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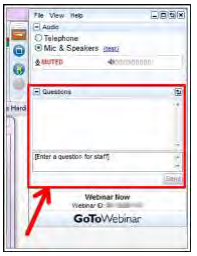

Type them into questions box!

"Why am I muted?"
Don't worry. Everyone is muted except the presenter and host. Thank you and enjoy the show.

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Why does food taste better when it is grilled or what molecular compounds make a great wine? Discover the delectable science of your favorite food and drink and don't forget to come back for a second helping.

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YOUR CAREER

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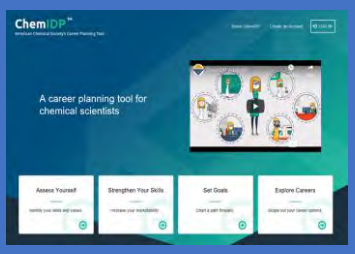

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Moderator: Paula Christopher, American Chemical Society

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- How to manage nanomaterial-containing products as part of an already-existing environmental, health, and safety (EHS) program
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- Resources that are available to laboratories, manufacturers, and processors to safely handle nanomaterials

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Science History Institute

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THIS ACS WEBINAR WILL BEGIN SHORTLY...

10

Building Green – Advances in Sustainable Building

October 13, 2020

Science History Institute
Chemistry · Engineering · Life Sciences

Louis Padulo
President Emeritus, University City Science Center

Rob Fleming
Professor and Director, MS in Sustainable Design Program, Thomas Jefferson University

Edgar Stach
Professor, Thomas Jefferson University

Marc Duey
Managing Partner, Duce Management, Project 1851 Benefactor

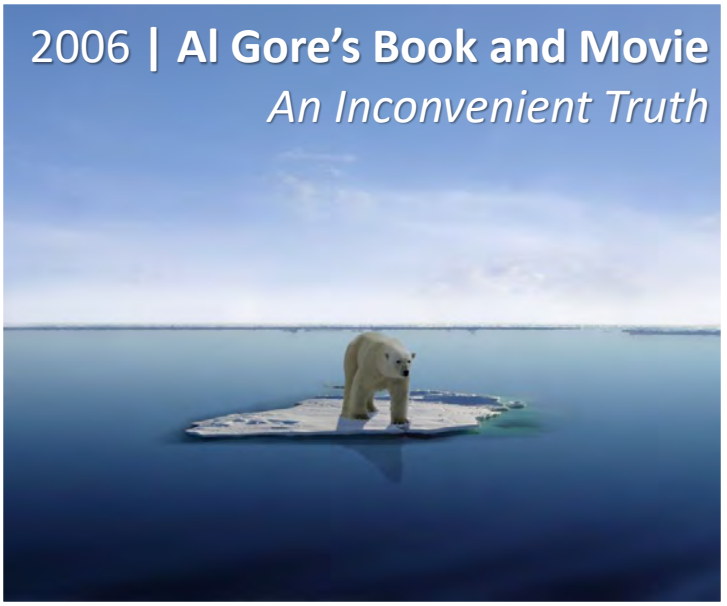
Net-Zero Energy

Rob Fleming, AIA, LEED AP, NOMA
Cofounder and Director
MS in Sustainable Design program

Jefferson
Thomas Jefferson University
College of Architecture & the Built Environment

