



Finance Products for Low and Middle Income Customers: What Works?

Tuesday, May 16
11:15-12:30

Panelists

- Greg Leventis, Lawrence Berkeley National Lab
- Bruce Schlein, Citi
- Curtis Wynn, Roanoke Electric Cooperative
- Karyn Sper, Fannie Mae
- Philip Henderson, Natural Resources Defense Council

Greg Leventis

Lawrence Berkeley National Lab



Energy Technologies Area

Lawrence Berkeley National Laboratory

Energy Efficiency Financing for Low- and Moderate-Income Households

**Greg Leventis, Lawrence Berkeley National
Laboratory**

Better Buildings Summit

May 16, 2017

Coming soon!



SEE Action
STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

Energy Efficiency Financing for Low- and Moderate-Income Households: Current State of the Market, Issues, and Opportunities

Financing Solutions Working Group

May 2017

The State and Local Energy Efficiency Action Network is a state and local effort facilitated by the federal government that helps states, utilities, and other local stakeholders take energy efficiency to scale and achieve all cost-effective energy efficiency by 2020.

Learn more at www.seeaction.energy.gov

Coming soon!

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Programs examined

- ◆ **Renew Financial (WHEEL, PACE)**
- ◆ **PosiGen**
- ◆ **NYSERDA**
- ◆ **Roanoke REC**
- ◆ **Ouachita REC**
- ◆ **NYCHA**
- ◆ **Fannie Mae (Multifamily Green Financing)**
- ◆ **Community Preservation Corporation (NY)**
- ◆ **Community Investment Corporation (Chicago)**
- ◆ **CT Green Bank**
- ◆ **PSE&G (NJ)**

Agenda

- ◆ Takeaways
- ◆ Low- and moderate-income (LMI) sector overview
- ◆ Consumer protections
- ◆ Financing products
- ◆ Lessons learned

High-level takeaways

- ◆ Very diverse sector (with implications for using financing to promote efficiency)
- ◆ Program design and coordination with other stakeholders can be valuable for reaching LMI households
- ◆ A number of programs are overcoming some challenges to EE adoption in LMI households
- ◆ Strong consumer protections are needed when steering financing to LMI households

High-level takeaways

- ◆ **So...what works?**
- ◆ No ONE approach works for ALL LMI households
 - Must understand markets and their specific barriers to select appropriate financing products
- ◆ However, a set of traditional and specialized products have been used and are gaining momentum
 - Each has strengths and weaknesses
 - Often *accessed* by LMI, not *designed* for LMI
 - In Southeast, great interest in OBF for LMI households
- ◆ Programs can collect data to help answer this question

