




Phius Phuture Lunch Session

Lisa White | Associate Director

James Ortega | Certification Program Director

November 10, 2023





**Phius' Mission:
Every building
supports the health
of people and the
planet.**

• **Did you Know?**

- ~~New Website~~
- ~~Portal~~
- ~~Resource Library~~
- ~~List of journals/publications we've been featured in~~
- Project growth slide(s)
 - Locations
 - General numbers/bar chart
 - ~~Cost data - MA slide~~
- Training growth slide(s)
- Staff photos - get a candid/non-work photo to share
 - JO get cert staff
 - Lisa get everyone else

New Releases

- New Window Database
 - Lisa to grab screenshots from DB
- Interactive Guidebook (Lisa to check on)
- ASHRAE 227P - Out for public comment
- New Alliance Chapters
 - Lisa get list from Jennie
- Member-Only Login/ Access through the website

• **Coming in 2024**

- Training
 - CPHC Program Full Revamp
 - Phius Foundations Training
 - Trades Training
 - Expansion of University Training / Initiative
 - Lisa to create list of Universities that have included, and new inquiries
- Project Cert Development
 - Phius CORE & ZERO 2024 Updates
 - REVIVE 2024
 - ENERGY STAR Multifamily Review Organization
 - New Plaque (get from IS)
- C3RRO in the cloud (come back to this after IS call)
- Policy Updates / Massachusetts Code
 - Full slide of recent updates - get from zoe - need one line about MA, otherwise go to phius.org/policy

Virginia Tech training grant??
To include Phius in high school/other curriculum

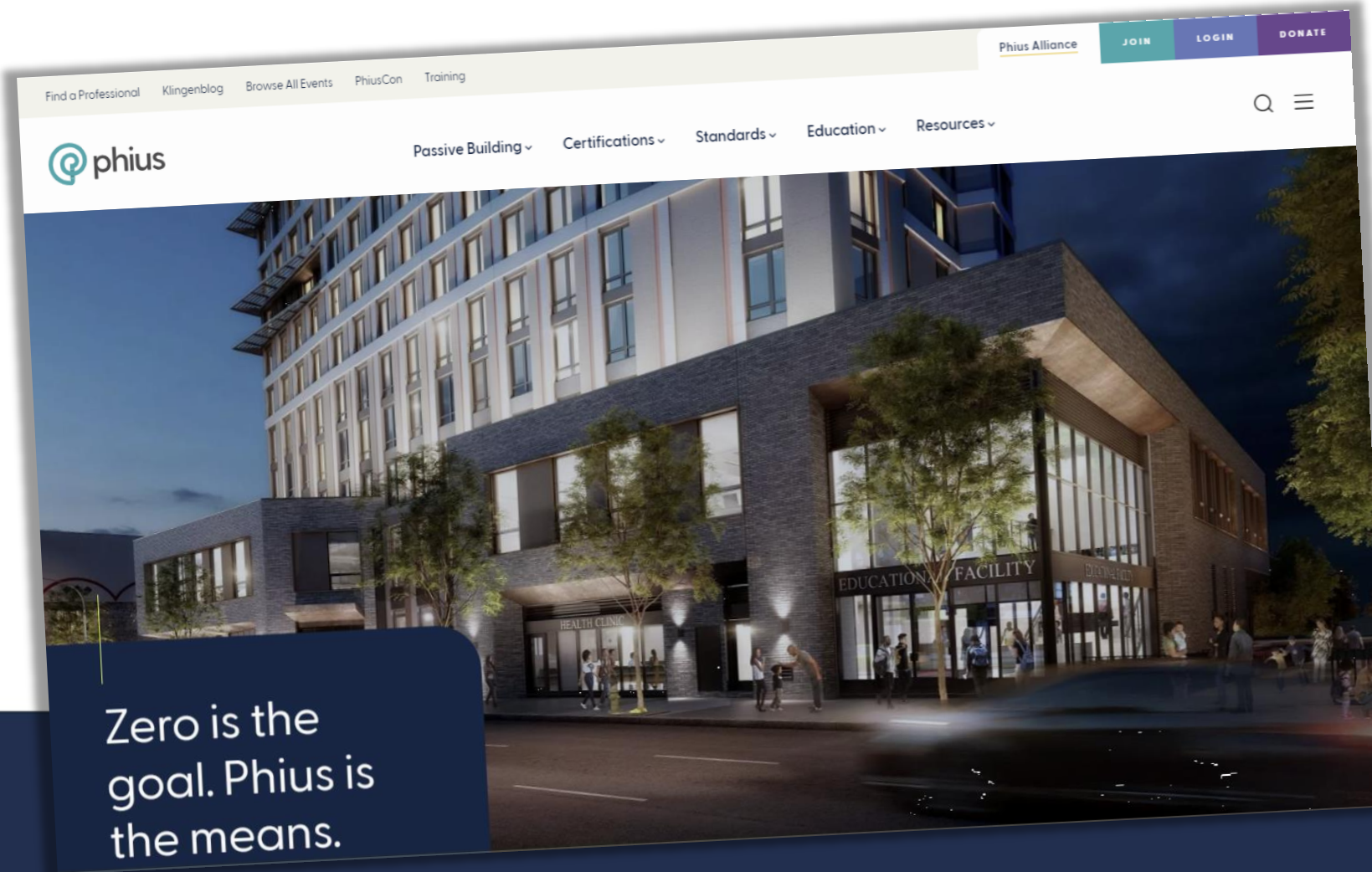
- Lisa to ask Kat
- Details Book / Online Library
- Greenbuild - 2 tracks - USGBC partner or whatever we want to call it
 - Lisa ask Knezo/Jennie how to talk about this

“Out there”

- PhiusGEB / Connected Communities / Block Energy / Microgrid stuff
 - Show Block Energy Maryland project
- Ongoing monitoring and performance validation
- Phius COMM (launch) - powered by 227P
- Globally applicable quality assurance program
- Expanding toolkit for modeling & design
- Language translation of training materials

Did You Know?

Phius Got a New Website!



With new databases for:

- **Professionals**
- **Building Projects**
- **Policies**
(codes, QAPs, incentives)
- **Events**
- **Resources**
- **Windows**

Including a searchable Resource Library with 640+ Resources...and more added each week

RESOURCE TYPE

- Article/Paper
- Blog Post
- Calculator/Tool
- Case Study
- Graphic
- Modeling Protocol
- Podcast
- Presentation
- Tutorial
- Webinar
- Workbook

The screenshot shows the Phius website's Resource Library page. At the top, there is a navigation bar with links for 'Find a Professional', 'Klingenblog', 'Browse All Events', 'PhiusCon', and 'Training'. On the right side of the navigation bar are links for 'Phius Alliance', 'JOIN', 'LOGIN', and 'DONATE'. Below the navigation bar is the Phius logo and a secondary navigation menu with dropdowns for 'Passive Building', 'Certifications', 'Standards', 'Education', and 'Resources'. A search bar is located in the top right corner. The main heading 'Resource Library' is centered on a dark teal background. Below the heading is a search bar with the placeholder text 'Search' and a magnifying glass icon. Underneath the search bar, there is a 'TOPIC' filter section with a list of categories: 'Building Components', 'Building Science', 'Cost Data', 'Embodied Carbon', and 'Energy Modeling'. To the right of the filter section, it says 'Showing 1-6 of 641 results'. A featured blog post titled 'Phius Policy Update | October 2023' is displayed with a thumbnail image of a modern building.

...and a New Portal for Members & Professionals

MANAGE YOUR PROJECTS & PRODUCTS [SUBMIT A PROJECT](#) [SUBMIT A PRODUCT](#)

My Projects

Project No.	Project Name	Dropbox Link	Stage	Submit Date	Project Reviewer	Feedback Return Date	
1127	Lisuzzo Residence				Lisa White	Submit to Review Queue	EDIT
2310	Lisa's Casa Dulce	Drop					
1305	Alice Street Duplex - Housing NS Valley Waste						
1155	Management Office Building						
1255	Solterre Cottage						
1506	Provo Passive House	Drop					

My Products

Certified Job Name	Certification Job Number	Submitted

phius

- [DASHBOARD](#)
- [EVENTS](#)
- [MY PROJECTS & PRODUCTS](#)
- [RESOURCES & GUIDEBOOKS](#)
- [MY PROFESSIONAL CERTIFICATION STATUS](#)**
- [CONTACT PHIUS](#)

MY CERTIFICATIONS

Certification	Certification Date	Renewal Date	Expiration Date	Current CEU Total	Status
CPHC	5/22/2013	11/9/2022	11/7/2025	7	Will Renew

MY CONTINUING EDUCATION

CEU Name	Date Earned	Number of Credits	Session Code	Project Number	Project Role
Common Project Questions May 2022	3/28/2023	1		-	-
NYSERDA Buildings of Excellence and the Seven Lessons Learned on My First Precertified Phius Project	3/28/2023	1		-	-
Andres House	5/2/2023	-	-	2195	CPHC
PhiusCon23 - Phius CORE Prescriptive Path 101	10/24/2023	1		-	-

RENEWAL REQUIREMENTS

Phius Certified CPHC	Phius Certified CPHB	Phius Certified Rater	Phius Certified Verifier
See Requirements	-	-	-

Word is getting out there...

Passive Houses: An Energy-Efficient Way of Living

Discover the pros, cons, costs and more of adopting a greener way of life in a passive house.

