



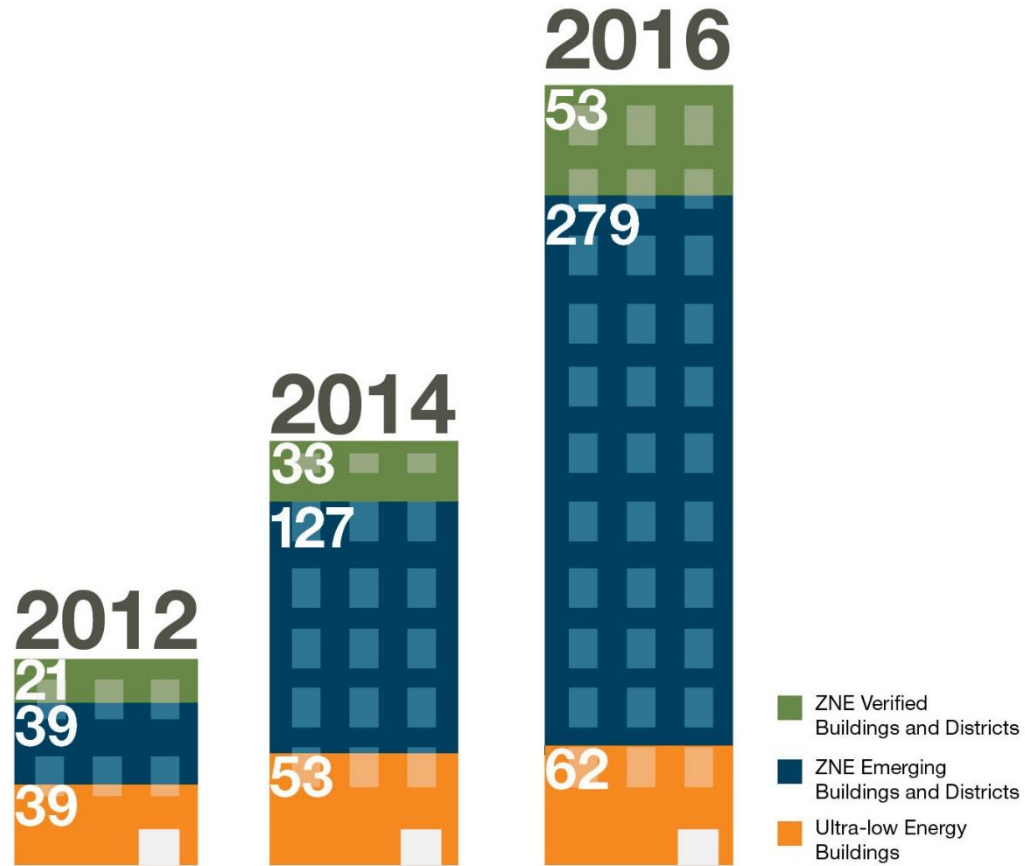
MWCOG CEEPC Meeting

Net Zero Energy Policy

Bill Updike, Principal, Integral Group



Number of ZNE Projects



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institute





85+ NET ZERO ENERGY PROJECTS

45+ LEED PLATINUM CERTIFIED

10+ AIA COTE TOP TEN BUILDINGS

8+ LIVING BUILDING PROJECTS



ZNE - Achievable. Affordable. Comfortable. Elegant. Integrated. Simple



IDEAs HQ

Packard Foundation

Exploratorium

J Craig Venter Institute

DPR

Indio Way

Mathilda Avenue

10,000 SQFT
Retrofit
Office

49,000 SQFT
New Build
Office

210,000 SQFT
New Build
Museum

45,000 SQFT
New Build
Laboratory

22,000 SQFT
Retrofit
Office

32,000 SQFT
Retrofit
Office

30,000 SQFT
Retrofit
Office

2007

2012

2013

2013

2014

2015

2015

Passive +
GSHP +
Radiant

Passive +
DOAS +
Chilled Beam

Baywater Cooling +
Radiant

DC Vent +
Chilled Beam

Passive +
Roof Top Unit

Passive +
Roof Top Unit

Passive +
Roof Top Unit

Market Cost +
PV Grants

Institutional

Museum +
PPP \$10m

Laboratory

Market Cost

Market Cost

Market Cost +
PV Grants

First Certified
ILFI Zero Net
Energy Building

2012 ENR - Best
Green Project
2013 ASHRAE
Technology
Award First Place
2013

2014 Honor Award
Energy +
Sustainability, AIA SF
Chapter
2014 ULI
Global Awards for
Excellence

2015 Architizer A+
Awards –
Architecture +
Sustainability Award

2014 ENR
California Project
of the Year
2014 ENR
California
Best Green
Project

2015 Silicon
Valley Business
Journal
Best
Reuse/Rehab

2015 Silicon
Valley Business
Journal
Green Project of
the Year



Metro DC Net Zero Projects



DC Policy Path to Net Zero Energy

RESEARCH

- ❖ Green Appraisals Grant
- ❖ Microgrid/District Energy Analysis
- ❖ Incentives for Deep Green Buildings (Net Zero, Passive House, Living Building Challenge)
- ❖ DC Net Zero & Living Building Challenge Financial Study
- ❖ EcoDistricts & Living Community Challenge Planning

POLICIES/PROGRAMS

- ❖ Green Building Act (2006)