LMI sector overview: Wide spectrum of LMI households



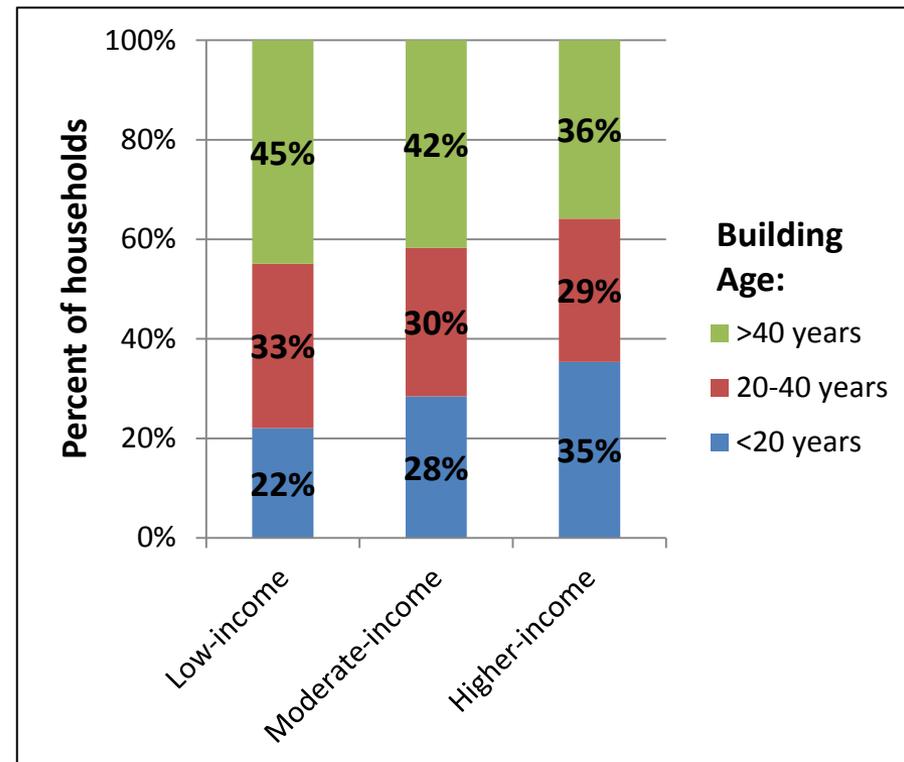
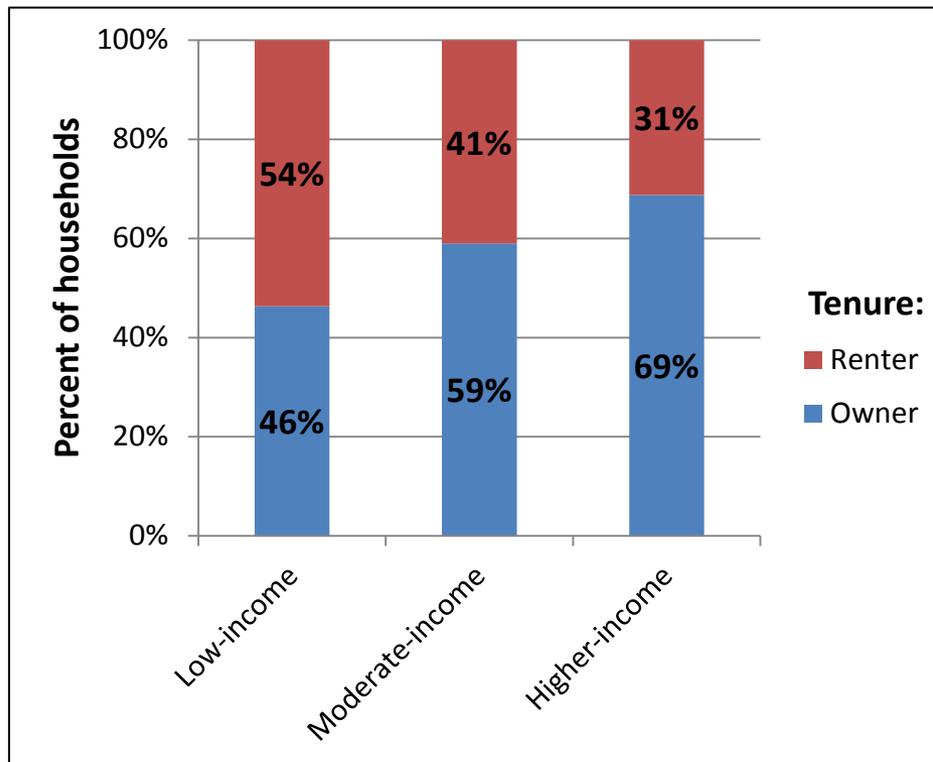
← Urban multifamily renters

Rural single family owners →



LMI sector overview

- ◆ More likely to live in older, less efficient housing
- ◆ Spend larger portion of income on energy (7.8% vs. 3% for all households)
- ◆ Less able to afford energy efficiency improvements
- ◆ Less likely to own their home, but ownership level still significant