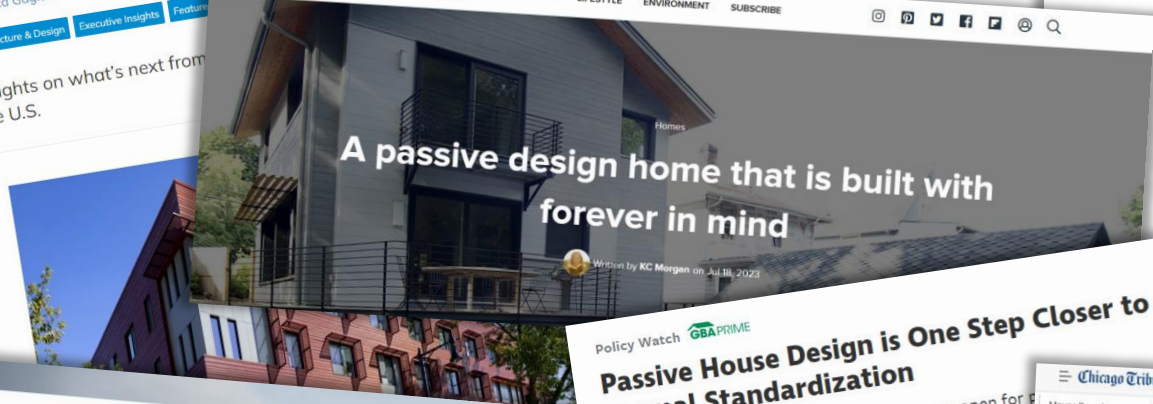
Building the Case for Passive House Standards

By Anca Gaglic

June 22


Architecture & Design Executive Insights Feature

Insights on what's next from the U.S.



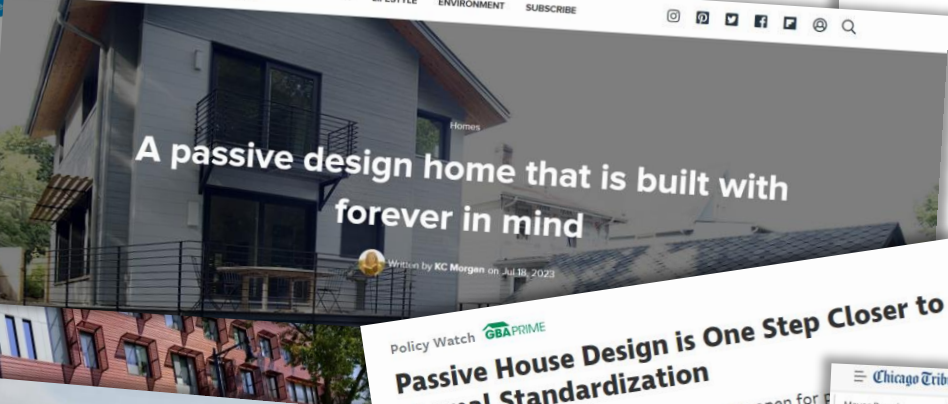
What Is a Passive Building and How Can It Contribute to Decarbonizing Architecture?

ArchDaily ArchDaily Interviews What Is a Passive Building and How Can It Contribute to Decarbonizing Architecture?



A passive design home that is built with forever in mind

Written by KC Morgan on Jul 18, 2023

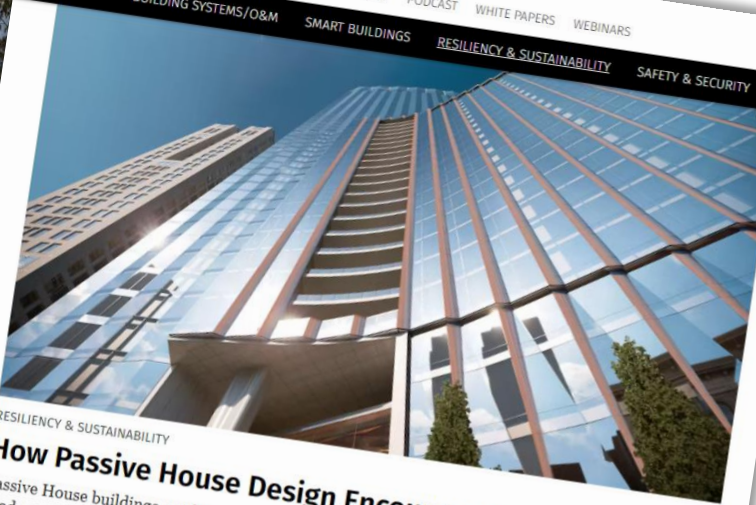


How Passive House Design Encourages Resilience

Passive House buildings combine a super-tight envelope with highly efficient mechanical systems to produce resilient, eco-friendly structures. Learn more.

Barbara Horwitz-Bennett


March 6, 2023



Passive House Design is One Step Closer to Formal Standardization

ASHRAE 227P - Passive Building Design is now open for public comment

By Justin R. Wolf | October 23, 2023



Passive House design is coming to Chicago's multifamily

By Lizzie Kane

Chicago Tribune - Published: Aug 08, 2023 at 5:00 am



Builder

PASSIVE BUILDING A PROACTIVE WAY TO DELIVER ON ENERGY EFFICIENCY

According to [Phius](#), one of two options in the United States for passive house certification, passive building "is a set of design principles for attaining a rigorous level of energy efficiency while also creating comfortable indoor living spaces."



We launched the first ever Phius Prescriptive path




and have now:

- 2 Certified
- 13 Design Certified
- 13 Registered

Phius CORE Prescriptive 2021 Snapshot

Input or select data in teal cells



State: **UTAH** (dropdown)
City: **SALT LAKE CITY INT ARPT [!]** (dropdown)
ASHRAE (169-2021) Climate Zone: **5B**
iCFA* (ft²): **2000**
Number of Bedrooms*: **4**
Number of Stories: **2**
*per dwelling unit

1 General

1.1.2 iCFA divided by Number of Bedrooms
(Calculated Value based on Inputs)

Maximum Limit	900	ft ²
OK, Meets Limit	500	ft ²

3 Compactness

3.1.1 Envelope Area
(Maximum Envelope to Floor Area Ratio)

Maximum	5998	ft ²
	3.00	

4 Solar Protection

4.1.1 Whole Window SHGC
Maximum **NR**

4.4.1 Projection Factor for Fixed Overhangs
Minimum **NR**

5 Thermal Enclosure

5.1.1a Fenestration / Openings	Maximum Whole U-Value	0.18	(BTU/h.ft ² .°F)
5.1.1b Walls & Overhang Floors - Effective R-value	Minimum Effective R-Value	35	(ft ² .°F.h/BTU)
5.1.1c Roofs / Ceilings	Minimum Effective R-Value	66	(ft ² .°F.h/BTU)
5.1.1d Whole Slab Foundations, Below-Grade Walls, Floors of Conditioned Basements & Crawl Spaces	Minimum Effective R-Value	17	(ft ² .°F.h/BTU)
5.1.1e Ceilings of Unconditioned Basements or Crawl Spaces & Pier and Beam Floors	Minimum Effective R-Value	22	(ft ² .°F.h/BTU)

6 Moisture Risk Limitation

6.2.1 Fenestration Condensation Resistance
Minimum **61%**

7 Mechanical Ventilation

7.2.1 Sensible Recovery Efficiency, Heating Mode	Minimum	79%	
7.2.2 Total Recovery Efficiency, Cooling Mode	Minimum	NR	
7.2.5 Total Length of Fresh Air Ducts to Outside	Maximum	25	ft

8 Mechanical Systems

Select System Type

8.2.1 **Air Source Heat Pump** (dropdown)

Minimum COP @ 5F	1.8
Minimum SEER	15.0

© PHIUS 2023

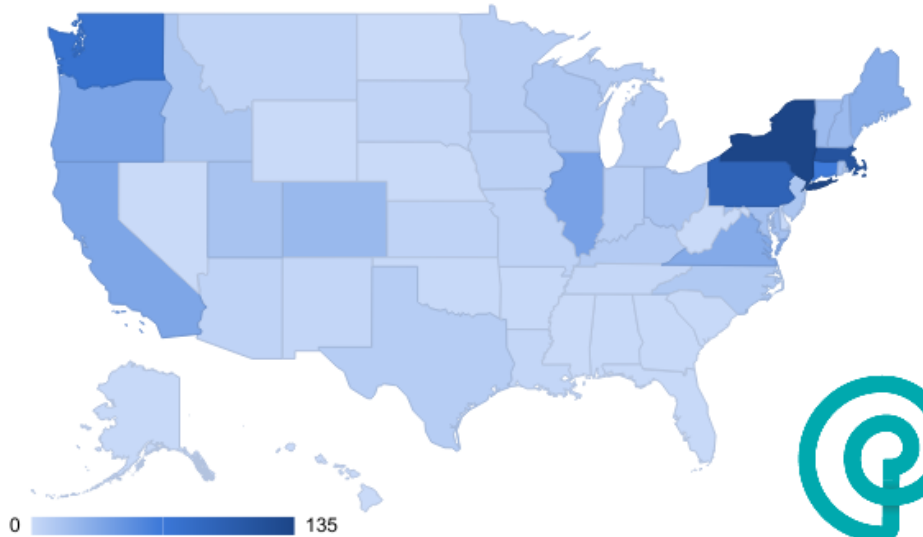
Phius Project Statistics (Total Registered)



