

Financing Efficiency in Affordable Multifamily: Challenges and Solutions



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Rebecca Schaaf
Senior Vice President, Energy
Stewards of Affordable Housing for the Future

Stewards of Affordable Housing for the Future (SAHF):

- A collaborative of eleven exemplary multi-state non-profits
- Provide over 115,000 units of affordable housing across the U.S.



**BRIDGE Housing · The Evangelical Lutheran Good Samaritan Society
Homes for America · Mercy Housing · National Church Residences · The NHP Foundation
NHT/Enterprise · Preservation of Affordable Housing · Retirement Housing Foundation
The Community Builders · Volunteers of America**

Who We Are

- Small Project Size
- High Soft Costs

- Complex Capital Stacks
- Need for Lender/Investor Consents

- Double Split Incentive!
 - Owner and Tenant
 - Owner and HUD

Challenges to Financing Efficiency

EZ Retrofit: Audit Your Properties for Free

Key characteristics

- Excel-based tool
- User friendly interface
- Behind the scenes analytics
- Retrofit recommendations with costs and savings

Workflow

- Benchmarking
- System data – EZ or Advanced Path
- Results

Reduce Soft Costs

- One year of prior data for all utilities (optional but highly recommended)
- Evaluates current level of efficiency
- Calibrates savings projections to past usage

Pre-Retrofit Performance:

Site EUI: 93 kbtu/square foot

Site WUI: 31 gal/square foot

EZ Retrofit: Benchmarking

- Envelope
- HVAC
- DHW
- Clothes Washers
- Kitchen Appliances
- Lighting
- Motors & Controls
- Air Sealing
- Duct Sealing
- Water Fixtures
- Toilets