2005


Wikipedia.com
2005 | Hurricane Katrina


2006 | Al Gore's Book and Movie
An Inconvenient Truth


aninconvenienttruth
A GLOBAL WARNING

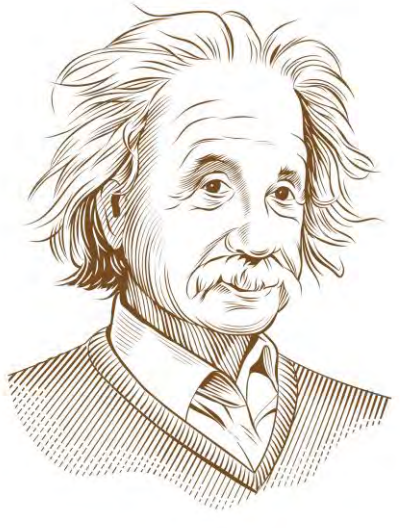

2012 | **Record Drought in the U.S.**


2012 | **Hurricane Sandy**


2017| Harvey


2020| West Coast Wildfires
Shave Lake 4
Clovis 44
Fresno 55

We need to change
and change fast



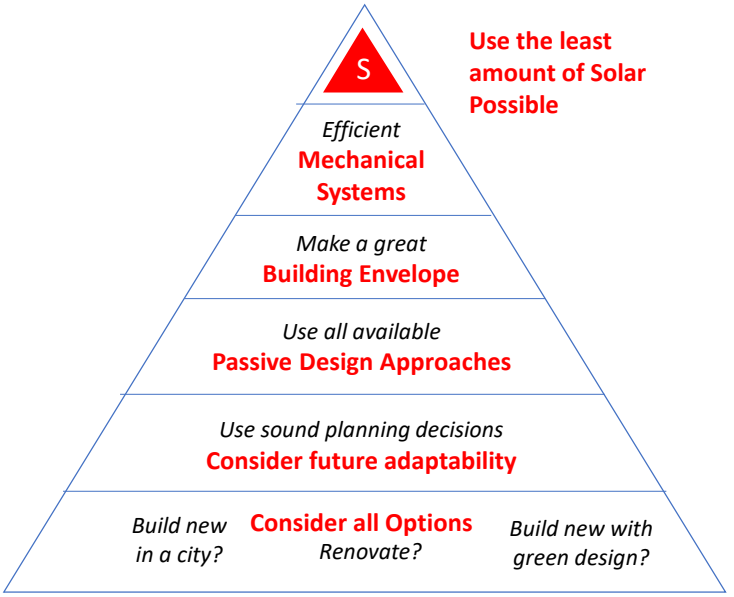
“You can never solve a problem on the level on which it was created”