21 million square feet total projects



21k dwelling units



+ 0 to 10% additional cost



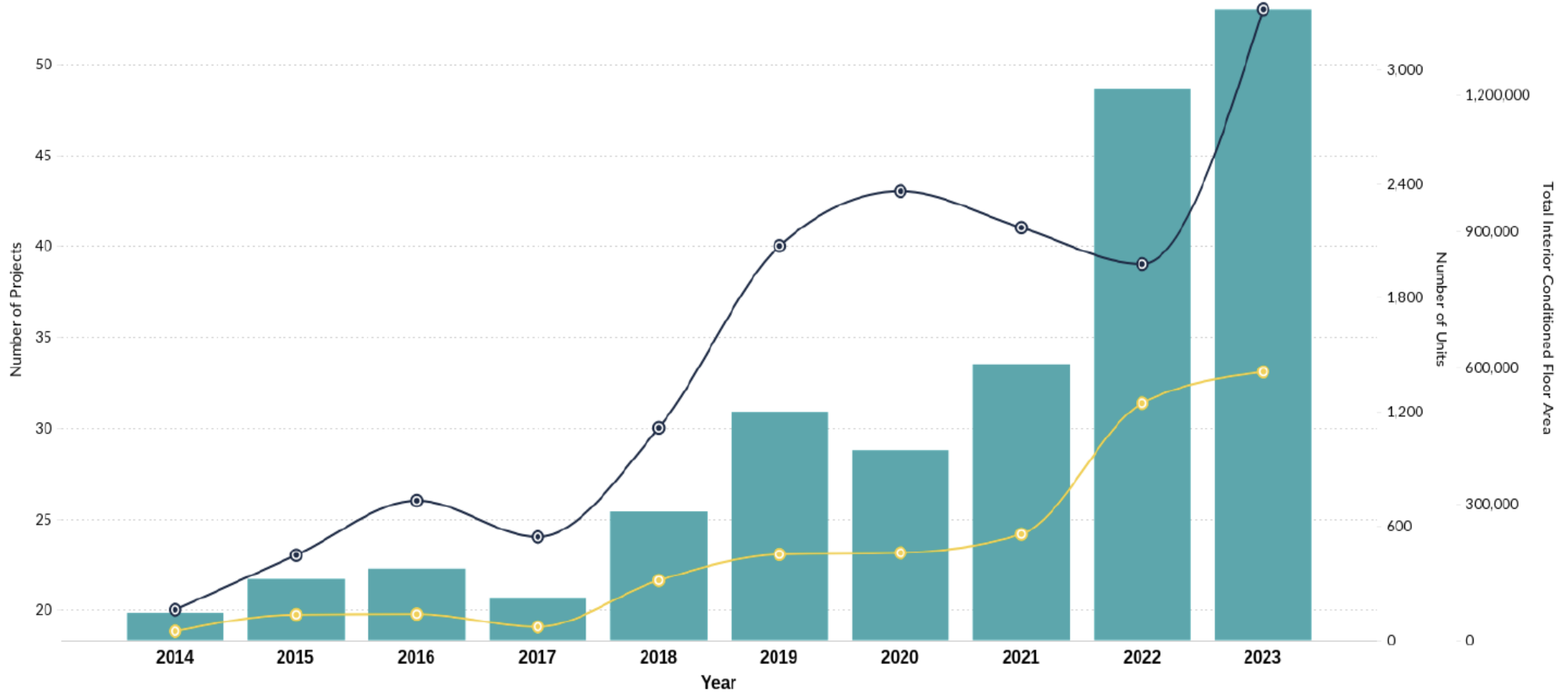
- 40 to 70% energy use



Design Certified Projects, Number of Units, and iCFA by Year

Legend

- Number of Projects
- Number of Units
- Total Interior Conditioned Floor Area (iCFA)



Certified Project Database

Q Search

SEARCH

PROJECT TYPE

- Addition
- New Construction
- Retrofit

BUILDING FUNCTION

- Directory
- Government / Public
- Hotel
- Mixed-Use
- Multifamily
- Office
- Other Non-Residential
- School / Education
- Single-Family

LOCATION

- Canada
- United States
- Japan
- Mexico
- South Korea

PROGRAM VERSION

Show all

STATUS

Show all

ASHRAE CLIMATE ZONES

Show all

Showing 1-10 of 655 results



69 Hillside Avenue

Single-Family • Retrofit
4A - Mixed - Humid

1713 sq. ft.

Completed 2020

Final Certified



Habitat for Humanity Columbia County - Ancramdale

Multifamily • New Construction
5A - Cool - Humid

2788 sq. ft.

Completed 2020

Final Certified



Rolling Bay Passive

Single-Family • New Construction
4C - Mixed - Marine

2342 sq. ft.

Final Certified



Susie Clemens House

Multifamily • New Construction
4A - Mixed - Humid

5737 sq. ft.

Completed 2019

Final Certified

Projects Database

<https://www.phius.org/certified-project-database>

1200 Projects

→ 405 Buildings Fully Certified

~5000 Dwelling Units

~5 Million Square Feet

→ 800 Buildings In Progress

Database Filters by:

Type

Location

Climate Zone

Function

etc

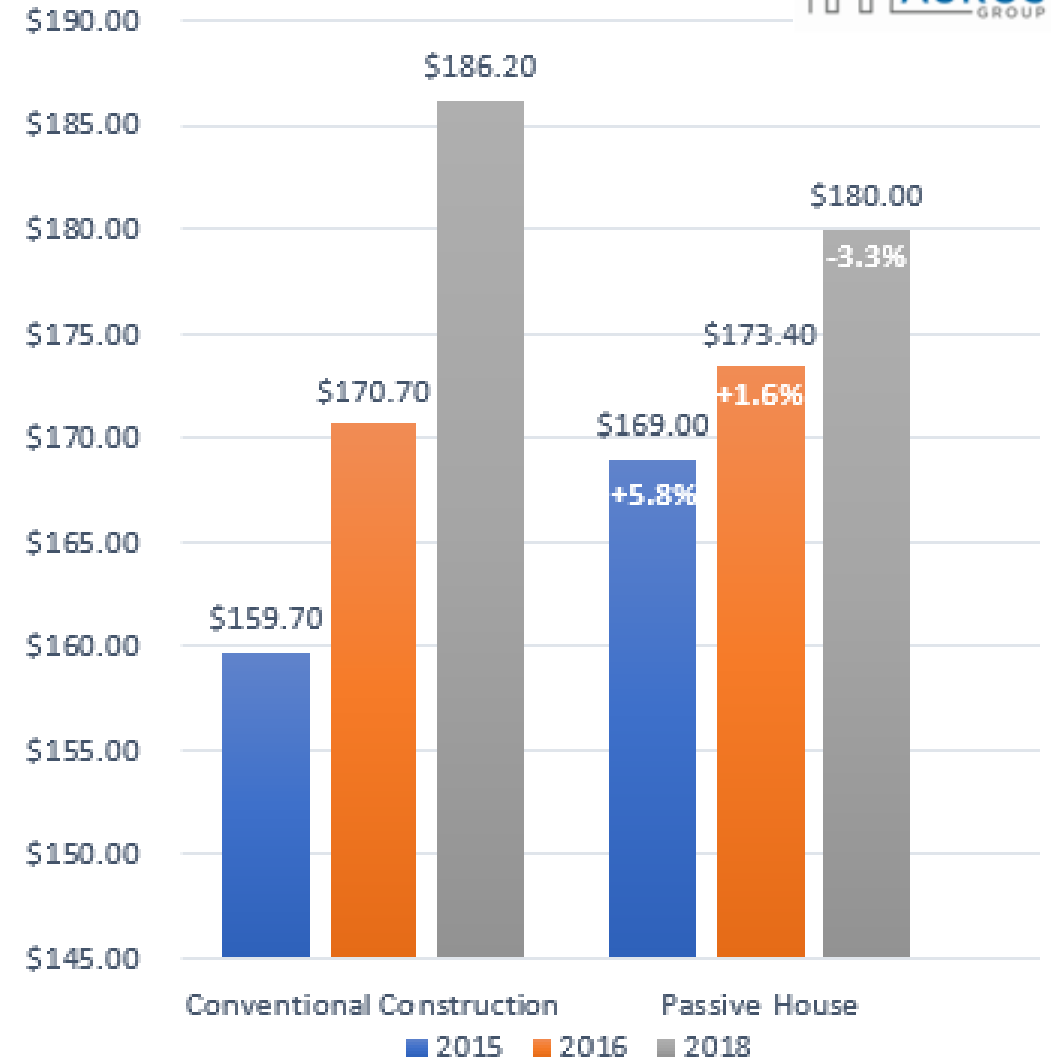
Pennsylvania Housing Finance Agency

Passive costs less with experience

First Year = +5.8%
Second Year = +1.6%
Fourth Year = -3.3%

Source: "How a PA affordable housing agency is making ultra-efficient buildings mainstream" Pittsburgh Post-Gazette December 31, 2018 & PHFA

Note: Low-income housing tax credits were not awarded in 2017



Massachusetts Clean Energy Center (Mass CEC)

OWNER & PROJECT	LOCATION	UNITS	AWARD	INCREMENTAL COST
<u>Beacon Communities Old Colony Phase Three C</u>	South Boston	55	\$120,000	<u>3.5%</u>
<u>Community Builders North Commons</u>	Northampton	53	\$212,000	<u>4.3%</u>
<u>Homeowner's Rehab Inc.'s Finch Cambridge</u>	Cambridge	98	\$147,000	<u>1.4%</u>
<u>NeighborWorks Southern Mass's Holbrook Center Senior Housing</u>	Holbrook	72	\$131,200	<u>1.6%</u>
<u>NorthShore Community Development Corporation's Harbor Village</u>	Gloucester	30	\$120,000	<u>1.8%</u>
<u>Preservation for Affordable Housing Mattapan Station</u>	Mattapan	135	\$540,000	<u>2%</u>
<u>Preservation of Affordable Housing The Kenzi at Bartlett Station</u>	Roxbury	52	\$168,000	<u>1%</u>



Lots of New Professionals since PhiusCon 2022..



500+ TOTAL in the past year...

Including a cohort in Japan...