Consumer protections

From poor disclosure

- Costs of the loan
- Risks

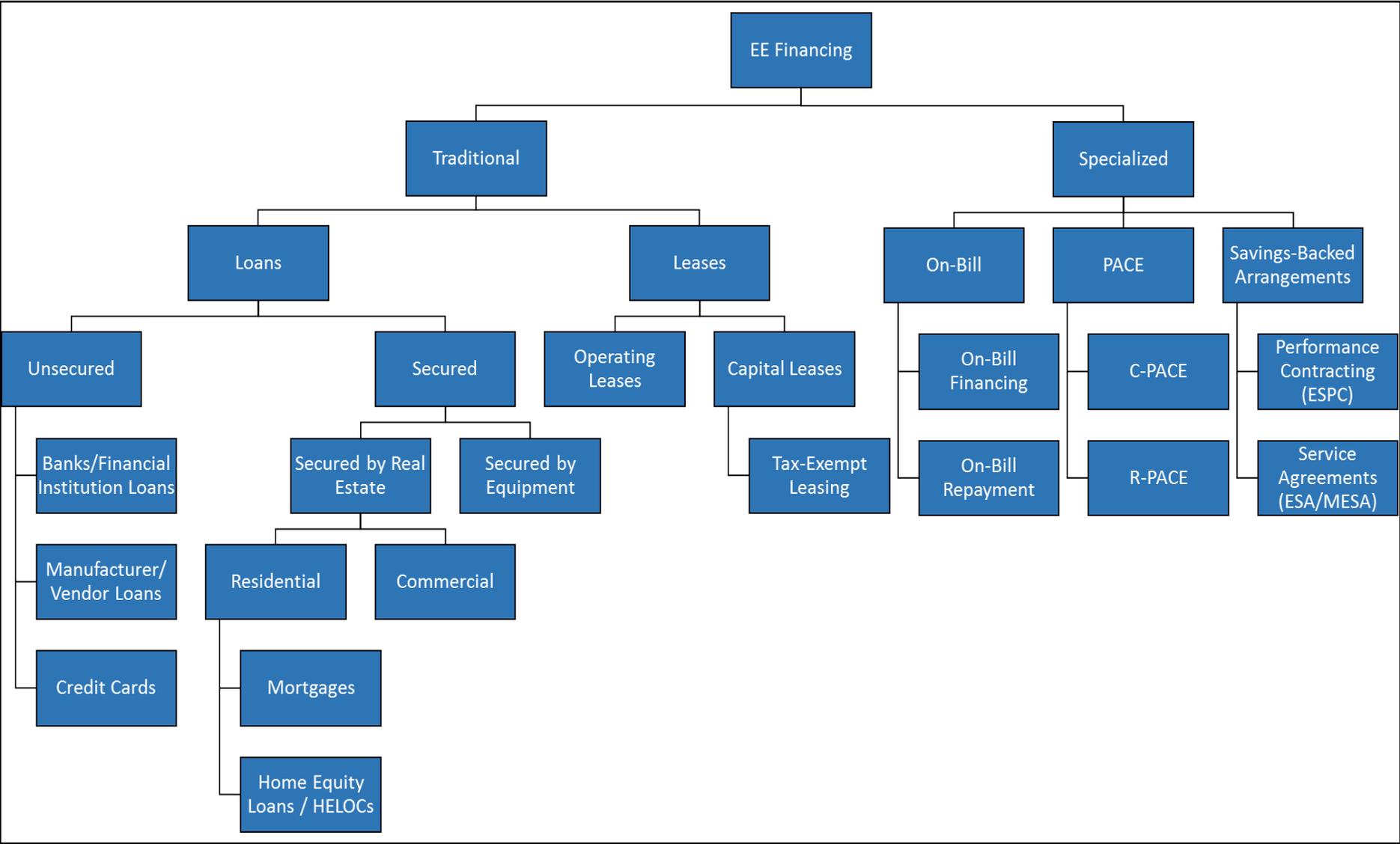
From abuse

- Fraud
- Predatory lending

Verifying ability to pay

- Potential loss of property
- Potential damage to credit
- Potential disconnection

