

Exhibit G - Energy Efficiency Worksheet

Rising energy costs hit low- and moderate-income households especially hard, often forcing them to make tough choices between paying their utility costs or other household needs. With energy becoming such a significant cost, it is becoming increasingly important to use energy efficiency measures in housing, to reduce energy usage, and therefore utility bills.

Creating affordable housing that is energy efficient offers important short- and long-term benefits for the nation in reduced pollution and demand for energy. There are also direct benefits to residents, property owners, state and local housing agencies, PJs, and HUD. These include:

- Energy bill savings for low-income families, property owners, state and local PJs, and HUD.
- Improved home performance (in terms of air quality or reduced maintenance) which creates a healthier environment for residents.
- Greater future financial stability for residents and property owners through increased savings.
- Improved marketability of the home when renting or selling.
- Reduced long-term maintenance costs due to the use of more durable products and building techniques; and
- Increased affordability of housing due to reduced utility costs.

*Source: https://www.hud.gov/sites/documents/19758_200809ENERGYSTAR.PDF

Please list expected appliances to be installed in the homes to be built

	Energy Use (YR)	Electric	Gas	Brand & Model	EnergyStar Rated (Y/N)	Lifespan
AC/Furnace*						
H2O Heater*						
Cooking Range*						
Refrigerator*						
Washer*						
Dryer*						
Dishwasher*						

* Please attach spec sheets for each of the above
 Energy Star ratings can be found in the link below
<https://www.energystar.gov/products>

Developers are encouraged to incorporate sustainable design and construction techniques and maximize energy efficiency and indoor air quality in construction projects. Strategies may include:

- Energy audits and modeling (EnergyWorks)
- “Green Lease” language to overcome split incentive
- Certification or consistency under LEED, EnergyStar, Enterprise Green Communities or other third-party rating system.

Net Zero Energy Definition

Zero energy buildings combine energy efficiency and renewable energy generation to consume only as much energy as can be produced onsite through renewable resources over a specified time period.¹

Net Zero Carbon Definition

A highly energy efficient building that produces on-site, or procures, enough carbon-free renewable energy to meet building operations energy consumption annually.²

Key Difference

The key difference between Net Zero Energy and Net Zero Carbon is that in the former, clean energy must be produced onsite. Net Zero Carbon buildings may procure off-site clean energy if it is not possible to produce on-site clean energy due to space and/or cost considerations.

Both prioritize efficiency first to ensure that investments are made to the building envelope and HVAC systems are right-sized accordingly.

Third-Party Standards













There are many third-party standards that can help design and construction teams meet net zero goals.

- [U.S. Department of Energy Zero Energy Ready Home \(ZERH\) Program](#)
 - Third-party verified
 - Prescriptive and performance paths
 - Uses ENERGY STAR for Homes baseline
 - HERS Rating 48-55
 - v2 to be released soon - moves baseline from 2015 IECC to 2021 IECC
- [PHIUS+ \(Passive House\)](#)
 - Third-party verified
 - Performance path
 - HERS Rating 35-45
 - Improved energy performance beyond ZERH requirements increases likelihood of being able to produce as much on-site energy as the home uses (net zero energy)
- [LEED v4: Homes](#)
 - Third-party verified
 - Prescriptive and performance path credit options
 - Energy performance can be more variable, as design teams can choose to collect points from non-energy categories
 - Can require a certain number of energy-related points or set a higher certification level to ensure that energy efficiency is prioritized

¹ <https://www.energy.gov/eere/buildings/zero-energy-buildings>

² <https://architecture2030.org/zero-net-carbon-a-new-definition/>

DOE High-Performance Home Staircase

							Source Zero Renewable Energy System
						Balanced Ventilation HRV/ERV	Balanced Ventilation HRV/ERV
				SOLAR READY <small>Depends on climate</small>	SOLAR READY ALWAYS	SOLAR READY ALWAYS	SOLAR READY ALWAYS
				Eff. Comps. & H ₂ O Distrib	Eff. Comps. & H ₂ O Distrib	Eff. Comps. & H ₂ O Distrib	Eff. Comps. & H ₂ O Distrib
				 EPA Indoor Air Package	 EPA Indoor Air Package	 EPA Indoor Air Package	 EPA Indoor Air Package
				Ducts in Condit. Space	Ducts in Condit. Space	Ducts in Condit. Space	Ducts in Condit. Space
		HVAC QI w/WHV	HVAC QI w/WHV	HVAC QI w/WHV	Micro-load HVAC QI	Micro-load HVAC QI	Micro-load HVAC QI
		Water Management	Water Management	Water Management	Water Management	Water Management	Water Management
		Independent Verification	Independent Verification	Independent Verification	Independent Verification	Independent Verification	Independent Verification
IECC 2009 Enclosure	IECC 2012 Enclosure	IECC 2009 Enclosure	IECC 2012 Enclosure	IECC 2012/15 Encl./ES Win.	Ultra-Efficient Enclosure	Ultra-Efficient Enclosure	Ultra-Efficient Enclosure
HERS 85-90	HERS 70-80	HERS 65-75	HERS 55-65	HERS 48-55	HERS 35-45	HERS < 0	HERS < 0
 IECC 2009	 IECC 2012	 ENERGY STAR v3	 ENERGY STAR v3.1	 ZERH	 PHIUS+	 PHIUS+ SourceZero	 PHIUS+ SourceZero

Baltimore's First Zero Energy Multifamily Development

- Rehab of historic townhouses
- Using Passive House to reach high level of energy efficiency
- Final product will be two consolidated buildings (pre-fab construction)
- Rooftop solar with workforce development component
- 50%-120% AMI-restricted rentals