We need to go to the next level

New forms of thinking

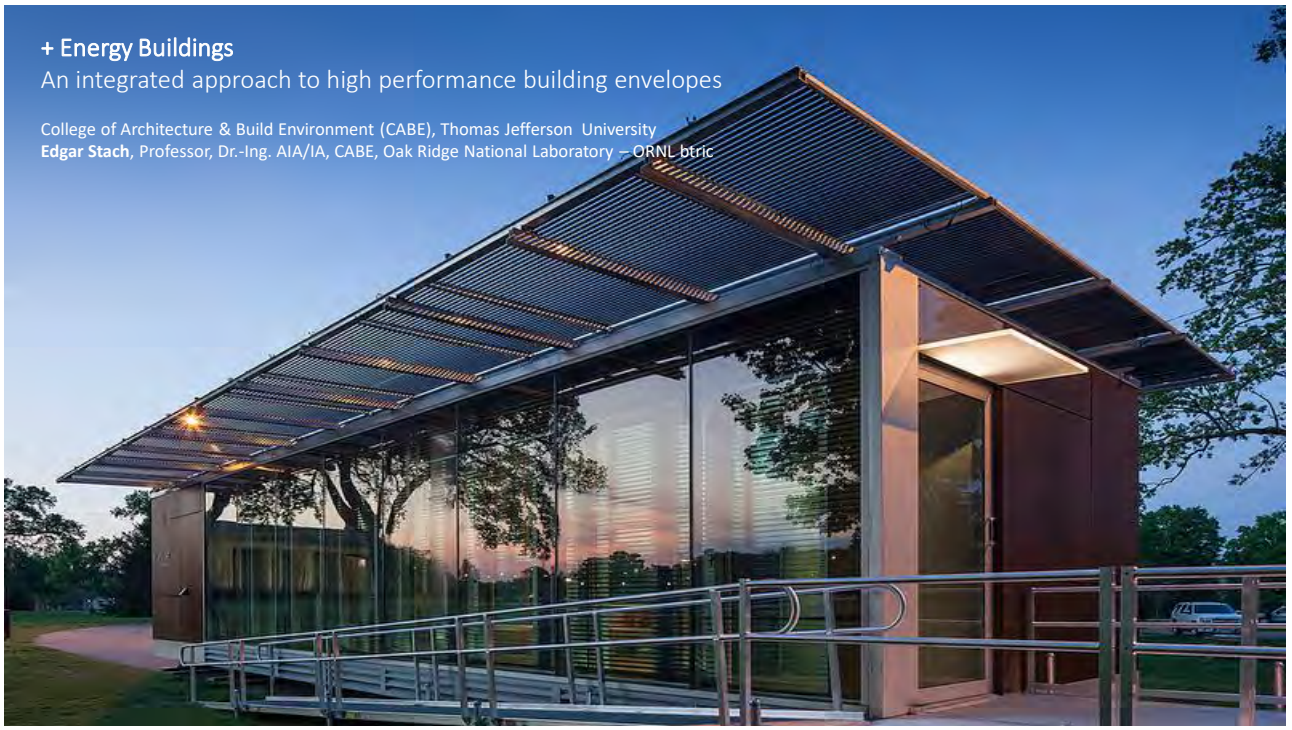
24

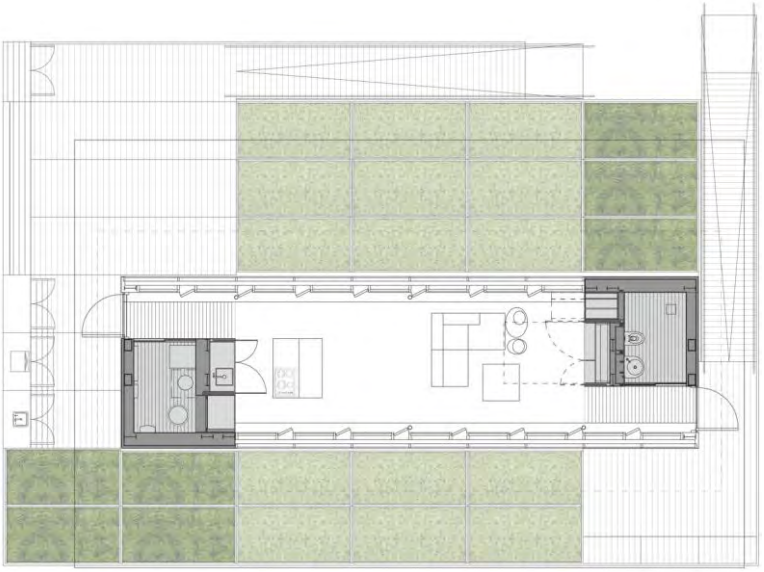
Net-Zero Energy Design Principles



25

Thank You!





The LIVING LIGHT home is intended as a retreat from the visual and physical clutter of the Information Age while integrating technology seamlessly into the design. The greatest luxuries in the LIVING LIGHT home are volume and light.

Jefferson
Thomas Jefferson University

In the Living Light house the ubiquitous glass façade is re-imagined as a transparent wrapper that simultaneously resolves dissimilar interior and exterior design criteria.

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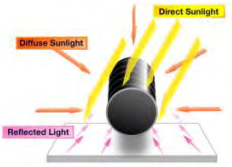
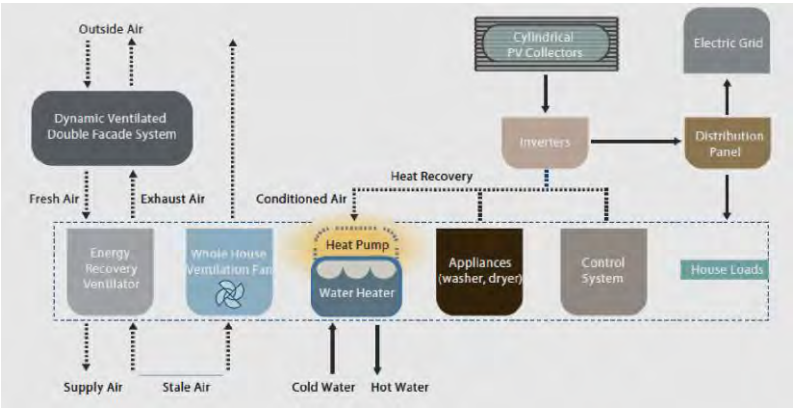
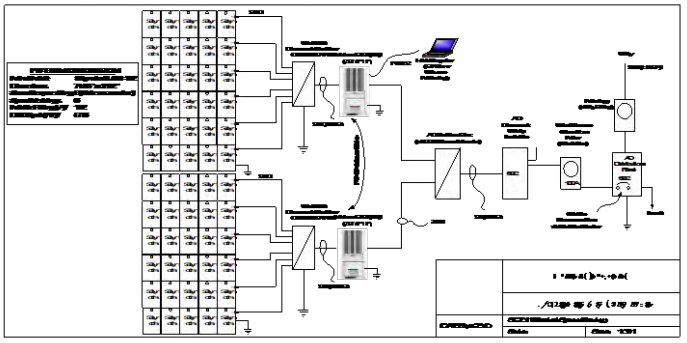
SOLAR PV SYSTEM, MECHANICAL SYSTEMS, HOME AUTOMATION SYSTEM