Financing products



Barriers and EE Financing Product Features

Easier

Neutral

More difficult

	Secured (First Mortgage)	Secured (Junior Lien)	Unsecured	OBF/OBR	PACE	Savings-Backed Arrangements
Qualifying for Financing	Standard underwriting	Standard underwriting	Standard underwriting	Alternative underwriting	Alternative underwriting	Alternative underwriting
Debt Issues (restrictions, aversion)	Sr. lien holders may object	Sr. lien holders may object	Debt instrument	May be structured as non-debt	Sr. lien holders may object	Uncertain
Inherent Risks	Potential loss of home or building	Potential loss of home or building	Damaged credit	Power shut-off (some programs)	Potential loss of home or building	Depends on the product
Transaction Costs	High	High	Low	Low	Depends on prog / sector	Depends on prog / sector
Affordability	Long terms, typically lowest rates	Long terms, low rates (but higher than 1 st mortgage)	Shorter terms, lack of security = higher rates	Depends on program terms	Long terms, lower rates than unsecured	Structured as cash flow positive
Financing Cycles (MF)	Leverages fin. Cycles; hard for stand alone projects	Leverages fin. Cycles; easier for stand alones	Easier for stand alone projects	Easier for stand alone projects	Easier for stand alone projects	Easier for stand alone projects

Lessons learned

- ◆ Financing products and product features
 - Know LMI needs and products that may address them
 - Focus on affordability
 - Consider alternative underwriting (careful about ability to pay)
- ◆ Stakeholder coordination and collaboration
 - Trust and awareness
 - Funding and capital
- ◆ Consumer protections
 - Leverage appropriate legal frameworks
 - Exercise useful industry and program practices

Lessons learned

◆ Collect LMI data

- ❑ Program participation
- ❑ Loan performance
- ❑ Underwriting process
- ❑ Measures implemented
- ❑ Energy savings

◆ Considerations specific to MF borrowers

- ❑ Debt considerations
- ❑ MF financing cycles

Contacts



Greg Leventis
(510) 486-5965
gleventis@lbl.gov



Chris Kramer
(802) 482-5001
[ckramer@
energyfuturesgroup.com](mailto:ckramer@energyfuturesgroup.com)



Lisa C. Schwartz
(510) 486-6315
lcschwartz@lbl.gov

Coming soon:

- ◆ The State and Local Energy Efficiency Action Network's (SEE Action Network) report:

Energy Efficiency Financing for Low- and Moderate-Income Households by Lawrence Berkeley National Lab

- ◆ For more information on efficiency financing, please visit our website: <http://emp.lbl.gov>

Bruce Schlein

Citi

Solar Deployment by State (single family, cumulative systems)

By 2030, 16.6mm solar systems installed; 100% of addressable market (25% single family housing solar-eligible; >= FICO 300; 75% Sweep); requires new financing solution for FICO < 680 (~40% or 6.7mm homes)

