



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

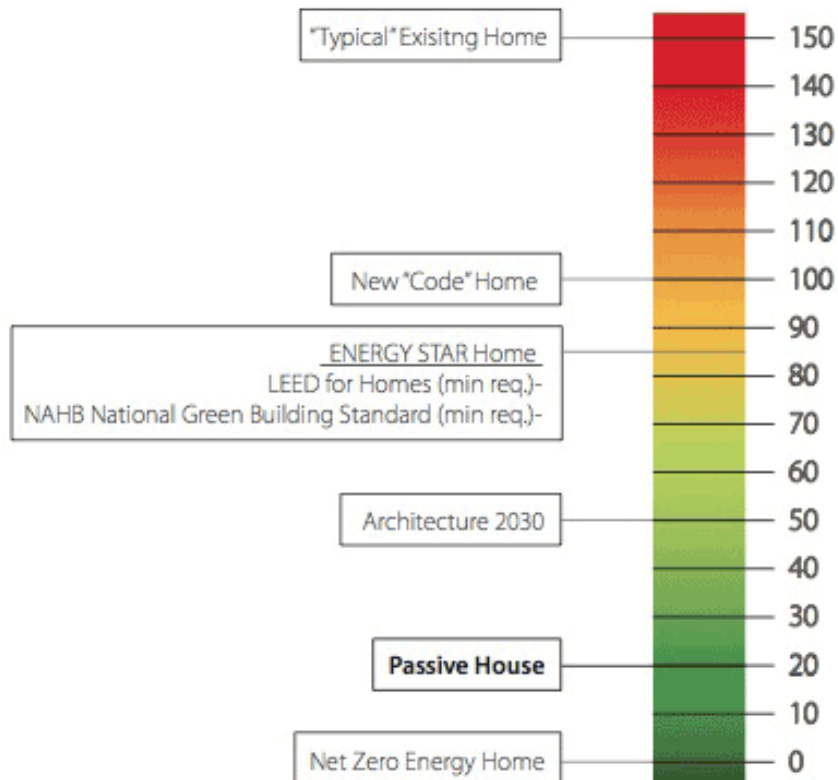
Deep green features including

- 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 33rd 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 33rd 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

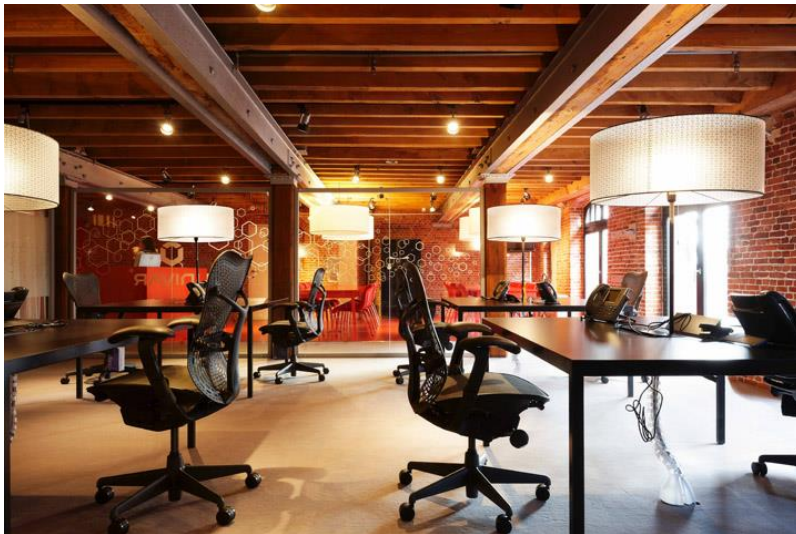


BLAIR WOODSIDE LAW

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

| Space User | Full Time | Part Time |
|--------------|-----------|-----------|
| Ace Hardware | 14 | 11 |
| Restaurant* | 10 | 15 |
| Office** | 45 | N/A |
| Total | 69 | 26 |

**Based on industry interviews*

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

Source: CoStar Group



Sustainability

Protect Natural Resources

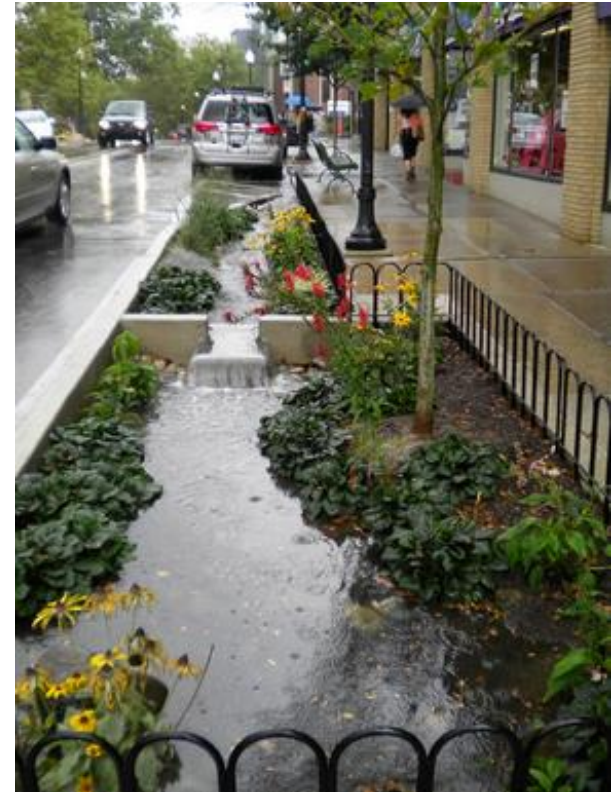
Net Zero Energy

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

| Building Energy Use | Target | Max |
|---|---------------|---------------|
| Energy Use (kwh/year) | 54,098 | 69,495 |
| PV System Details | | |
| 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 ¹ | 6% | 6% |
| Expected Solar Generation | 54,214 | 69,816 |

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 ² |
| Source Energy | 38.1 kBtu / sq ft TFA / year |
| Converted to Site Energy Use: ³ | |
| 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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