



Net Zero Main Street  
Metropolitan Washington Council of Governments

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Flywheel Development

# About Flywheel Development

## Vision

We build communities, not buildings, and that distinguishes us in a crowded marketplace.

## Priorities

### Sustainability

Sustainability is breaking the mold, reinventing the process, and above all, seeing opportunities where others see adversity.

### Community

A community approach to designing projects makes sense, because our goal is to build visionary, responsive projects.

### Partnerships

Strong partnerships help us do what we can't do alone.

# NZE Background

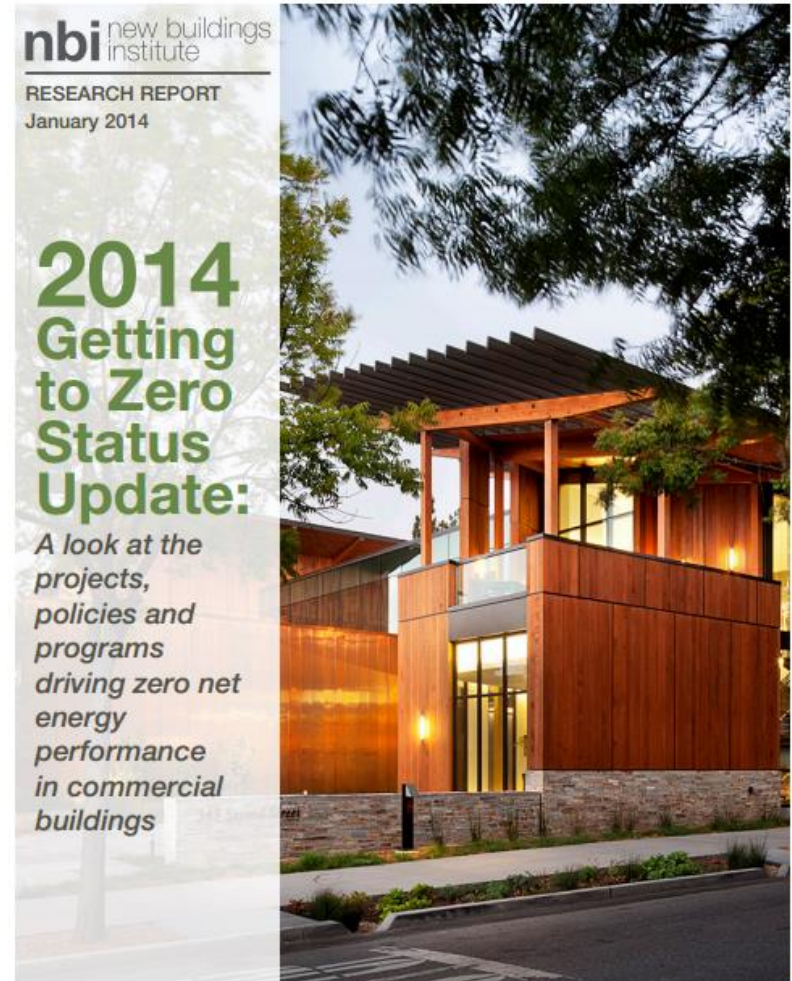
## Net Zero as a Tool for Revitalization

### Why Net Zero?

- Tool for revitalization
- Green jobs
- Meaningful climate action
- Building science is well-understood: not just for institutional buildings

### Resources

- Market Reports (NBI, others)  
Active Projects
- Local: DC Habitat Homes, Redevelopment Authority of Prince George's County, DHCD/DDOE Living Building Challenge RFP
- National: US Army, Navy Campus housing retrofits, hundreds of units through public-private efforts in California
- *You can do it too.* Ask for NZE in RFP process or upzoning requests – or provide density bonuses



# Mount Rainier, Maryland

## Classic First-Ring Streetcar Suburb

### Two Net Zero Proposals

- Four new townhomes
- 23,000 square foot rehab
- NZE achieved on-site



# Perry Street Townhomes

## Project Overview

3208 & 3210 Perry Street  
Project Phase: Entitlements

- 4 for-sale units
- 1,600 sq. ft. above grade
- Detached garages with green roofs



## Project Vision: A regionally-significant model for low-impact development

Respect neighborhood character, scale, and architecture to enhance the community:

- Two stories above grade
- Significant porches (6' deep) to contribute to street life
- Match materials and colors with neighborhood architecture