State	Homes	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Alabama	292,636	70	83	100	123	152	185	237	357	548	901	1,841	4,267	9,949	30,289	161,791	292,636
Alaska	37,383	1	8	18	31	46	64	90	141	219	363	744	1,726	4,025	12,256	37,383	0
Arizona	300,648	74,219	104,217	144,617	197,478	263,092	300,648	0	0	0	0	0	0	0	0	0	0
Arkansas	181,479	354	362	372	387	408	434	496	704	1,051	1,707	3,472	8,034	18,721	56,985	181,479	0
California	1,708,248	407,878	589,011	832,927	1,151,778	1,547,355	1,708,248	0	0	0	0	0	0	0	0	0	0
Colorado	270,321	30,105	38,171	49,039	63,334	81,129	102,034	133,063	202,688	270,321	0	0	0	0	0	0	0
Connecticut	194,071	13,855	23,464	36,398	53,250	74,116	98,545	133,206	194,071	0	0	0	0	0	0	0	0
Delaware	52,464	2,622	3,165	3,897	4,864	6,071	7,491	9,643	14,595	22,428	36,894	52,464	0	0	0	0	0
District of Columbia	23,825	1,316	1,588	1,956	2,441	3,047	3,760	4,839	7,325	11,256	18,516	23,825	0	0	0	0	0
Florida	928,069	9,622	13,783	19,386	26,713	35,804	46,461	61,850	95,141	147,215	242,883	496,904	928,069	0	0	0	0
Georgia	481,187	711	969	1,316	1,771	2,336	2,999	3,965	6,079	9,392	15,487	31,677	73,433	171,239	481,187	0	0
Hawaii	60,739	49,748	60,739	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Idaho	84,181	515	765	1,100	1,538	2,082	2,718	3,634	5,600	8,672	14,312	29,284	67,893	84,181	0	0	0
Illinois	670,261	1,111	1,648	2,371	3,316	4,487	5,860	7,832	12,071	18,692	30,850	63,123	146,347	341,281	670,261	0	0
Indiana	410,153	938	1,483	2,216	3,171	4,356	5,743	7,722	11,935	18,503	30,553	62,527	144,975	338,087	410,153	0	0
Iowa	205,484	1,820	2,875	4,296	6,149	8,445	11,135	14,973	23,140	35,875	59,239	121,231	205,484	0	0	0	0
Kansas	187,636	335	578	906	1,332	1,860	2,478	3,353	5,197	8,068	13,329	27,282	63,261	147,530	187,636	0	0
Kentucky	260,570	382	659	1,032	1,518	2,120	2,824	3,822	5,925	9,197	15,193	31,099	72,111	168,171	260,570	0	0
Louisiana	274,319	22,016	32,569	46,779	65,342	88,362	115,339	154,119	237,491	274,319	0	0	0	0	0	0	0
Maine	99,200	1,863	2,673	3,765	5,191	6,962	9,037	12,033	18,511	28,644	47,260	96,687	99,200	0	0	0	0
Maryland	338,592	15,885	24,385	35,830	50,767	69,282	90,972	122,015	188,348	291,863	338,592	0	0	0	0	0	0
Massachusetts	323,188	26,684	40,405	58,879	82,998	112,899	147,931	198,147	305,681	323,188	0	0	0	0	0	0	0
Michigan	689,328	1,840	2,433	3,231	4,279	5,581	7,109	9,351	14,302	22,077	36,386	74,412	172,492	402,224	689,328	0	0
Minnesota	329,476	1,683	2,225	2,956	3,914	5,105	6,503	8,553	13,082	20,194	33,283	68,067	157,784	329,476	0	0	0
Mississippi	177,421	180	187	197	211	229	251	295	426	640	1,043	2,125	4,919	11,463	34,896	177,421	0
Missouri	381,787	9,004	11,308	14,413	18,499	23,589	29,569	38,474	58,542	90,166	148,470	303,527	381,787	0	0	0	0
