A PREVIEW: THE NEW UW GREEN BUILDING STANDARD

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BE BOUNDLESS



UW OFFICE OF SUSTAINABILITY



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New Position

Sustainability Project & Engagement Specialist

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GBS DEVELOPMENT

CONSULTANT (O'Brien360) (experienced with UW)



Transforming the way we build and live, one building at a time We catalyze sustainability in the built environment to ensure a better quality of life for present and future generations. Our vision is equitable advancement of the built environment toward positive life cycle impacts From project conception to occupancy, we bring sustainable building

MODEL (UBC)



UW STAKEHOLDERS

- Faculty from College of Built Environments and UW Engineering
- UW Project Managers
- UW Bothell & Tacoma Facilities Staff
- Staff from Medicine, Housing and Food Services, and Athletics
- Representatives and stakeholders of the Environmental Stewardship Committee and the Executive Committee for the Sustainability Action Plan

WHY A GREEN BUILDING STANDARD?

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URGENCY OF WATER CONSERVATION

Department of Ecology News Release - April 16, 2024 Updated: April 19, 2024

Statewide drought declared due to low snowpack and dry forecast

Limited exceptions for metro areas with healthy water storage

OLYMPIA - With winter's snowstorms largely behind us and summer just weeks away, our state's low snowpack and forecasts for a dry and warm spring and summer have spurred the Department of Ecology to declare a drought emergency for most of Washington.

After an exceptionally dry start to the winter, Washington's snowpack made up some ground in Enhrunny March and April But with changes







Reduce greenhouse gases emitted in the construction and operation of the building





Increase resilience to climate change

Create buildings that support health and feel welcoming

CONTRIBUTION TO UW GHG EMISSIONS



CONTRIBUTION TO UW GHG EMISSIONS



OLD vs NEW GREEN BUILDING STANDARD

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OLD UW Green Building Standard

PROJECT TYPES







OLD UW Green Building Standard

PROJECT TYPES







NEWUW Green Building Standard





- Required Life Cycle Cost Assessment
- Must connect to District Energy System



NEWUW Green Building Standard



NEW FEATURE: LIFE CYCLE COST ANALYSIS (LCCA)

Life-cycle cost analysis (LCCA) is a tool to determine the most cost-effective option by evaluating the purchase cost, maintenance and operating costs.



NEW FEATURE: EMBODIED CARBON

"Embodied carbon will be responsible for almost half of total new construction emissions between now and 2050"







SUSTAINABLE BUILDINGS: Learning by Doing UW, Examples



Health Sciences Education

Founders Hall

Hans Rosling Center for Population Health

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UW EXAMPLE – Health Sciences Education Building



Whole Building Analysis in the Health Sciences Education Building (HSEB)



Health Sciences Education Building embodied carbon analysis by Miller Hull:

TOP MATERIALS BY GWP (57 materials defined, total)

1	Steel, W section (wide flange shape)	59	588,166	517,281 8.4% of total
2	Cast-in-place concrete, structural concrete, 5000 p	60	484,508	2,355,158 <i>38.1% of total</i>
3	Extruded polystyrene (XPS), board	60	416,084	5,578 0.1% of total
4	Cast-in-place concrete, structural concrete, 3000 p	60	293,318	1,350,786 21.8% of total
5	Cast-in-place concrete, structural concrete, 4000 p	60	154,025	869,023 14.0% of total
6	Polyethelene sheet vapor barrier (HDPE)	60	89,467	34,145 0.6% of total
7	Steel, HSS section	60	86,564	48,942 0.8% of total
8	Aluminum, sheet	60	85,836	21,243 0.3% of total
9	Steel, deck	60	75,352	36,306 0.6% of total
10	Mineral wool, board, generic	60	70,684	39,858 0.6% of total
		-200K	OK 200K 400K 600K 800K	СОК 1000К 2000К 3000К
			GWP (kgCO2eq)	Mass Total (kg)

Health Sciences Education Building embodied carbon analysis by Miller Hull: Highest emissions:

TOD MATERIAL C DV CM/R (57 moto

	accinars acrinice				
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GWP (kgCO2eq)

Mass Total (kg)

Health Sciences Education Building embodied carbon analysis by Miller Hull:

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1	Steel, W section (wide flange shape)	59	Very high emission/mass:	517,281 8.4% of total		
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			GWP (kgCO2eq)	Mass Total (kg)		

Health Sciences Education Building embodied carbon analysis:

EARLY EMBODIED CARBON STUDIES: WALL ASSEMBLY



Analysis influenced final material selection: Fiber cement exterior siding and cross laminate timber floors reduced emissions by 20%



UW EXAMPLE – FOUNDERS HALL



Designed to achieve:

- 76% reduction in cumulative carbon emissions through cross laminate timber (CLT)
- CLT adds to well-being, beauty and warmth
- 70% less energy
- 53% less water

compared to a comparable facility built with conventional methods and materials

UW EXAMPLE – Hans Rosling



Hans Rosling Center for Population Health

- LEED Platinum
- High energy efficiency
- Clean indoor air
- Rainwater collection to flush toilets
- Shading fins on the east and west façades
- Improved accessibility throughout the site
- Design elements that promote human health
- Gender neutral restrooms

NEW UW Green Building Standard & **Campus Renewal**

CAMPUS ASSET RENEWAL PROGRAM



Synergies and Opportunities

- Renovation and renewal = opportunities for buildings and energy
- Renovation will be done more sustainably b/c of the new GBS
- No net new square footage
- Minimize carbon emissions through building renewal, where appropriate

NEW UW Green Building Standard DRAFT Applicability

Still finalizing applicability....