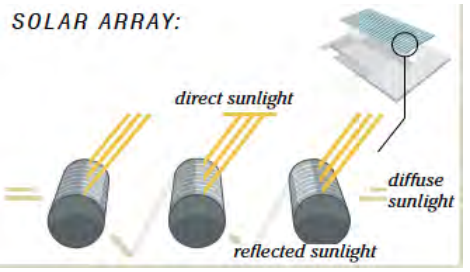
Flow chart for mechanical, electrical, and plumbing systems.

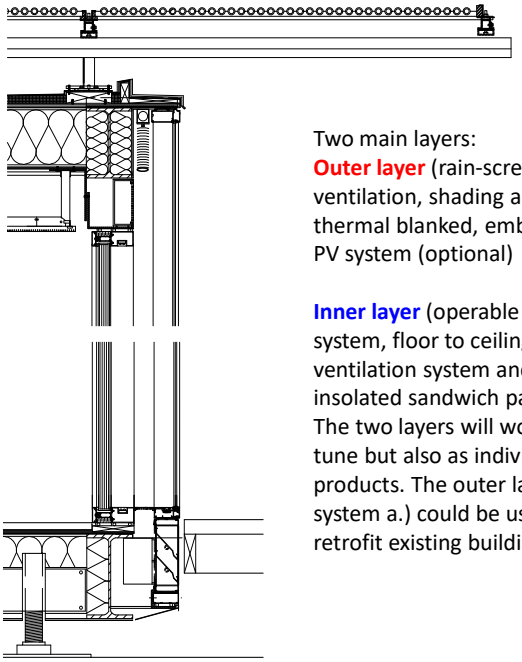
Solar Power Generation



The 10.9-kW array employs a cylindrical module

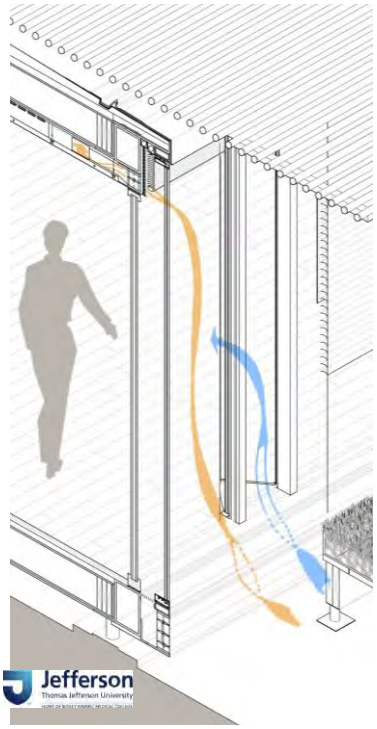
SOLYNDRA®

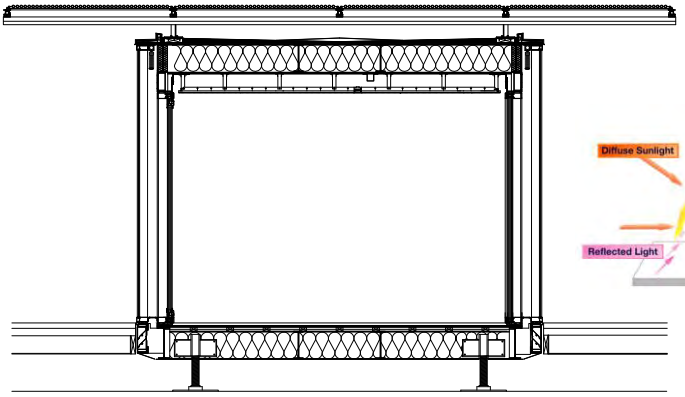




Two main layers:
Outer layer (rain-screen) with ventilation, shading and thermal blanked, embedded PV system (optional)