Phius 2021
パフォーマンス目標値計算機 v2.1

言語 / LANGUAGE: 日本語

単位: メートル法

建物タイプ: 住宅

プロジェクトタイプ: 新築

都道府県: SHIGA

市: HIKONE

外皮面積 (m²): 3,750

空調有効床面積 (ICFA, m²): 1,500

住戸数: 1

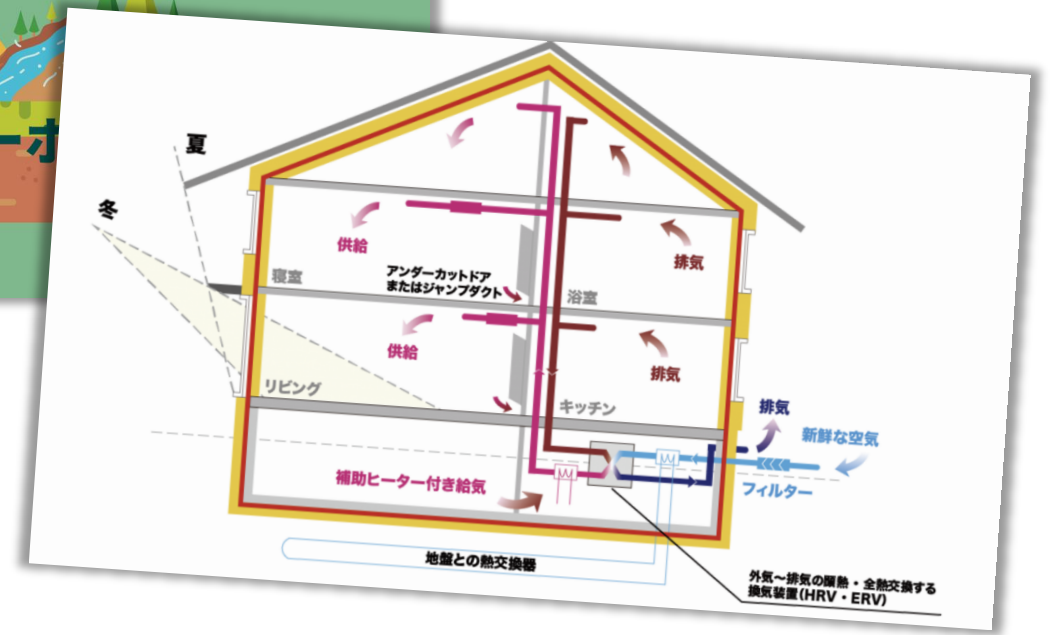
寝室数: 4

空調目標値

年間暖房需要	12.0	kWh/m ² yr
年間冷房需要	24.6	kWh/m ² yr
最大暖房負荷	10.7	W/m ²
最大冷房負荷	8.2	W/m ²

一次エネルギー目標値

Phius コア	8637	kWh/person.yr
Phius ゼロ	0	kWh/person.yr



And we keep growing!



Katrin Klingenberg
Co-Founder & Executive Director



Lisa White
Associate Director



Michael Knezovich
Communications Director



Graham S. Wright, PhD
Senior Scientist & Chair of the Phius Technical Committee



John Loercher
Project Certifier



Anthony V. Lisanti CEM, CPHC®
QA/QC Manager



Josh Ruedin
Professional Training and Education Programs Manager



Jennie Eber
Manager of Membership and Programs



Michael Franco
Product Certification Manager



James P. S. Ortega, RA
Certification Program Director



Andrés Pinzón, PhD
Project Certifier



Isaac Elnecave
Policy Specialist & Project Certifier



Steven Reid-Wynn
Office Administrator



Max Laphorne
Communications Manager



Al Mitchell
Project Certifier



Neil Rosen
Project Certifier



Haley Kalvin-Gold
Project Certifier



Zoe Rader
Project Certifier and Policy Associate



Mark Smith
Quality Assurance Associate



Aditya Singh
Quality Assurance Associate



Shannen Martin
Project Certifier



Cristina Orozco
Training Program Administrator


New Releases

We launched a NEW Window Database!

With extensive filters, climate zone recommended products, AND an inch-pound & metric toggle

Imperial Metric

MANUFACTURER

Choose manufacturer 

U-VALUE, WHOLE WINDOW
BTU/HR·FT²·°F

0.09 to 0.50

0.09 0.30 0.50

SHGC, WHOLE WINDOW


0.00 to 0.99

0.00 0.50 0.99

Window Database

SELECT PRODUCT TYPE

Windows Doors Panels

Search windows 

Showing 1-10 of 489 windows

MANUFACTURER	SERIES NAME	U-VALUE, WHOLE WINDOW	SHGC, WHOLE WINDOW	OPERATION TYPE	FRAME MATERIAL	IGU PANES
DAKO Windows and Doors	DAKO DPO 82 Tilt Turn	0.15 BTU/hr·ft ² ·°F	0.337	Operable	Vinyl	Triple
DAKO Windows and Doors	DAKO DPO 82 Tilt Turn	0.15 BTU/hr·ft ² ·°F	0.175	Operable	Vinyl	Triple
DAKO Windows and Doors	DAKO DPO 82 Tilt Turn	0.16 BTU/hr·ft ² ·°F	0.362	Operable	Vinyl	Triple
DRUTEX SA	Drutex IE7 Tilt Turn	0.16 BTU/hr·ft ² ·°F	0.318	Operable	Vinyl	Triple
DRUTEX SA	Drutex IE Transom	0.16 BTU/hr·ft ² ·°F	0.307	Operable	Vinyl	Double

Overview

U-VALUE, WHOLE WINDOW 0.18 BTU/hr·ft²·°F
1.00 W/m²K

U-VALUE, CENTER OF GLASS (U-COG) 0.10 BTU/hr·ft²·°F
0.59 W/m²K

SHGC, WHOLE WINDOW 0.121

OPERATION TYPE Operable

FRAME MATERIAL Vinyl

IGU PANES Triple

GLAZING NAME SN5IHT Clear 4mm/90% Argon 16 mm/ Extra Clear 4mm/ 90% Argon 16mm/ ClimaGuard Premium 2T 4 mm

REC. CLIMATE ZONE(S)

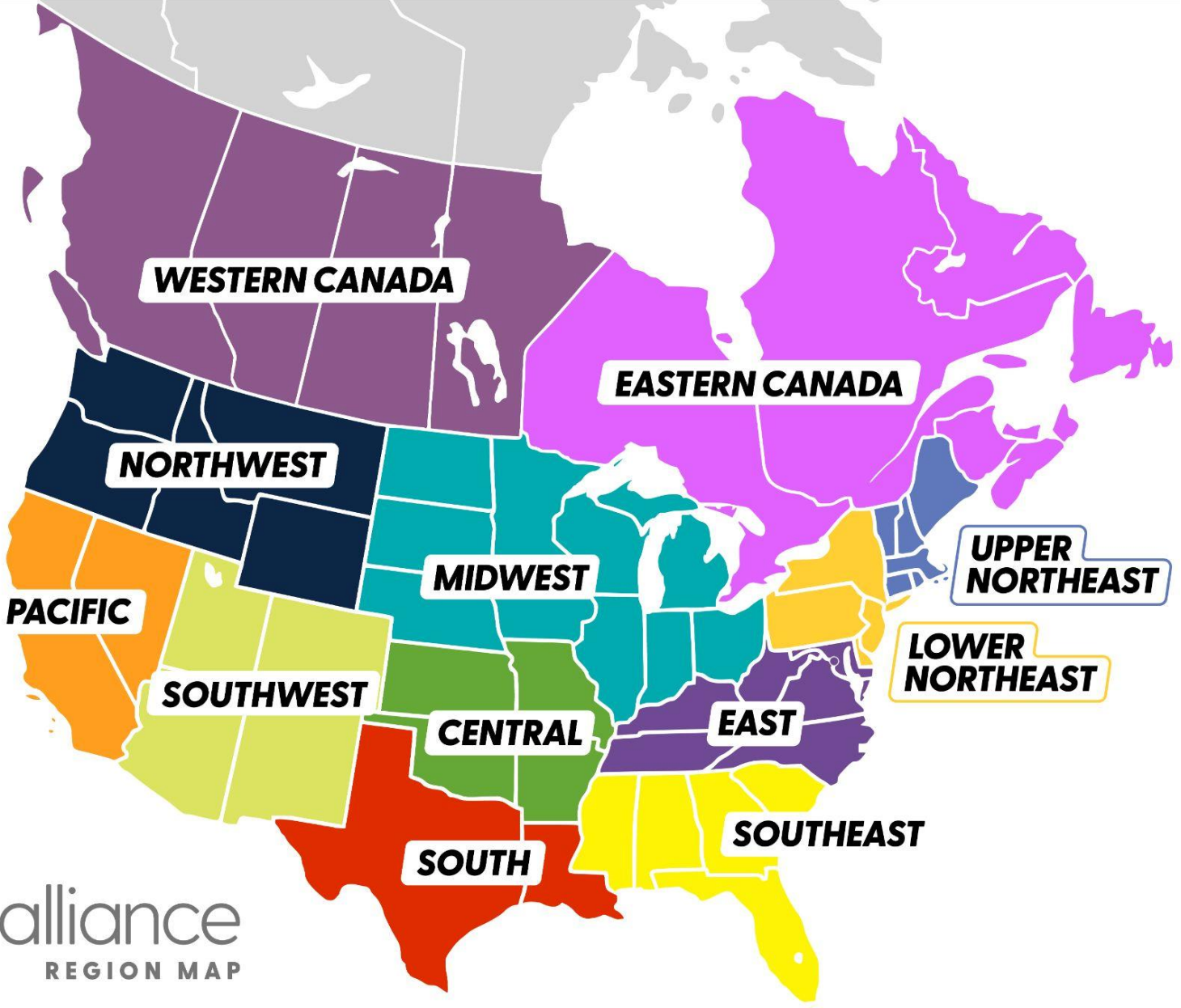
1 2 3C 3B 3A 5C
4C 4B 4A

Alliance Chapters

New in 2023

- 1. Houston
- 2. Minnesota
- 3. Cascadia
- 4. Rhode Island


* & one re-brand
Hudson Valley → New York



ASHRAE 227P

Passive Building Design Standard

**OUT FOR ADVISORY
PUBLIC COMMENT
THROUGH
NOVEMBER 13, 2023**



BSR/ASHRAE Standard 227P

Public Review Draft

Passive Building Design

Advisory Public Review (September 2023)
(Draft Shows Complete Proposed New Standard)

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed standard, go to the ASHRAE website at www.ashrae.org/standards-research-technology/public-review-drafts and access the online comment database. The draft is subject to modification until it is approved for publication by the Board of Directors and ANSI. Until this time, the current edition of the standard (as modified by any published addenda on the ASHRAE website) remains in effect. The current edition of any standard may be purchased from the ASHRAE Online Store at www.ashrae.org/bookstore or by calling 404-636-8400 or 1-800-727-4723 (for orders in the U.S. or Canada).