> UW capital projects and public work in WA State:

- All campuses, facilities, departments, units
- Buildings and facilities owned and operated by UW

> Under development & likely a Phase 2 roll-out:

- Leases, other ownership models, development agreements, etc.
- > Once new GBS is finalized and published:
 - GBS applies to all projects that have yet to complete project formation once the new standard is published
 - Target publish date: June 30, 2024



NEXT STEPS: Roll-Out and Implementation

• We have already begun a '**soft-launch'** with several projects: Haggett Hall, Anderson Hall, ASUW Shell House, T-Wing Renovation

 Next steps are more education, training, and tools for successful implementation!

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NEXT STEPS: Education



Quick Reference Guide

NEXT STEPS: Process Integration

PHASE: Project Concept Development	PHASE: Project Format	ion	PHASE: Project Execution							
SUBPHASE: Options Analysis	SUBPHASE: Project Initation	subphase: Project Development	suernase: Design/Preconstruction				SUBPHASE: Design/Preconstruction Close-out		SUBPHASE: T20/Close-out	
STAGE: Planning Sight Selection: Identify barriers and opportunities for meeting GSS requirements	stage: Planning	stace: Pre-design	STACE: Project Definition Budgeting Incluée buildings or projects with smini-suscenability goals of heatures welabilish target wilves.	stace: Early design	stace: Mid design	STACE: Prior to construction	stace: Post 100% Design	stage: Quarterly	stage: Monthly	STACE: Post Substantial Completion
Budgeting: Benchmark with sustainable buildings. Include maintenance of potential sustainability features in O&M budgeting.	Owner Project Requirements (OPR) include GBS Tier and requirements (OPR), whether the project will connect to district energy systems, and how the project will contribute to meeting the Clean Building Performance Standards. Include the OPR in the project werefolge	Owner Project Requirements (OPR) (Update OPR to include performance targets or specific sustainability strategies for achieving GBS requirements, and other conditions of satisfaction identified during requirements, and other conditions of		Owner Project Requirements (OPR) Update OPR to include performance requirements, specific strategies, or other conditions of satisfaction identified during early design.			Owner Project Requirements (OPR) Update OPR to include any changes or further development of requirements during final design.		Rating System Monthly sustainability/rating system check-ins	Rating System All construction phase rating system required documentation from the project team complete within 30 days of substantial completion for internal (UW) QC review.
	Sanderfa, lickule the OPR in the project workplack. Rating System Include in OPR	addition landford during pre-source. Rating System Description for applicable action of the Description for applicable actions. Requests for Areplicable actions. Sustainability Workshop Identify how OPR and Gits Inspectration RPC to constraint descrip- ingent of the Constraint description description being considered in practice patient and RPC to constraint descrip- tion being considered in practice patient and the Constraint description description being constraints and the constraint description descri	Raing System System certification Register (Editorial Design of the second second Design of the second second Design of the second second Design of the second second second second Design of the second second second second second second Design of the second seco	LICA Design constraints and a second	Request for Proposals (R*)(tocked OP and suttainable subleme Locked OP and suttainable subleme Locked Constant of the Constant subleme Report II and the Constant subleme sublem	Penning Construction phase plan for managing al GBS and mag system requirements	Retrieved documentation from the Ardisego photom rating system respired documentation from the from 100% degrap for internet (MOV days of documentation here googness address QC comments. Retrieved address QC comments. Retrieved address QC comments. Retrieved address QC comments.	Reporting completes GBS reporting from and submit to PDG Project Manager		Commissioning Editor complexes and bounnerstation and bound with the second sec

Note early engagement

NEXT STEPS: Process Integration

PHASE: Project Concept Development	PHASE: Project Formation				
SUBPHASE: Options Analysis	SUBPHASE: Project Initation	SUBPHASE: Project Development			
STAGE: Planning	stage: Planning	stage: Pre-design			
Sight Selection: Identify barriers and opportunities for					
Budgeting:	Owner Project Requirements (OPR) include GBS Tier and requirements,	Owner Project Requirements (OF iUpdate OPR to include performan			

Other Sustainability Initiatives & Resources

- <u>2022 Greenhouse Gas Emissions</u> <u>Inventory</u> (Includes goods and services)
- GHG Preview Webinar
- Energy Transformation
- Decarbonization Town Hall
- <u>Draft Air Travel</u> Emissions Reduction Program
- Sustainability Action Plan Update (kick-off in fall 2024)
- <u>Stay Informed</u>! Sign-up for UW Sustainability news



Thank you!

QUESTIONS?

Questions or need help with the new GBS? Contact: Lisa Dulude, lisad3@uw.edu

Website: sustainability.uw.edu Email: <u>sustainability@uw.edu</u> Visit our <u>staff page</u> for individual contact information