Inner layer (operable window system, floor to ceiling) with ventilation system and insolated sandwich panels. The two layers will work in tune but also as individual products. The outer layer, system a.) could be used to retrofit existing building.





Tubular Photovoltaic System
Overhang
- blocks summer sun
- allows winter sun

Glazing System
- incorporates thermal shade to prevent winter night heat loss
- incorporates protected horizontal blinds outside of conditioned space

In Summer
- air is ventilated from cavity to reduce heat loss

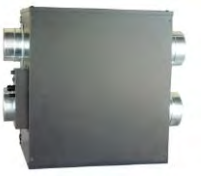
In Winter
- warm air may be allowed into conditioned space by operable windows in the inner façade

MECHANICAL VENTILATION

DUCTLESS MINI-SPLIT

- High Efficiency, SEER 22
- Variable capacity 2,800 – 12,000 Btu/hr
- Humidity Control

ENERGY RECOVERY VENTILATOR



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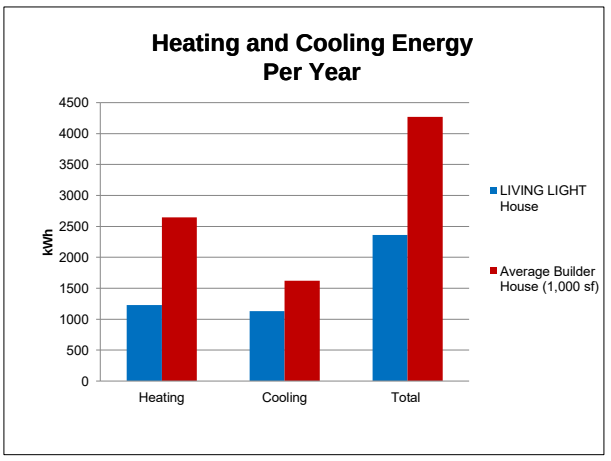

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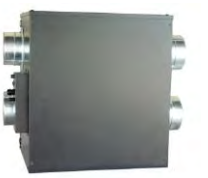

EnergyPlus Model		
	Max Load	
Cooling	1.28	Ton
Heating	14,457	Btu/hr

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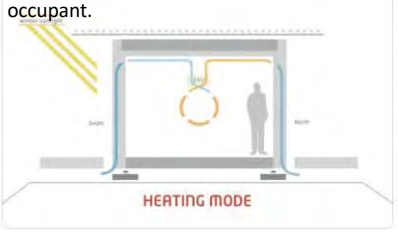
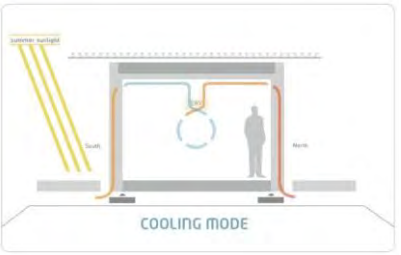
Smart Façade

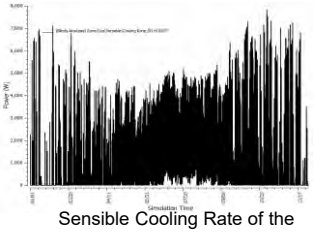
A dynamic double façade system, made up of suspended film, highly insulated (R-11) interior glass and single-pane exterior glass, is implemented along the majority of the north and south facades of the home. Alternating translucent and transparent panes allow for views of the landscape while maintaining a sense of privacy for the occupant.