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ASHRAE, 180 Technology Parkway Peachtree Corners, GA 30092

READ MORE HERE



Coming in 2024

Phius REVIVE 2024

a retrofit standard, for existing buildings

Vision: every building supports the health of people and the planet

- **Robust, Resilient – Weatherization & Fortification** versus site hazards
- **Removing-unhealthy-stuff-ification**
- **Decarbonization**

OUT FOR PUBLIC COMMENT SOON

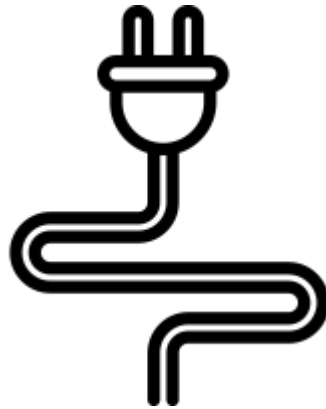
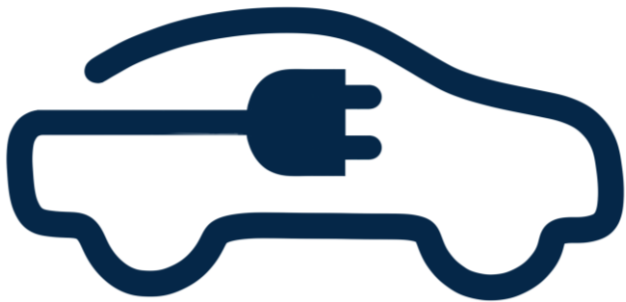
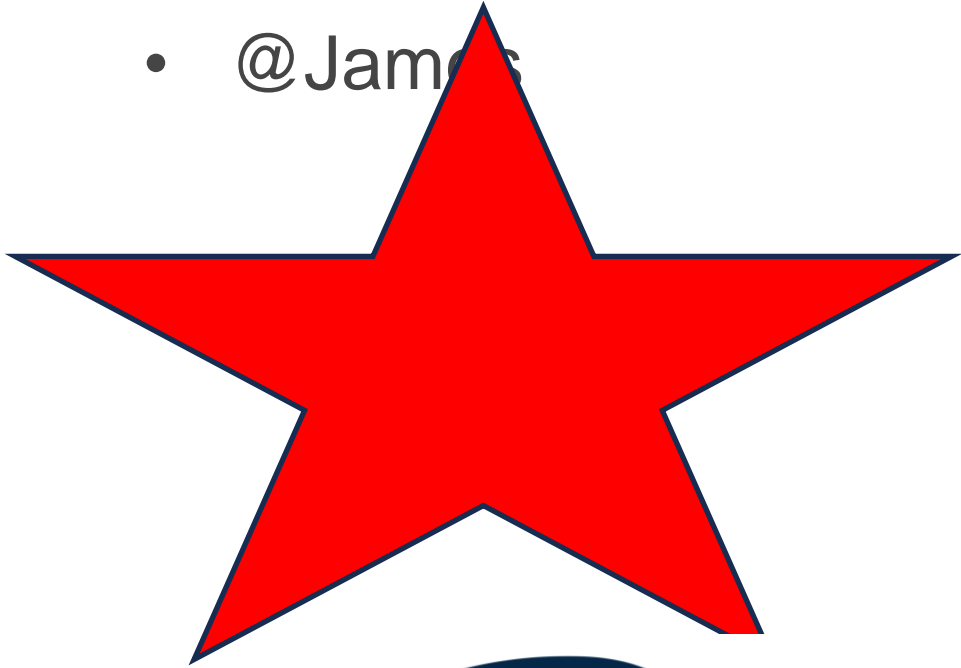




Project Certification & Standards Development

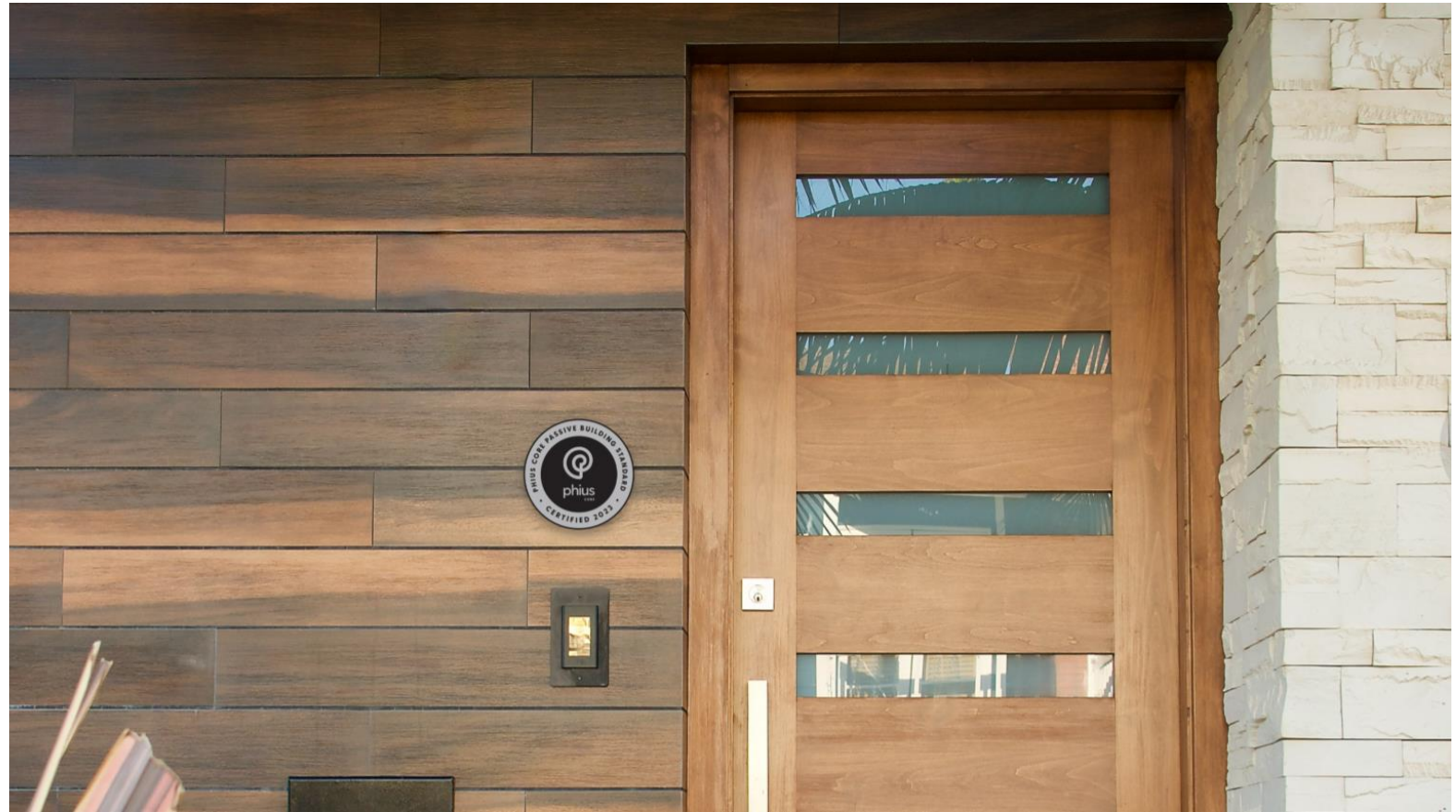
Phius CORE and ZERO 2024 Updates

- @James





New Certified Project Plaques



Phius earns designation as Multifamily Review Organization for Energy Star Multifamily New Construction (ESMFNC) Program



					Renewable Energy to Get to Zero
					No Fossil-Fuel Combustion On-Site
					Electric Vehicle Readiness
					Balanced Ventilation HRV/ERV
				SOLAR READY Depends on climate	SOLAR READY ALWAYS
				Eff. Comps. & H ₂ O Distrib	Eff. Comps. & H ₂ O Distrib
				EPA Indoor airPLUS VI	EPA Indoor airPLUS VI
				Ducts in Condit. Space	Ducts in Condit. Space
		HVAC QI w/WHV	HVAC QI w/WHV	HVAC QI w/WHV	Micro-load HVAC QI
		Water Management	Water Management	Water Management	Water Management
		Independent HERS Verification	Independent HERS Verification	Independent HERS Verification	Independent HERS Verification
IECC 2012 Enclosure	IECC 2012 Enclosure	IECC 2012 Enclosure	IECC 2015/18 Encl./ES Win.	Ultra-Efficient Enclosure	Ultra-Efficient Enclosure
HERS 70-80	HERS 60-70	HERS 50-60	HERS 35-45	HERS 30-40	HERS < 0
IECC 2012	ENERGY STAR v3	ENERGY STAR v3.1	ZERH	phius CORE	phius ZERO

A dimly lit classroom with students at desks and a teacher at the front. The text "Training & Education Programs" is overlaid in the center.

