional 398 kW of offsite PV will be required to offset the remaining electricity consumption.

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Occupant Comfort and Health – Introduction

The Proviso and RCW Title 39 requires that state buildings are high-performance. While this objective is not entirely defined, we know it does include a LEED certification requirement. We also know that a true high-performance building is not only about energy and water savings but about promoting good occupant health, comfort and wellness. Within both sustainability charettes that were held with stakeholders, health and wellness goals were addressed. The health goals developed for this project can be paraphrased to include being a good neighbor and enhancing occupant health. These goals are primarily building-centric but when extended to all-electric operation with no on-site emissions and removing chemicals of concern, the health benefits can reach the larger community including the craftspeople and manufacturers into the supply chain.

Building Occupants and Users

Daylighting and Natural Ventilation

- The Newhouse Building Replacement Project will provide generous and controllable daylighting to building occupants. The building has reached an average sDA factor of 71% for the entire project. Almost all regularly occupied spaces have access to windows with daylight and views as well as glare control with manual shades.
- The building's central staircase boasts a large skylight which brings daylight all the way down to the ground floor.
- The design team has provided operable windows for natural ventilation in nearly every windows except on the first level because of security requirements for the Legislators.

Indoor Air Quality

In addition to providing a best-practices level of outdoor air, the design also includes mechanical filtration of at least a MERV-13 level which exceeds ASHRAE 62.1 standards.

- The design achieves increased breathing zone outdoor air ventilation rates of up to 95% of all occupied spaces by at least 30% above the minimum rates.
- A DOAS to provide 100% outdoor air ventilation is part of the building design.

Together, these strategies promote wellness and help reduce viral transmission and the spread of wildfire smoke indoors. See related LEED credit documentation for more information including mechanical drawings, schedules and calculations.

Surrounding Community

The positive health impacts from the Newhouse Building on the surrounding community can be summarized in several aspects:

- First, as an all-electric building, this project has not emissions that would impact air quality in the immediate area.
    - In terms of stormwater management and biodiversity, this landscape manages stormwater so as not to impact surrounding neighborhood.
    - The pollinator habitat and landscape designs support community ecological protection and enhancement.

- The use of materials and products that do not contain chemicals of concern is a health benefit for workers in the community who work in the building.

Supply Chain

Chemicals of Concern

Our team removed chemicals of concern from building products and materials used throughout design and development of the Newhouse Replacement Project. This health goal has wide-reaching impacts that affect not only the building occupants but also the community and supply chain. By avoiding chemicals like PVC, phthalates, fluorinated chemicals, and even harmful and unnecessary flame retardants, we significantly improved the indoor air quality of this building and the building materials industry. The process to achieve this was to start with a good design that reduced unnecessary materials whenever possible. Then, we made decisions during design by vetting our materials against our years of expertise in delivering Living Building Challenge projects that were Red List compliant. As the world's most rigorous sustainability certification system, the Living Building Challenge has strict requirements for both product transparency and removing harmful chemicals from our buildings. The team analyzed scores of material transparency documents, building on many products we've used for years to ensure they are complaint with these reduced hazards. We maintained these carefully selected products throughout construction and worked with the general contractor to ensure we maintained our rigorous VOC and emissions standards for wet-applied products.

Throughout construction, we helped to educate our subcontractors and craftspeople about the importance of reducing chemicals of concern. We advocated to manufacturers to not only provide materials ingredients transparency, but also to use safer ingredients when chemicals of concern were identified.

As a building on the Washington State Capitol Campus, we hope that the impact of this work will be a bridge between the past, present and future to the many constituents of Washington State while representing the nation-leading health goals and laws of Washington.

Anticipated Health Outcomes

We believe that the most prominent health outcomes will be noticeable in the building itself. From generous daylighting and natural ventilation options to better indoor air quality, it is likely that these health and wellness results will be the most visible through both qualitative and quantitative outcomes.

With unscientific interaction from several of the building tenants, we have already heard positive feedback from the number of operable windows provided in the building and how much they are enjoyed. The team has also heard feedback from some of the craftspeople that built the Newhouse project, remarking about their appreciation for removing chemicals of concern from the project to help make a safer working environment for them.

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Materials Analysis

The inclusion of materials standards played a critical role in the design of the Newhouse Building Replacement Project.

From an embodied carbon standpoint, great effort was made to analyze, salvage and reuse building materials and products from the original Newhouse Building as well as the old Press Houses which were demolished.

Salvaging these materials resulted in saving more than **10 metric tons of greenhouse gas emissions**.

- Efforts were also made to reduce the GWP of the concrete mix by optimizing its design.
- The project achieved a 20% reduction in GWP emission from concrete alone.
    - Mass timber was also used as the primary structural system in the project including glu-laminated beams and columns and dowel laminated timber for the floor structure.
    - The design team also reduced the GWP of the mix used for the precast concrete exterior cladding and worked to reduce emissions from primary interior materials.

Finally, the team took great efforts to reduce chemicals of concern in the project including:

- Chlorinated polymers
- Flame retardants
- Phthalates
- Formaldehyde
- BPA (Bisphenol A)
- Toxic heavy metals
- PFAS (Per- and polyfluoroalkyl substances)
- Alkylphenols (surfactant type chemicals that are endocrine-disrupting)

This effort will result in improved indoor air quality and reduced demand in the market to help support a safer supply chain that preferences the use of safer materials ingredients.

The collection of documents, including the Predesign Report, is publicly available at the DES Irving R. Newhouse Building Replacement Project website.

Sincerely,

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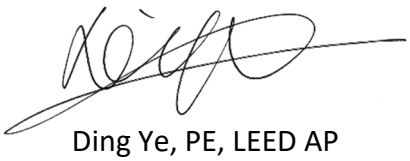

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