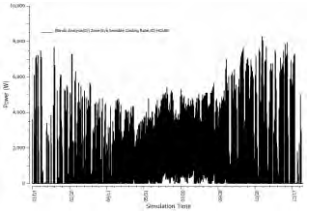


Sensor points

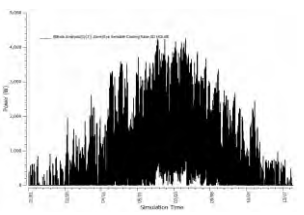
Energy Analysis Summary (Blinds)



Sensible Cooling Rate of the LIVING LIGHT house without blinds



Sensible Cooling Rate of the LIVING LIGHT house with Interior blinds



Sensible Cooling Rate of the LIVING LIGHT house with Exterior blinds

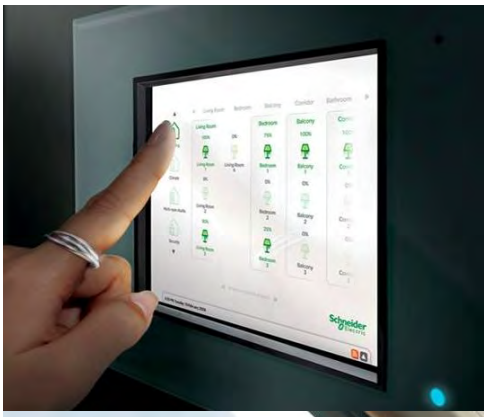
Energy Plus Results	Max Heating Load (Btu/hr)	Total Heating Energy (kBtu)	Max Cooling Load (tons)	% Difference in Max Cooling Load	**Total Cooling Energy (ton-hrs)**	**% Difference in Cooling Energy**
No Shading	15,656	16,003	2.24	0	**3,231**	**0**
Interior Shading	16,662	17,399	2.39	+6.7%	**3,365**	**+3.8%**
Exterior Shading	15,419	16,185	1.26	-43.8%	**1,700**	**-47.4%**

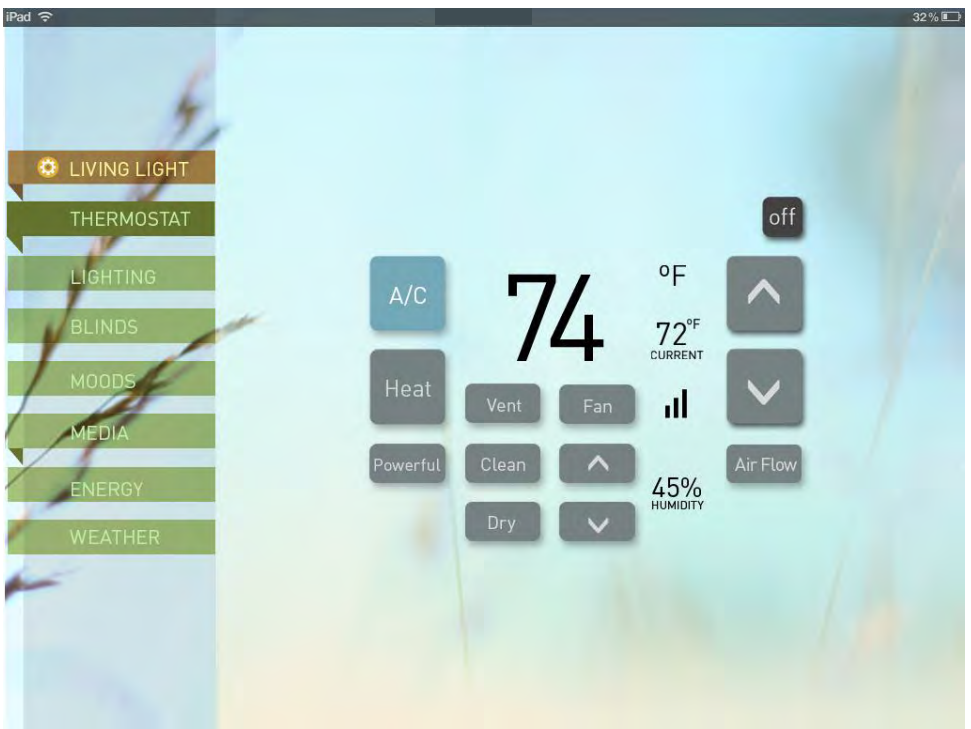
Home Automation System

Lighting
- LED dimming, Shading control

Active thermal control
- Shading, Weather monitoring

User Interface
- Internet enabled for third-party devices
- Simple Graphics
- Intuitive





Electric car charging station

The steel structural frame is permanently joined to a demountable chassis of a low-boy double-drop highway trailer as well as the temporary foundations of the main transportable volume. The temporary foundations will be steel screw jacks permanently attached to the demountable chassis of the highway trailer. The jacks will be spaced and sized to evenly support the weight of the chassis over uneven terrain.