Montana	62,835	940	947	957	978	1,007	1,046	1,169	1,637	2,429	3,934	7,992	18,486	43,071	62,835	0	0
Nebraska	118,179	167	174	184	198	216	238	281	405	610	995	2,027	4,691	10,933	33,283	118,179	0
Nevada	104,351	9,276	9,276	9,276	9,276	12,660	18,942	28,919	46,644	73,578	104,351	0	0	0	0	0	0
New Hampshire	79,896	2,292	3,676	5,541	7,971	10,983	14,510	19,535	30,209	46,846	77,362	79,896	0	0	0	0	0
New Jersey	454,689	43,219	50,782	60,982	74,506	91,417	111,342	142,005	213,952	328,134	454,689	0	0	0	0	0	0
New Mexico	111,754	7,576	10,220	13,782	18,450	24,250	31,055	40,988	62,795	96,998	111,754	0	0	0	0	0	0
New York	782,154	45,342	76,721	118,962	173,995	242,142	321,922	435,125	674,082	782,154	0	0	0	0	0	0	0
North Carolina	518,889	2,473	4,011	6,080	8,778	12,120	16,033	21,605	33,423	51,838	85,611	175,213	406,258	518,889	0	0	0
North Dakota	41,879	42	50	60	72	89	108	137	207	317	521	1,064	2,467	5,751	17,509	41,879	0
Ohio	744,343	2,229	3,110	4,297	5,850	7,778	10,039	13,319	20,454	31,628	52,166	106,713	247,390	576,894	744,343	0	0
Oklahoma	244,142	329	567	887	1,305	1,822	2,427	3,285	5,092	7,903	13,057	26,727	61,972	144,525	244,142	0	0
Oregon	209,672	7,581	10,329	14,030	18,879	24,902	31,966	42,258	64,790	100,112	165,073	209,672	0	0	0	0	0
Pennsylvania	847,121	14,451	15,648	17,267	19,469	22,261	25,579	31,229	46,000	69,853	114,319	233,178	540,038	847,121	0	0	0
Rhode Island	55,493	375	648	1,014	1,491	2,082	2,773	3,753	5,818	9,031	14,920	30,539	55,493	0	0	0	0
South Carolina	244,556	707	1,219	1,909	2,807	3,919	5,221	7,066	10,953	17,002	28,089	57,495	133,317	244,556	0	0	0
South Dakota	49,193	14	21	31	44	59	78	104	161	250	412	844	1,956	4,561	13,887	49,193	0
Tennessee	373,995	11	16	23	32	44	57	76	117	182	300	614	1,422	3,317	10,099	53,945	373,995
Texas	1,184,879	14,228	19,442	26,465	35,663	47,088	60,489	80,000	122,682	189,582	312,611	639,427	1,184,879	0	0	0	0
Utah	121,966	5,020	9,145	14,697	21,924	30,868	41,335	56,117	87,111	121,966	0	0	0	0	0	0	0
Vermont	44,438	6,369	9,256	13,142	18,221	24,523	31,908	42,550	44,438	0	0	0	0	0	0	0	0
Virginia	456,854	2,274	3,289	4,655	6,441	8,657	11,255	15,000	23,086	35,730	58,955	120,617	279,637	456,854	0	0	0
Washington	350,524	7,331	11,692	17,563	25,219	34,706	45,815	61,655	95,322	147,807	244,078	350,524	0	0	0	0	0
West Virginia	130,469	620	919	1,323	1,850	2,503	3,269	4,369	6,734	10,428	17,210	35,213	81,640	130,469	0	0	0
Wisconsin	351,777	1,710	2,261	3,003	3,976	5,186	6,607	8,690	13,291	20,516	33,815	69,154	160,302	351,777	0	0	0
Wyoming	33,535	165	172	182	196	214	235	278	401	604	985	2,007	4,646	10,828	32,962	33,535	0
U.S. Total	16,680,250	849,498	1,203,345	1,604,309	2,207,988	2,960,412	3,502,590	4,991,225	7,031,156	9,758,026	13,980,468	19,639,207	27,716,375	39,375,893	54,992,622	75,854,804	100,666,631