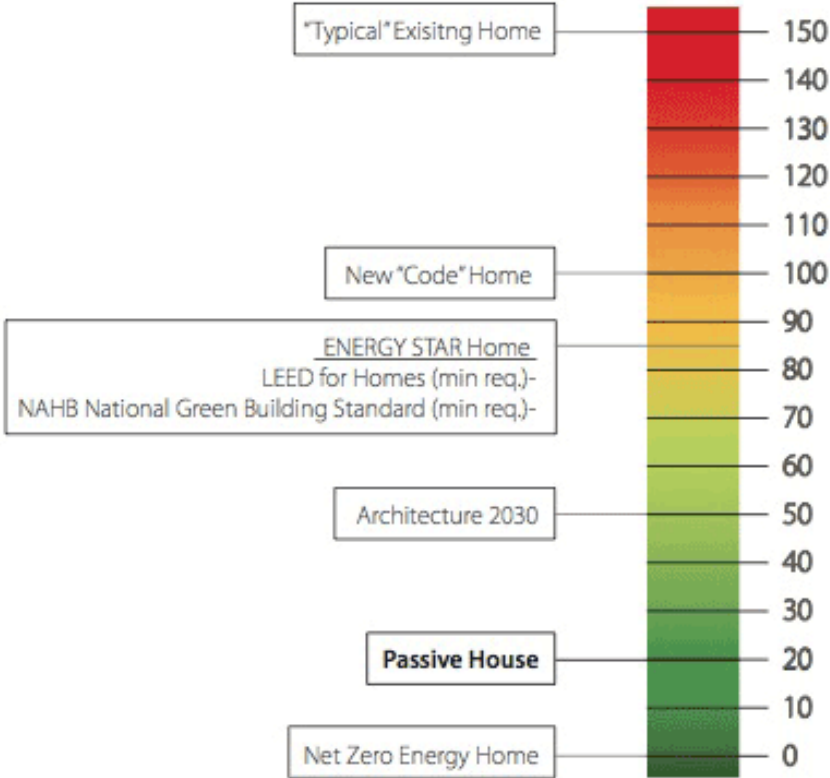
Deep green features including

- Net zero energy target using the Passive House standard and rooftop solar PV (20+ panels)
- Stormwater efforts: green roofs, cisterns, pervious materials
- Working with town and local schools

# Perry Street Townhomes

## Green Building Constructability

Not as hard as you think – when you start early



# Net Zero Main Street

3330 Rhode Island Avenue



# The Site Plan





# Site Plan Details

Rehabilitation of three historic buildings and two blighted parcels at Perry and 33<sup>rd</sup> Street intersection, totaling 30,000 square feet of Net Zero Energy Development

- Rehabilitation of 23,000 square feet of community-serving retail and office space, creation of new space via “dig-out” of basement of all three buildings
- Green roof area of 7,600 square feet  
Rehabilitation of 900 linear feet of street frontage to include new “boulevard” style sidewalks, bioswales, and native plantings
- New diagonal parking on Rhode Island Avenue and 33<sup>rd</sup> Streets improves pedestrian safety and maximizes on-street parking
- Creation of new public space at Mount Rainier circle to include fountain and circular benches



# Partnerships: Net Zero Main Street Team

FLYWHEEL  
DEVELOPMENT



University Park Solar LLC

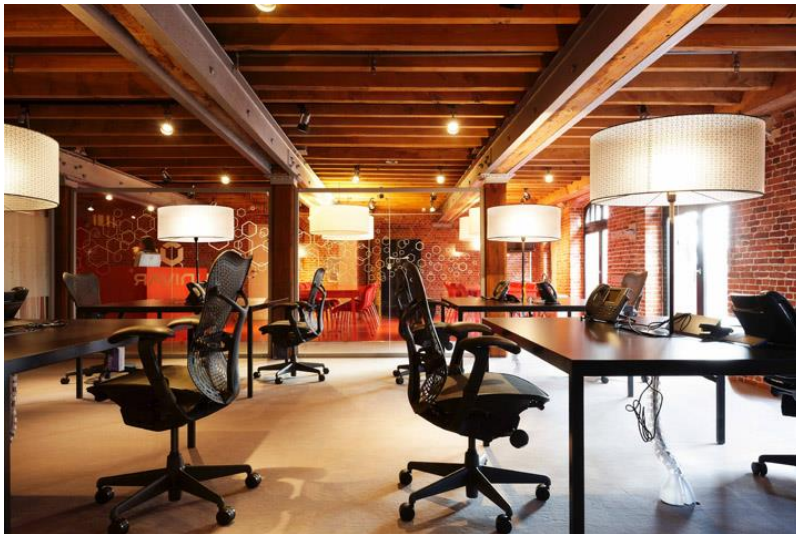


BLAIR WOODSIDE LAW

# Tenants

## Community Retail and Office

- Ace Hardware
- Community Office
- Restaurant/Coffee shop



## Job Creation

### Net Zero / Green Jobs:

- All construction jobs contribute to a green workforce
- Additional workforce training walkthroughs would have been provided by Urban Green LLC

### Permanent Job Creation:

- On-site jobs created at the restaurant, Ace Hardware, and via office tenants.