Training & Education Programs

Launch Phius Foundations Training



101-Level Introduction to:

Phius

The Business Case

Passive Building

Phius Case Studies

Building Science

Passive Policy

Phius Certification

Beyond the Building

+ Exam =

Phius Certified *Associate*

Launch Phius Trades' Training



Enclosure Specialist

MEP Systems Specialist

Master Specialist

University Expansion Initiative



THE UNIVERSITY
OF ARIZONA.



University
at Buffalo



PennState



UNIVERSITY OF
OREGON



Rensselaer



BALL STATE
UNIVERSITY.

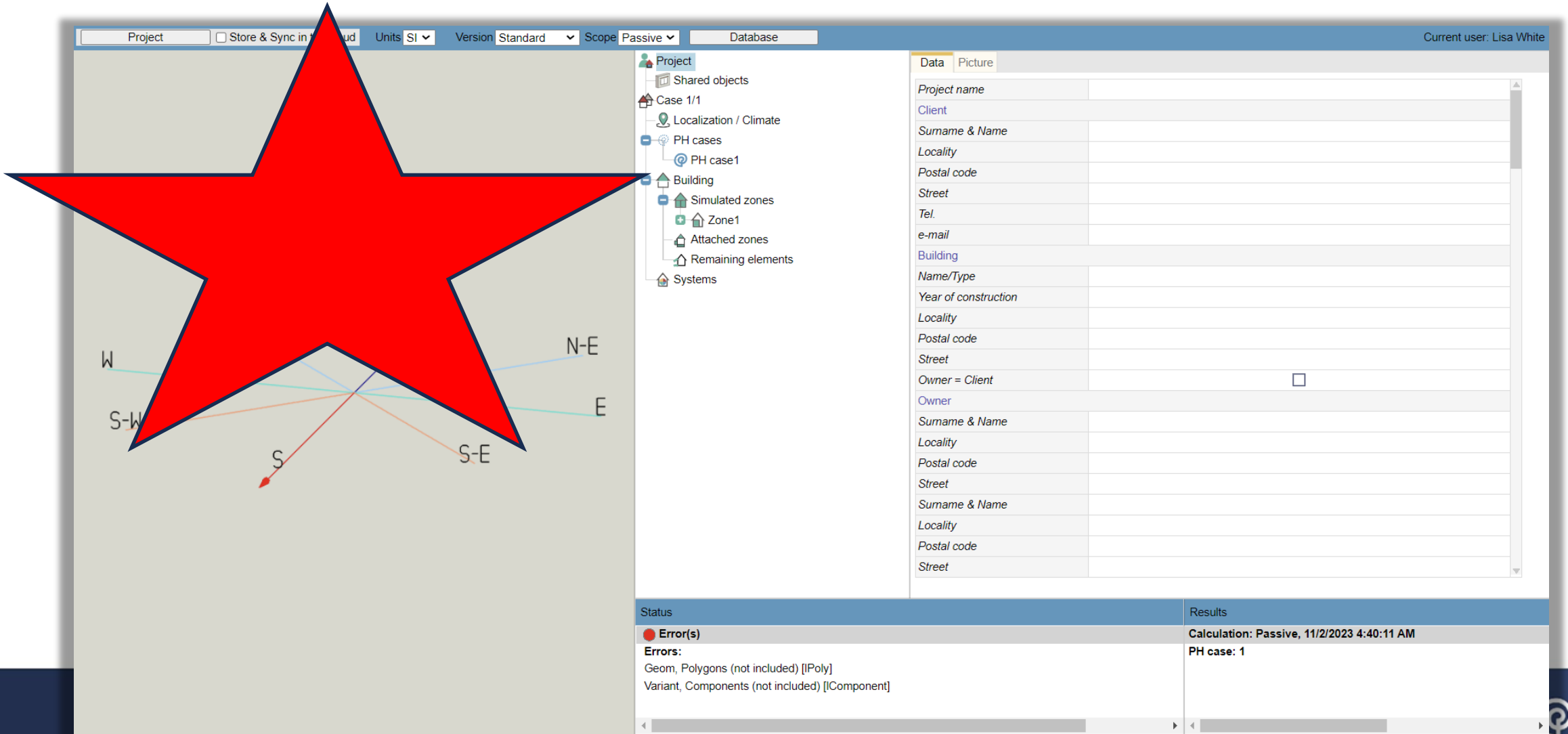


WENTWORTH
INSTITUTE OF TECHNOLOGY



More Resources & Tools

New Cloud-Based Energy Modeling Tool – Capabilities as WUFI Passive & More



The screenshot displays the software interface for a cloud-based energy modeling tool. A large red star is overlaid on the left side of the window, pointing towards the 'PH case 1' item in the project tree. The interface includes a top menu bar with options like 'Project', 'Store & Sync in Cloud', 'Units: SI', 'Version: Standard', 'Scope: Passive', and 'Database'. The main workspace shows a project tree on the left and a data entry table on the right. The data table has columns for 'Data' and 'Picture' and contains fields for 'Project name', 'Client', 'Surname & Name', 'Locality', 'Postal code', 'Street', 'Tel.', 'e-mail', 'Building', 'Name/Type', 'Year of construction', 'Owner = Client', and 'Owner'. The bottom status bar shows 'Error(s)' and 'Results'.

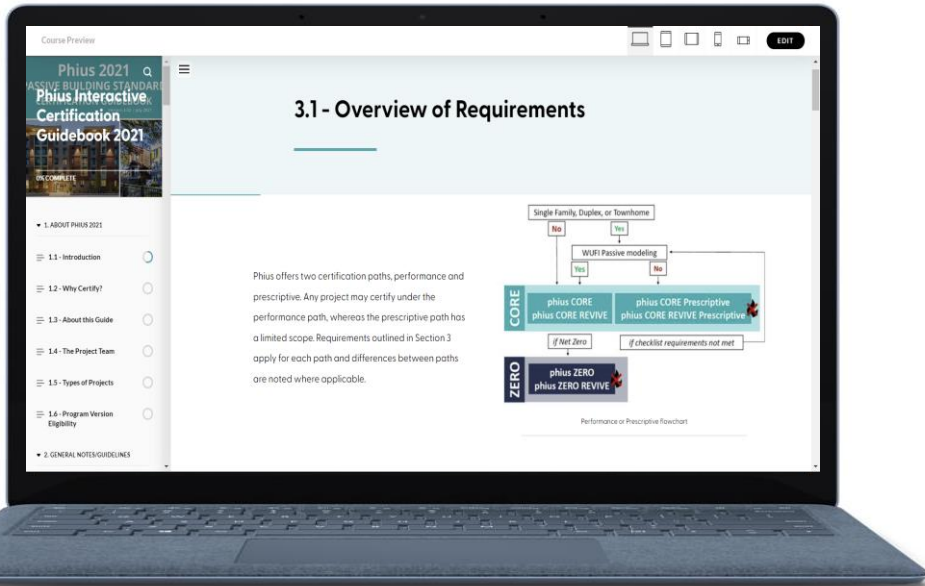
Data	Picture
Project name	
Client	
Surname & Name	
Locality	
Postal code	
Street	
Tel.	
e-mail	
Building	
Name/Type	
Year of construction	
Locality	
Postal code	
Street	
Owner = Client	<input type="checkbox"/>
Owner	
Surname & Name	
Locality	
Postal code	
Street	
Surname & Name	
Locality	
Postal code	
Street	

Status: Error(s)
Errors:
Geom, Polygons (not included) [IPoly]
Variant, Components (not included) [Component]

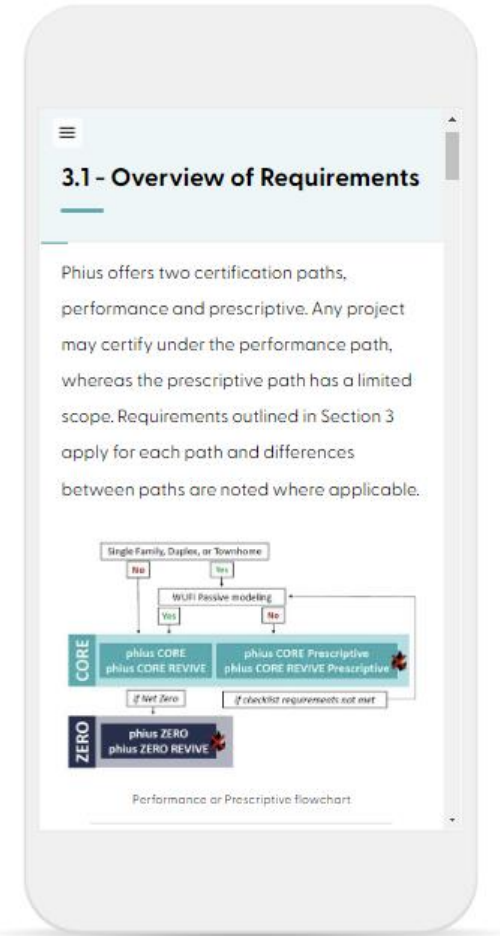
Results:
Calculation: Passive, 11/2/2023 4:40:11 AM
PH case: 1