- ❖ Energy & Water Benchmarking Law (2008)
- ❖ Renewable Portfolio Standard (2016 - 50%/2032 & 5% Local Solar)
- ❖ Incentives/Points for Public Building RFPs
- ❖ Energy Conservation Code (update pending)
- ❖ Green Construction Code (update pending)
- ❖ Net Zero Energy Code (pending)
- ❖ Mandatory Solar Legislation (Introduced)

FINANCE

- ❖ DC Sustainable Energy Utility
- ❖ DC PACE
- ❖ DC Green Bank (pending)



Making the Business Case for Net Zero

	Assumed Incremental Cost	ECM only			Net Zero with ECM			Net Zero without ECM		
		NPV	SPB	ROI	NPV	SPB	ROI	NPV	SPB	ROI
Office New Construction	\$3,790,218	-\$396,476	11 yrs	9.1%	\$2,672,413	3.0 yrs	33.8%	\$2,508,026	3.3 yrs	30.3%
Multifamily New Construction	\$4,608,518	-\$1,772,741	17.7 yrs	5.7%	\$3,192,398	3.0 yrs	33.1%	\$2,943,543	3.4 yrs	29.3%
Office Renovation	\$3,464,015	-\$137,039	8.1 yrs	12.3%	\$1,260,704	2.7 yrs	36.8%	\$3,008,046	3.4 yrs	29.2%



Making the Business Case for Net Zero

Your Configuration

130kW

348 k Trees Planted | 137 T Carbon Offset | 18 Homes Powered

\$227k Cost | **\$69.4k** Revenue

-- year payback

777 North Capitol St. NE
Washington, DC 20002

Get Solar! work with the sun®

Financials

Building Type: Residential

System Size	Cost per Watt	Total Cost
129.78kW	\$ 2.50	\$ 324,441

Cost to Owner: \$ 227,109

Item	Value
Federal Tax Credit	\$ (97,332)
Other Deductions	\$ []
Generation Value	\$ 2,688
SRECs	\$ 3,098
Average Monthly Revenue	\$ 5,786
Average Yearly Revenue	\$ 69,432

Payback Period: -- year

Item	Value
Net Present Value (20y / 5%)	\$ 738,326
Return (IRR / 20y)	79.3%

Comparative Investments
Show Payment Calculator

System Specs

Carbon Offsets

Washington, DC

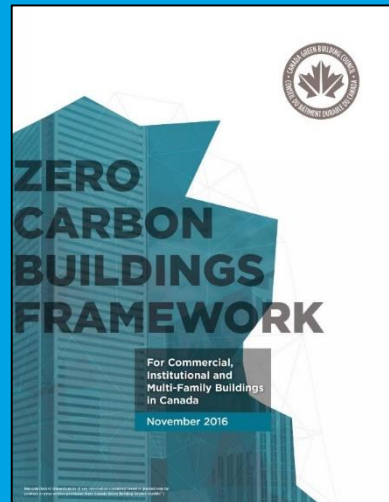
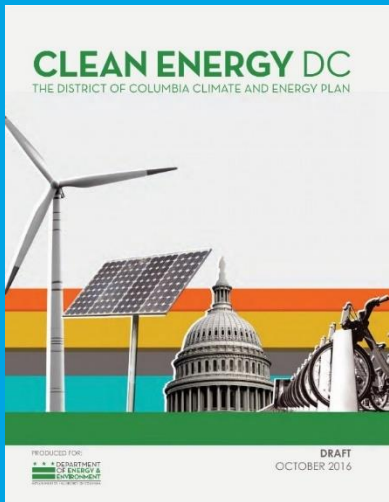
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DEPARTMENT OF ENERGY & ENVIRONMENT

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THANK YOU

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