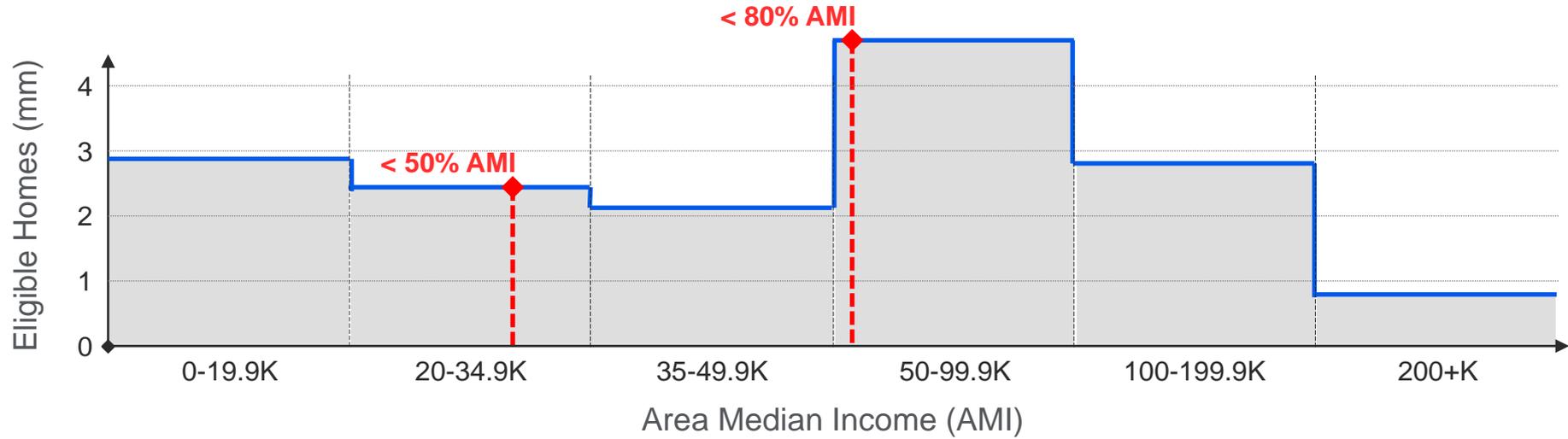
State @ 0 = 100% deployment

FICO < 650 600-649 550-599 500-549 300-499

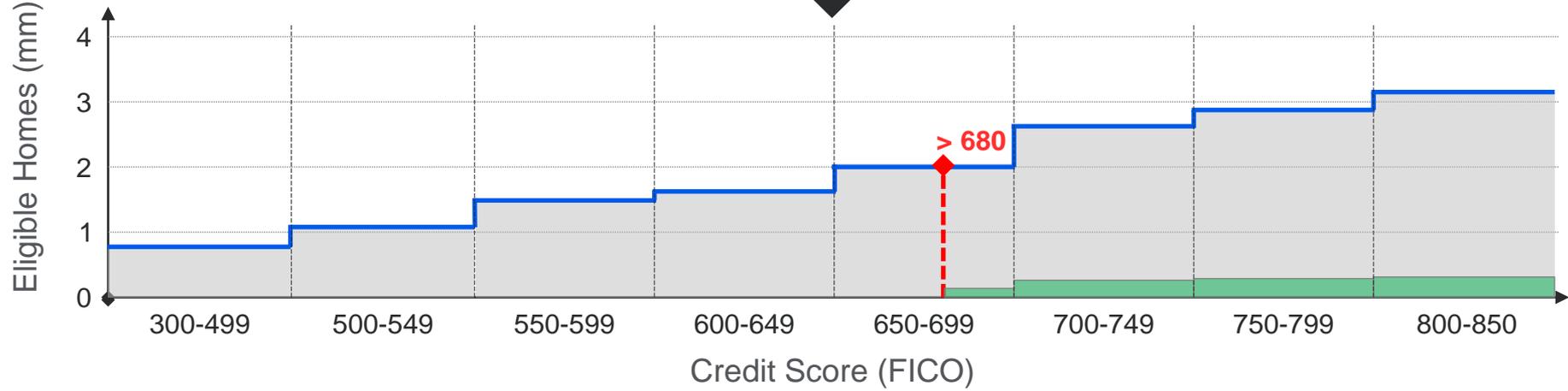


Solar Eligible Homes by Income and FICO (single family)

Of the 16.6mm single family, solar eligible homes, ~7.8mm (47%) are below 80% AMI, and ~6.7mm (40%) are below 680 FICO (excluded from current financing); the relationship between FICO and income is unclear.



? Relationship ?



Deployed solar systems (~1.0mm as of Q1 2017)

Curtis Wynn

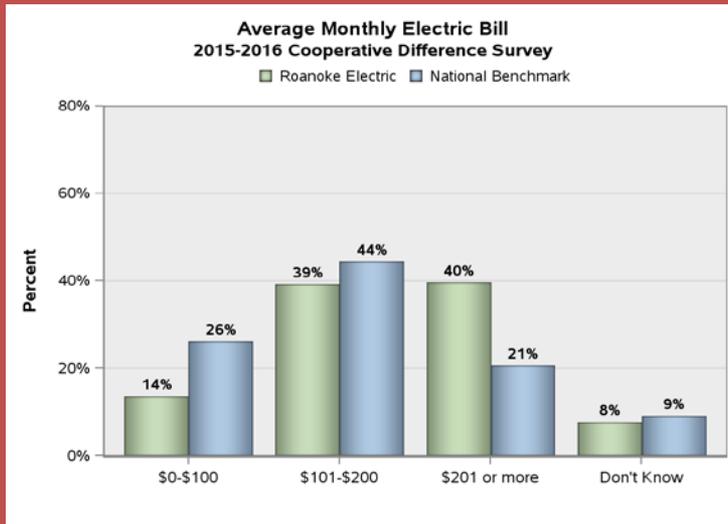
Roanoke Electric Cooperative



“Upgrade to \$ave”