Interactive Certification Guidebook

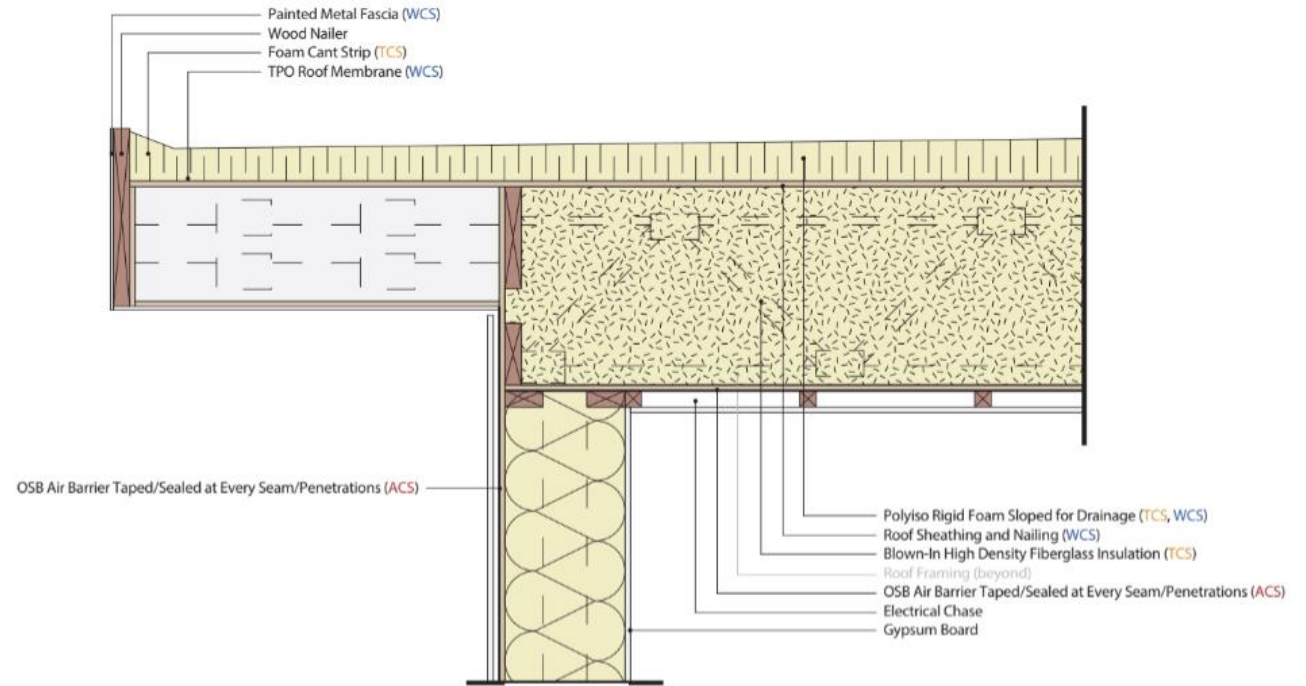
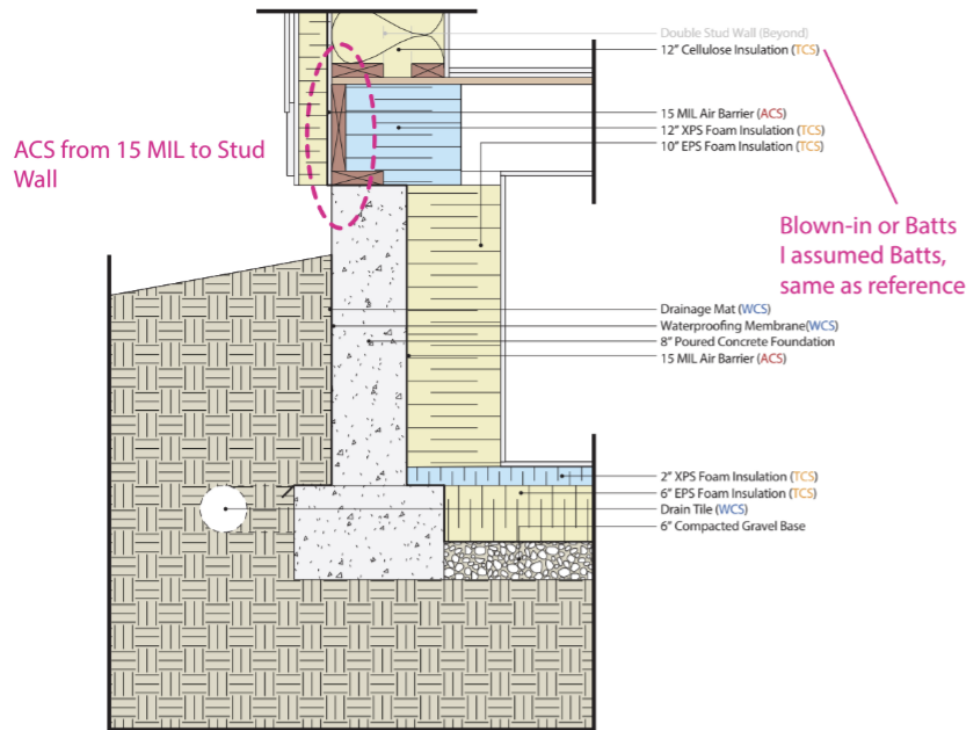


- Search Bar
- Integrated Instructional Videos
- More Supporting Graphics
- Mobile Friendly





Online Details Library



Policy Expansion





Massachusetts Stretch Code

MULTIFAMILY HOUSING

Boston's new stretch code requires new multifamily structures to meet Passive House building requirements

Plus certifications are expected to increase with tougher green building standards.

BY PETER FABRIS, CONTRIBUTING EDITOR | MAY 30, 2023





QAP Inclusion Expanding



**Coming...sometime?
Maybe?**



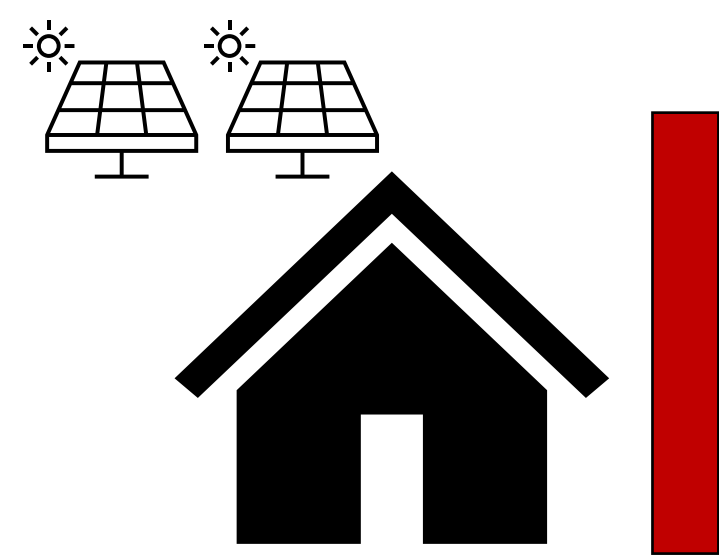
PhiusGEB = Designing for low loads, and enabling “smart” loads