EZ Retrofit: System Data

A	B	C	D	E	F	G				K	L	M	N	O	P
						Electricity (kWh)	Gas (Therms)	Oil (Gallons)	Water (Gallons)						
Location Notes	Measure No. / Location	Include this measure?	Who pays the utility bills?	End Use	Proposed System	Electricity (kWh)	Gas (Therms)	Oil (Gallons)	Water (Gallons)	Quantity	Total Initial Cost	Total Annual Cost Savings	Payback Period (Year)	Useful Life (Year)	Analysis Level
All - Total Impact						-	10,324	-	-	776	\$ 626	-	9.0		Level 1
HVAC - Total Impact						4,274	1,778	-	-	45	\$ 2,901	\$ 2,301	26.1		Level 1
	01. Your Predominant Heating System	Yes	Owner	HVAC	High Efficiency Boiler - Gas w/ Programmable Thermostat	-	1,778	-	-	1	\$ 2,382	\$ 2,382	8.1	11	Level 1
	01. Your Predominant Heating System	No	Owner	HVAC	High Efficiency Boiler - Gas	-	719	-	-	1	\$ 11,790	\$ 963	12.2	25	Level 1
	01. Your Predominant Heating System	No	Owner	HVAC	Programmable Thermostat For Existing Boiler - Gas	-	1,138	-	-	1	\$ 7,538	\$ 1,525	4.9	11	Level 1
	03. PTACs	Yes	Owner	HVAC	High Efficiency Package Terminal Air Conditioner w/ Programmable Thermostat	4,274	-	-	-	44	\$ 519	\$ 519	108.4	11	Level 1
	03. PTACs	No	Owner	HVAC	High Efficiency Package Terminal Air Conditioner	3,414	-	-	-	44	\$ 414	\$ 414	117.6	15	Level 1
	03. PTACs	No	Owner	HVAC	Programmable Thermostat For Existing Package Terminal Air Conditioner	1,058	-	-	-	44	\$ 7,538	\$ 128	58.7	11	Level 1
Domestic Hot Water - Total Impact						-	287	-	-	1	\$ 3,374	\$ 384	8.8		Level 1
	02. DHW Boiler	Yes	Owner	Domestic Hot Water	High Efficiency Direct Gas Storage Tank w/ Insulative Jacket R-19 & Pipe Insulation	-	287	-	-	1	\$ 3,374	\$ 384	8.8	7	Level 1
	02. DHW Boiler	No	Owner	Domestic Hot Water	High Efficiency Direct Gas Storage Tank	-	267	-	-	1	\$ 3,167	\$ 358	8.9	13	Level 1
	02. DHW Boiler	No	Owner	Domestic Hot Water	Insulative Jacket R-19 for Existing Direct Gas Storage Tank	-	22	-	-	1	\$ 71	\$ 29	2.5	7	Level 1
	02. DHW Boiler	No	Owner	Domestic Hot Water	Pipe Insulation R-5 for Existing Direct Gas Storage Tank	-	20	-	-	1	\$ 136	\$ 26	5.1	13	Level 1
Appliances - Total Impact						10,333	-	-	-	44	\$ 1,254	\$ 1,254	17.5		Level 3
	02. Refrigerator	Yes	Owner	Appliances	ES - Refrigerator	10,333	-	-	-	44	\$ 1,254	\$ 1,254	17.5	10	Level 3
Lighting - Total Impact						44,228	(59)	-	-	198	\$ 13,861	\$ 5,290	2.6		Level 1
	01. Corridors - Conditioned	Yes	Owner	Lighting	2-32W Lamp HP T8-high performance w/ Wall Switch Replacement - Occupancy Control	20,498	(20)	-	-	30	\$ 3,460	\$ 2,461	1.4	20	Level 1
	01. Corridors - Conditioned	No	Owner	Lighting	2-32W Lamp HP T8-high performance	14,949	(15)	-	-	30	\$ 3,890	\$ 1,795	2.2	20	Level 1
	01. Corridors - Conditioned	No	Owner	Lighting	Wall Switch Replacement - Occupancy Control for Existing 2-40W Lamp w/ EEMag	9,286	(9)	-	-	1	\$ 153	\$ 1,115	0.1	23	Level 1
	02. Meeting/Community Room	Yes	Owner	Lighting	2-32W Lamp HP T8-high performance w/ Wall Switch Replacement - Occupancy Control	1,405	(3)	-	-	10	\$ 340	\$ 166	2.0	20	Level 1
	02. Meeting/Community Room	No	Owner	Lighting	2-32W Lamp HP T8-high performance	631	(1)	-	-	10	\$ 244	\$ 75	3.3	20	Level 1
	02. Meeting/Community Room	No	Owner	Lighting	Wall Switch Replacement - Occupancy Control for Existing 2-32W Lamp Standard	931	(2)	-	-	1	\$ 153	\$ 110	1.4	23	Level 1
	03. Stairwell/Elevator	Yes	Owner	Lighting	7W Dimmable LED Lamp w/ Wall Switch Replacement - Occupancy Control	2,809	(3)	-	-	24	\$ 754	\$ 337	2.2	4	Level 1
	03. Stairwell/Elevator	No	Owner	Lighting	7W Dimmable LED Lamp	2,174	(2)	-	-	24	\$ 729	\$ 261	2.8	4	Level 1
	03. Stairwell/Elevator	No	Owner	Lighting	Wall Switch Replacement - Occupancy Control for Existing 13W CFL Non-Dimmable	1,178	(1)	-	-	1	\$ 153	\$ 141	1.1	23	Level 1
	04. Stairwell/Elevator	Yes	Owner	Lighting	3-32W Lamp HP T8-high performance w/ Wall Switch Replacement - Occupancy Control	513	(1)	-	-	1	\$ 154	\$ 62	2.5	20	Level 1
	04. Stairwell/Elevator	No	Owner	Lighting	3-32W Lamp HP T8-high performance	242	(0)	-	-	1	\$ 28	\$ 29	1.0	20	Level 1
	04. Stairwell/Elevator	No	Owner	Lighting	Wall Switch Replacement - Occupancy Control for Existing 3-32W Lamp Standard	332	(0)	-	-	1	\$ 153	\$ 40	3.8	23	Level 1
	05. Common Laundry	Yes	Owner	Lighting	Reduced Voltage T8 - 32/25W Lamp w/ Wall Switch Replacement - Occupancy Control	1,042	(1)	-	-	6	\$ 212	\$ 125	1.7	6	Level 1
	05. Common Laundry	No	Owner	Lighting	Reduced Voltage T8 - 32/25W Lamp	544	(1)	-	-	6	\$ 95	\$ 65	1.5	6	Level 1
	05. Common Laundry	No	Owner	Lighting	Wall Switch Replacement - Occupancy Control for Existing 32W T8 Standard Lamp	634	(1)	-	-	1	\$ 153	\$ 76	2.0	23	Level 1
	06. Common Laundry	Yes	Owner	Lighting	1-32W Lamp HP T8-high performance w/ Wall Switch Replacement - Occupancy Control	1,767	(2)	-	-	4	\$ 449	\$ 212	2.1	20	Level 1
	06. Common Laundry	No	Owner	Lighting	1-32W Lamp HP T8-high performance	1,389	(1)	-	-	4	\$ 372	\$ 167	2.2	20	Level 1
	06. Common Laundry	No	Owner	Lighting	Wall Switch Replacement - Occupancy Control for Existing 1-40W Lamp w/ EEMag	725	(1)	-	-	1	\$ 153	\$ 87	1.8	23	Level 1
	07. Corridors - Conditioned	Yes	Owner	Lighting	7W Dimmable LED Lamp w/ Wall Switch Replacement - Occupancy Control	1,170	(1)	-	-	10	\$ 391	\$ 141	2.8	4	Level 1
	07. Corridors - Conditioned	No	Owner	Lighting	7W Dimmable LED Lamp	906	(1)	-	-	10	\$ 304	\$ 109	2.8	4	Level 1
	07. Corridors - Conditioned	No	Owner	Lighting	Wall Switch Replacement - Occupancy Control for Existing 13W CFL Non-Dimmable	491	(0)	-	-	1	\$ 153	\$ 59	2.6	23	Level 1
	08. Apartment	Yes	Owner	Lighting	17W Dimmable LED Lamp w/ Wall Switch Replacement - Occupancy Control	940	(8)	-	-	40	\$ 3,779	\$ 104	36.5	4	Level 1