Mobile science lab

Washington DC, July 4th

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PROJECT 1851

A Journey in Sustainability

A Place With Purpose

Project 1851, an eco-friendly yet tech-rich luxury cabin-stay, will be a unique icon of environmental stewardship and high performance building design.

A Vision For Better

Nestled , it provides a dynamic educational space for exploring and understanding sustainable building techniques and innovative ways for ecofriendly living.

Our Principals

As a model of environmentally sensitive and sustainable design, Project 1851 encourages others to build lightly with the land, leaving traces only worth preserving — for family, friends and all.

TIME

Respect the past, embrace the present, cultivate the future.

PRESERVATION

Live and build with the land, using recycled and reclaimed materials.

EXPERIENCE

Embrace uncommon, meaningful experiences that stir the soul.

CRAFTSMANSHIP

Create with a quality and an aesthetic that will last forever.

NATURE

Let nature lead because everything starts, ends and is enveloped by her.

COMMUNITY

Consider community impact — at Project 1851 and beyond.

PROPERTY INFO

Location:

1851 Art School Road
Chester Springs, PA 19425

Lot Size:

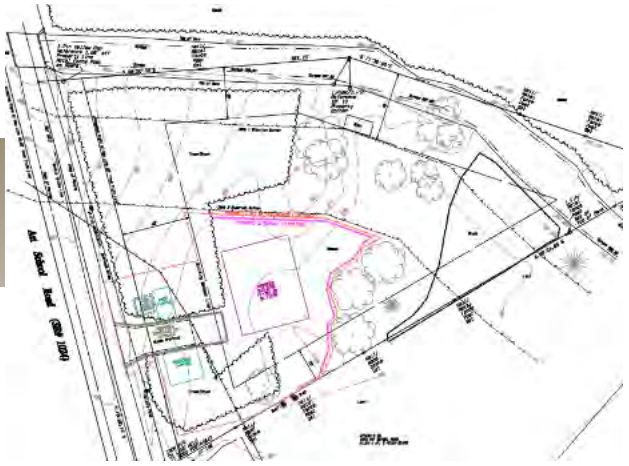
1.1 acre

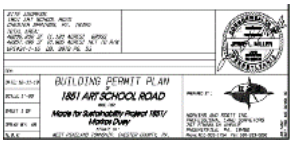
Project Owner:

The Duey Family

Anticipated Completion Date:

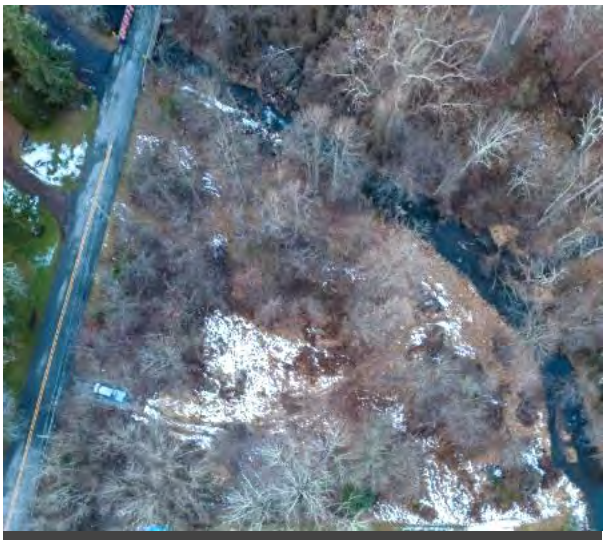
July 13th 2021





SITE PLAN

- 50'x40' proposed building with an approximate FF (Finished Floor) elevation on stilts
- Parking shown as 2-3 spots and kept out of flood plain



The cabin, gym and greenhouse will be on elevated stilts to be well above the flood level.