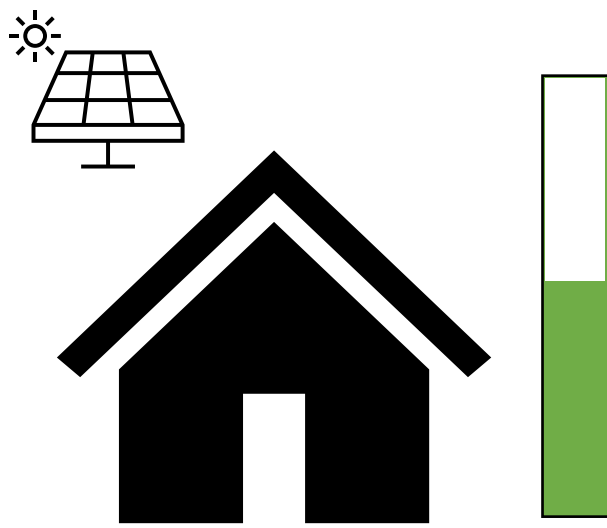
GEB =

**Grid-Interactive
Efficient
Building**

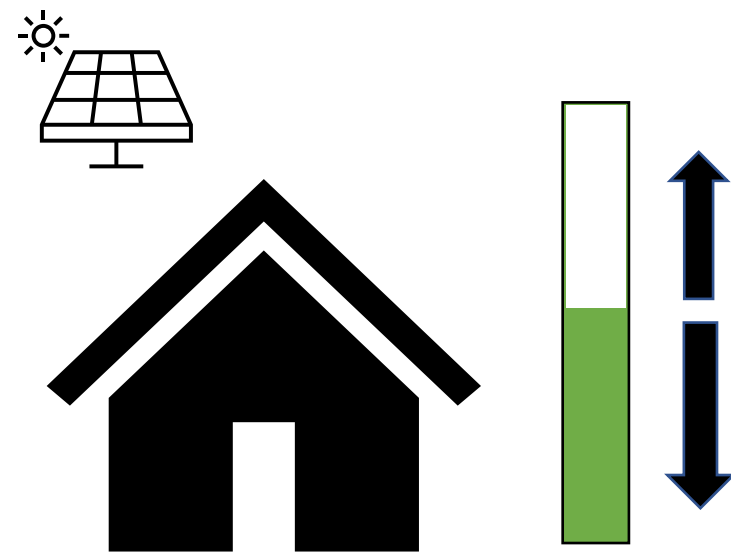




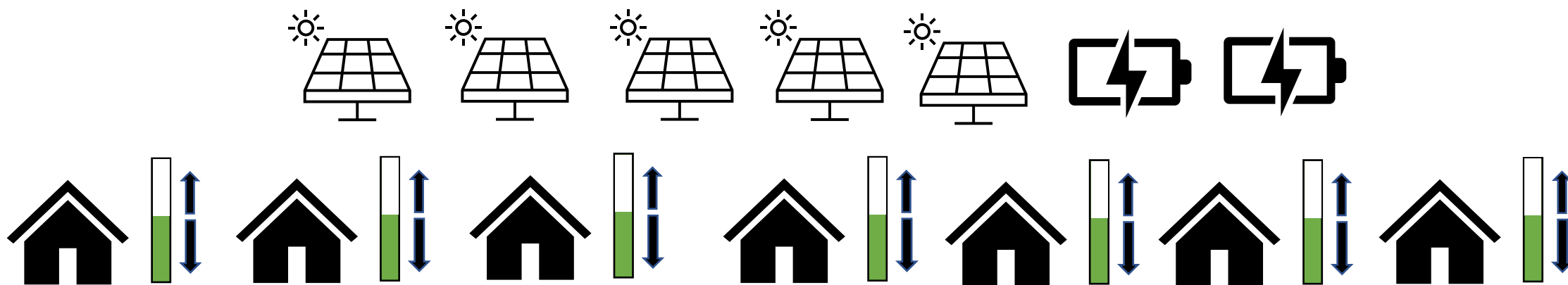
Baseline Net Zero



Phius CORE → ZERO



Phius ZERO + Grid-Interactive Building (GEB)

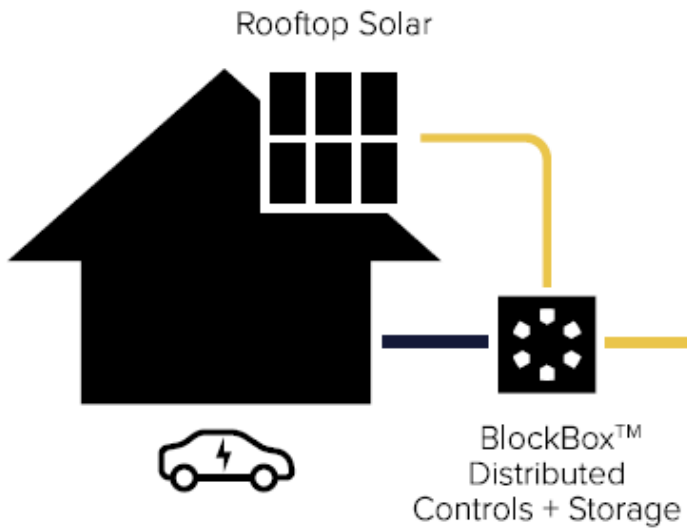


PhiusGEB Microgrid Community

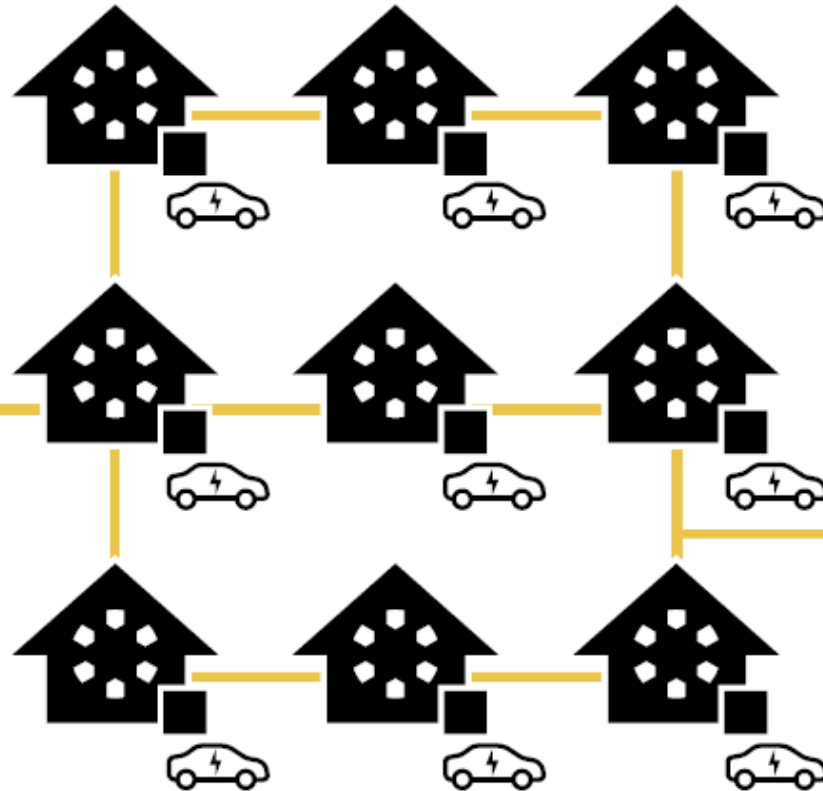


How It Works

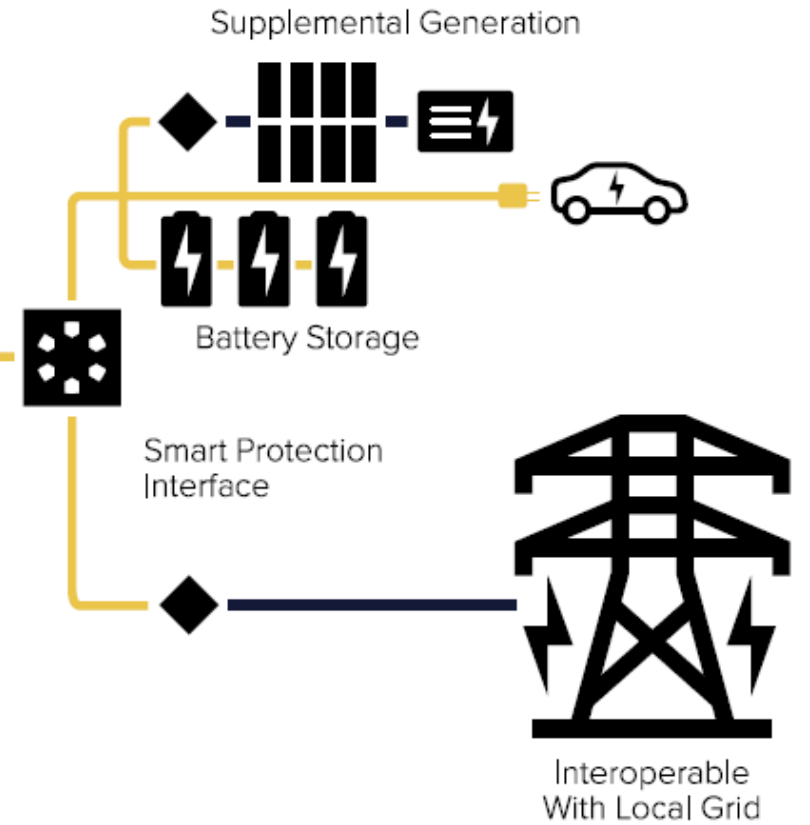
BlockHome™



BlockLoop™



BlockCentral™



LEGEND

— Distributed Clean Energy

— Traditional AC Power

Microgrids

Ground broken on first “zero-energy” Maryland housing community

Sean Wolfe

10.11.2023

Share |



**Peabody Architects
“Phius-Inspired”**

**6 Low-to-Moderate
Income Housing**

< 50 kW Rooftop Solar

**~ 100 kWh Battery
Storage**

The Phius F-150 Home?



9.6 kW

AVAILABLE
INTELLIGENT
BACKUP POWER

Based on 30 kWh use per day using the F-150 with the long range battery.

When home is properly equipped and home transfer switch disconnects the home from the grid. Based on 30 kWh use per day using the F-150 with the long range battery. Your results may vary depending on energy usage.





Ongoing Monitoring & Verification



Phius COMM *powered by 227P*





Expanding Toolkit for Modeling & Design





Translation



**Phius' Future is in Good
Hands**



Katrin Klingenberg

Co-Founder & Executive Director



Lisa White

Associate Director



Michael Knezovich

Communications Director



Graham S. Wright, PhD

Senior Scientist & Chair of the Phius Technical Committee



John Loercher

Project Certifier



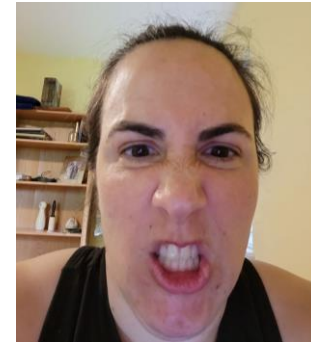
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QA/QC Manager



Josh Ruedin

Professional Training and Education Programs Manager



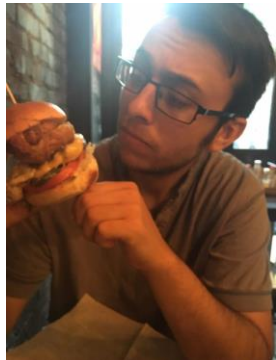
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Manager of Membership and Programs



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James P. S. Ortega, RA

Certification Program Director



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Project Certifier



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Policy Specialist & Project Certifier



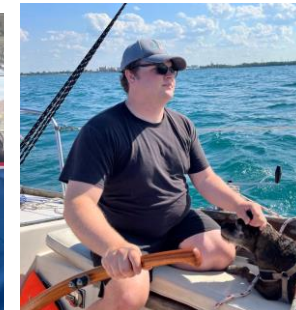
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Haley Kalvin-Gold

Project Certifier



Zoe Rader

Project Certifier and Policy Associate



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