EZ Retrofit: Results

- Recommends multiple options
- Shopping cart approach
- Owner/tenant savings tracked separately
- Cost and savings estimates
- Interactive effects
- Calibration
- Pre- and post- results graphs
- Applies to various retrofit models

Results

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U.S. DEPARTMENT OF
ENERGY

Expanding to Include the Multifamily Residential Sector

In 2013, the Department of Energy (DOE) and the Department of Housing and Urban Development (HUD) have partnered to expand the Better Buildings Challenge to the multifamily residential sector. This expansion is part of President Obama's Climate Action Plan, which was announced in June and recognizes the role that increased efficiency can play in reducing



www4.eere.energy.gov/challenge/partners/multifamily

Better Buildings Challenge

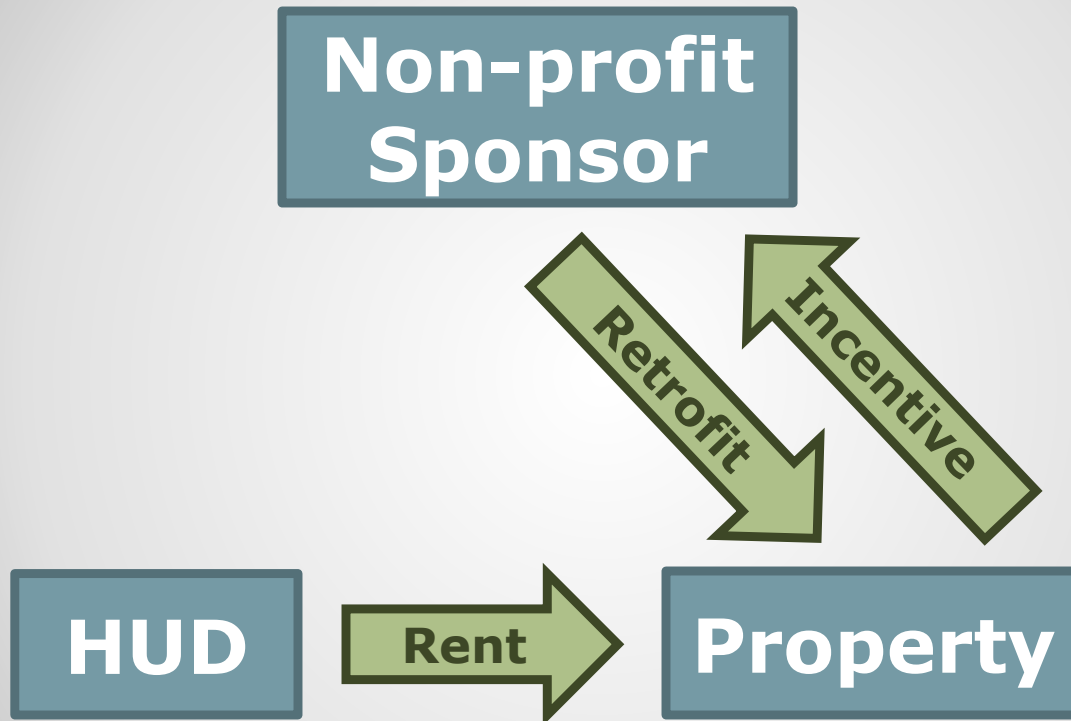
Pre-Retrofit

Annual Property Budget	
Utilities	\$10,000
Other Operating Expenses	\$40,000
Reserves	\$10,000
<i>Total</i>	\$60,000
Rent	\$1200

Post-Retrofit

Annual Property Budget	
Utilities	\$8,000
PRAC Incentive	\$2,000
Other Operating Expenses	\$40,000
Reserves	\$10,000
<i>Total</i>	\$60,000
Rent	\$1200

BBC Incentive for PRAC Properties



Pay for Success "Lite"

- Aurora, Colorado
- 57 Units
- Built in 2000
- Baseline Utilities:

Electricity (KHW)	388,461
Natural Gas (Th)	17,676
Water (Kgal)	2,782
Cost (USD)	56,966



Example: Aspen Place

	Installation Cost	Annual Cost Savings	Payback
Common Area Thermostats	\$1,000	\$50	20
Interior Lighting	\$40,000	\$6,500	6.2
Exterior Lighting	\$19,000	\$700	27.1
Water Conservation	\$20,000	\$4,200	4.8
Irrigation Moisture Sensors	\$2,000	\$1,000	2
Weatherstripping Exterior Doors	\$2,000	\$150	13.3
<i>Total</i>	\$84,000	\$12,600	6.7

Example: Retrofit Scope

- Reduced Soft Costs
- No debt on PRAC properties
- BBC Incentive Addresses Split Incentive with HUD

Solutions to Financing Challenges

- My Contact Info:
Rebecca Schaaf
rschaaf@sahfnet.org
202-737-5984
- EZ Retrofit Tool:
sahfnet.org/ezretrofit.html
- Better Buildings Challenge Information:
www4.eere.energy.gov/challenge/home

Contact Info & Web Link