

# New Opportunities in Affordable Housing Energy Efficiency and Renewables

Breakout Session 2B  
May 17, 2016

National Housing & Rehabilitation Association  
**2016 Spring Developers Forum**

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# Presentation Outline

- Introduction (1 min)
- Fuel Switching Case Study (Sean-Sydney) Ethan Terrace Sacramento, CA Case Study (15 min)
- Whole Building Retrofitting (Jeff-Catlin) Portfolio-Balanced projects (15 min)
- Energy Water Portfolio wide DYI model (Trisha) Solar project, community solar (15 min)
- Q&A (15 min)

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# Investment Choices at Ethan Terrace

Existing 2014 Utilities		Construction Cost	Underwriting Goal is \$55,000/yr for Total Utilities
Water	\$ 10,374	As-is	
Sewer	\$ 42,908	As-is	
Electricity	\$ 11,956	As-is	
Gas	\$ 22,845	As-is	
Trash	\$ 9,051	As-is	
<b>Total Utilities</b>	<b>\$ 97,134</b>	As-is	
2016 Utilities with Efficiency, Gas DHW and Solar Thermal		Construction Cost	
Water	\$ 7,781	\$ 9,200	Reduced 25% with deep residential retrofit
Sewer	\$ 42,908		No Reductions Available--Flat Fee for Sewer Per Apartment
Electricity	\$ 8,369	\$ 3,000	Reduced 30% with lighting retrofits
Gas	\$ 6,854	\$ 276,000	Reduced 70% with Best Case Solar Thermal and Gas DHW
Trash	\$ 6,788	\$ 4,000	Reduced 25% with Multifamily Best Practices in Waste Diversion
<b>Total Utilities</b>	<b>\$ 72,699</b>	<b>\$ 292,200</b>	
<b>Total Savings</b>	<b>\$ 24,435</b>	<b>12.0</b>	<b>Years until payback</b>
2016 Utilities with Efficiency, Common Area PV and Solar Thermal with Gas DHW		Construction Cost	
Water	\$ 7,781	\$ 9,200	Reduced 25% with residential retrofit
Sewer	\$ 42,908		No Reductions Available--Flat Fee for Sewer Per Apartment
Electricity	\$ -	\$ 131,658	Reduced 30% with lighting retrofits and <b>70% with PV array</b>
Gas	\$ 6,854	\$ 276,000	Reduced 70% with Best Case Solar Thermal and Gas DHW
Trash	\$ 6,788	\$ 4,000	Reduced 25% with best practices in waste diversion
<b>Total Utilities</b>	<b>\$ 64,330</b>	<b>\$ 420,858</b>	
<b>Total Savings</b>	<b>\$ 32,804</b>	<b>12.8</b>	<b>Years until payback</b>
2016 Utilities-Efficiency, Common Area PV and Electric Heat Pump DHW Retrofit		Construction Cost	
Water	\$ 7,781	\$ 9,200	Reduced 25% with Retrofit
Sewer	\$ 42,908		No Reductions Available--Flat Fee for Sewer Per Apartment
Electricity	\$ -	\$ 131,658	Reduced 30% with lighting retrofits and 70% with PV array
Gas	\$ -	\$ 312,000	Reduced 100% with switching DHW to Heat Pumps and PV array
Trash	\$ 6,788	\$ 4,000	Reduced 25% with best practices in waste diversion
<b>Total Utilities</b>	<b>\$ 57,477</b>	<b>\$ 456,858</b>	
<b>Total Savings</b>	<b>\$ 39,657</b>	<b>11.5</b>	<b>Years until payback</b>

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# What is a heat pump water heater?



Gas vs. Heat Pump Hot Water--A Comparison of Source Energy			
Energy Factor	Avg source energy (BTU/y)	Listed price on-line	Product
0.67	17,552,309	\$ 820	Rheem tank
0.70	16,800,067	\$ 900	A.O. Smith tank
0.82	14,341,521	\$ 1,900	Rheem tank
0.82	14,341,521	\$ 740	Rheem tankless
0.96	12,250,049	\$ 1,100	Rinnai Tankless
2.4	12,421,023	\$ 1,000	GE Geospring
2.77	10,761,897	\$ 1,045	Whirlpool Hybrid
3.07	9,710,246	\$ 1,400	AO Smith Voltex
3.39	8,793,645	\$ 1,500	GE Geospring Pro

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