97% of the property in 100-year flood plane

Possible Floor Plan

Learning Palette

Project 1851 will offer the opportunity to be exposed to and learn about:

- Sustainability Leadership
- Biophilic and Advanced Tech House Design
- Real Estate Development
- Green Building Operations
- Construction Management
- Greenhouse Contributions

Aspirations

- Be booked for one full year in advance by weekend visitors who want hands on experience living carbon negative and off the grid.
- To be written up in Architectural Digest so individuals across the country can be inspired to build their own carbon negative home and learn how to incorporate substantiable living into their everyday life.

To provide a material donation, please email

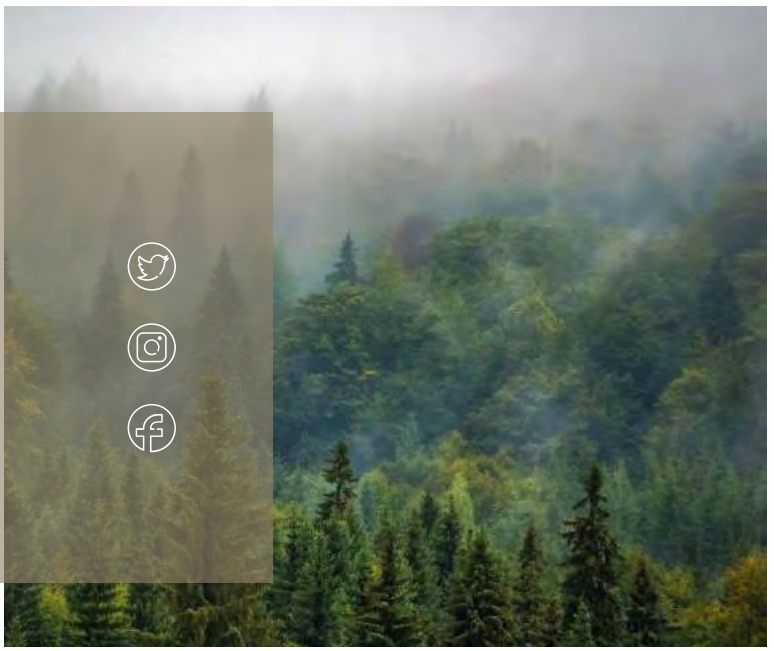
madeleineduey@gmail.com

THANKS

Does anyone have any questions?

Follow project updates:

www.Project1851.org



See you November 17th!

Here Comes the Sun – Advances in Solar Power

Dr. Vijay Kapur

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- Why STEM related organizations have a difficult time retaining underrepresented women
- Actionable steps to retain underrepresented talent in science, tech and engineering
- How retaining underrepresented talent leads to attracting talent that is more diverse

Co-produced with: ACS Department of Diversity Programs and the ACS Diversity, Inclusion & Respect Advisory Board

Thursday, October 15, 2020 at 2-3pm ET
Speakers: Peter Eckes, BASF Bioscience Research / Alexa Dembek, DuPont / John Benovetz, 3M
Moderator: LaTrease Garrison, American Chemical Society

Register for Free!

What You Will Learn

- What are the types of research currently happening within the chemical industry
- Where are potential industry career opportunities
- What are chemical companies looking for in future hires

Co-produced with: American Chemical Society and the Société de Chimie Industrielle

Friday, October 16, 2020 at 2-3pm ET
Speakers: Debbie Decker, University of California, Davis / Ken Kretchman, North Carolina State University / Craig Merlic, University of California, Los Angeles
Moderator: Chuck Geraci, National Institute for Occupational Safety and Health

Register for Free!

What You Will Learn

- How to manage nanomaterial-containing products as part of an already-existing environmental, health, and safety (EHS) program
- How to create and maintain a strong safety culture in a lab and the benefits of that culture
- Resources that are available to laboratories, manufacturers, and processors to safely handle nanomaterials

Co-produced with: Materials Research Society, National Nanotechnology Initiative, and ACS Chemical Safety Programs

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63