### MT. RAINIER LOCAL JOB CREATION

*Permanent employment only*

<b>Space User</b>	<b>Full Time</b>	<b>Part Time</b>
<i>Ace Hardware</i>	14	11
<i>Restaurant*</i>	10	15
<i>Office**</i>	45	N/A
<b>Total</b>	<b>69</b>	<b>26</b>

*\*Based on industry interviews*

*\*\*Assumes average of 200 square feet of leasable office space per employee.*

*Source: CoStar Group*



## Protect Natural Resources

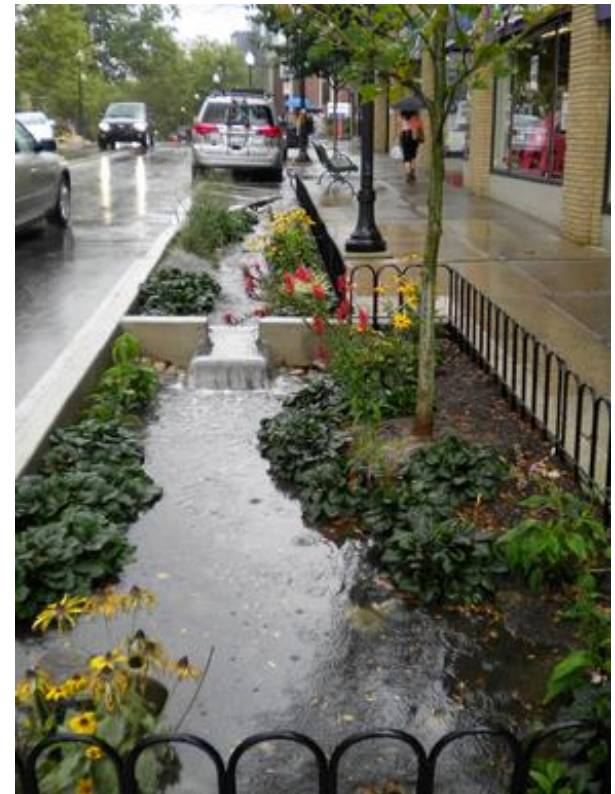
### Net Zero Energy

Meet and Exceed the Mount Rainier Urban Green Infrastructure Master Plan:

- Permeable surfaces
- Green roof in conjunction with solar PV
- Cisterns mitigate stormwater and can be used for on-site watering

Responsive landscaping:

- Bioswales in public right-of-way that connect to street
- Rehabilitate trees on site
- Choose native and local plants for landscaping
- Work with Anacostia Watershed Society to design educational materials, or planting events for the public right of way



# A New “Back of the Envelope”

Following the Passive House standard makes it much easier to get to net zero energy use:

- Passive House performance standard + rooftop solar PV = net zero energy use

## NET ZERO ENERGY CALCULATION

<b>Building Energy Use</b>	<b>Target</b>	<b>Max</b>
<b>Energy Use (kwh/year)</b>	<b>54,098</b>	<b>69,495</b>
<b>PV System Details</b>		
PV System Size (kW)	44.65	57.5
Panels Watts	235	250
Number of Panels	190	230
Energy Generation	51,145	65,864
Green Roof Efficiency Gain <sup>1</sup>	6%	6%
<b>Expected Solar Generation</b>	<b>54,214</b>	<b>69,816</b>

## REFERENCE INFO

### Building Size

Gross Floor Area:	23,119	square feet
Treated Floor Area:	20,807	estimate

### Passive House Standard

#### Annual Energy Use Requirements

Source Energy	120 kwh / sq m TFA / year <sup>2</sup>
Source Energy	38.1 kBtu / sq ft TFA / year
Converted to Site Energy Use: <sup>3</sup>	
Site Energy	3.34 kwh / sq ft TFA / year
Site Energy	11.4 kBtu / sq ft TFA / year

Target site energy use:	2.6 kwh / sq ft TFA / year
Target site energy use:	8.9 kBtu / sq ft TFA / year

1. Green roof efficiency gain based on various sources. Estimates ranged from 6% to 15% improvement.

2. TFA = Treated floor area

3. Conversion: 3.34 kwh source = 1 kwh site. Source: EPA Energy Star Methodology, 2011

# Contact Us

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