financed by
USDA’s Energy Efficiency &
Conservation Loan Program

Curtis Wynn, President & CEO
Roanoke Electric Cooperative



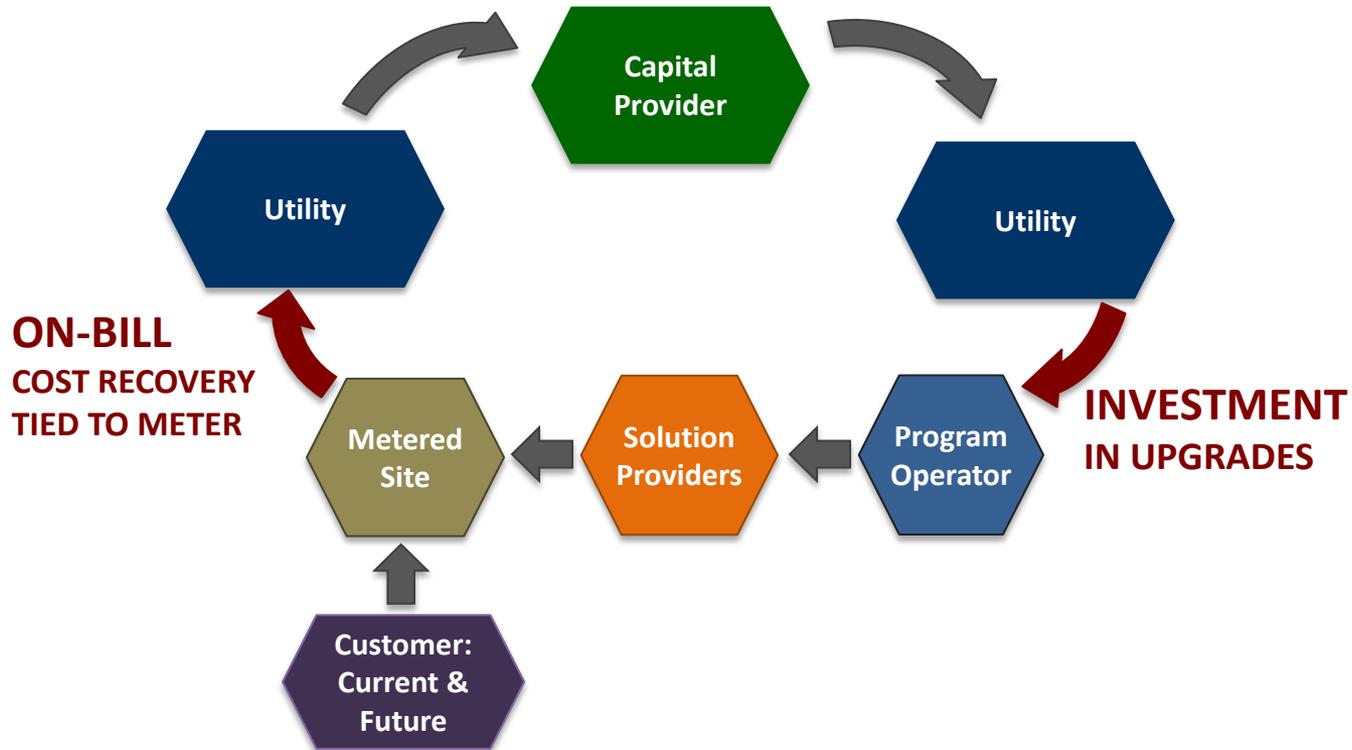
Bill Size & Member-Owner Satisfaction

Avg. Monthly Bill Amount	Roanoke EC		Quarterly Benchmark	
	Percent of Responses	Average Rating	Percent of Responses	Average Rating
TOTAL	100%	8.05	100%	8.72
\$100 or less	12%	9.21	25%	8.98
\$101 to \$200	28%	8.65	42%	8.80
\$201 or more	53%	7.37	22%	8.19
Don't Know	6%	8.87	9%	8.96

Initial loan offer wasn't enough get to "Yes" ...

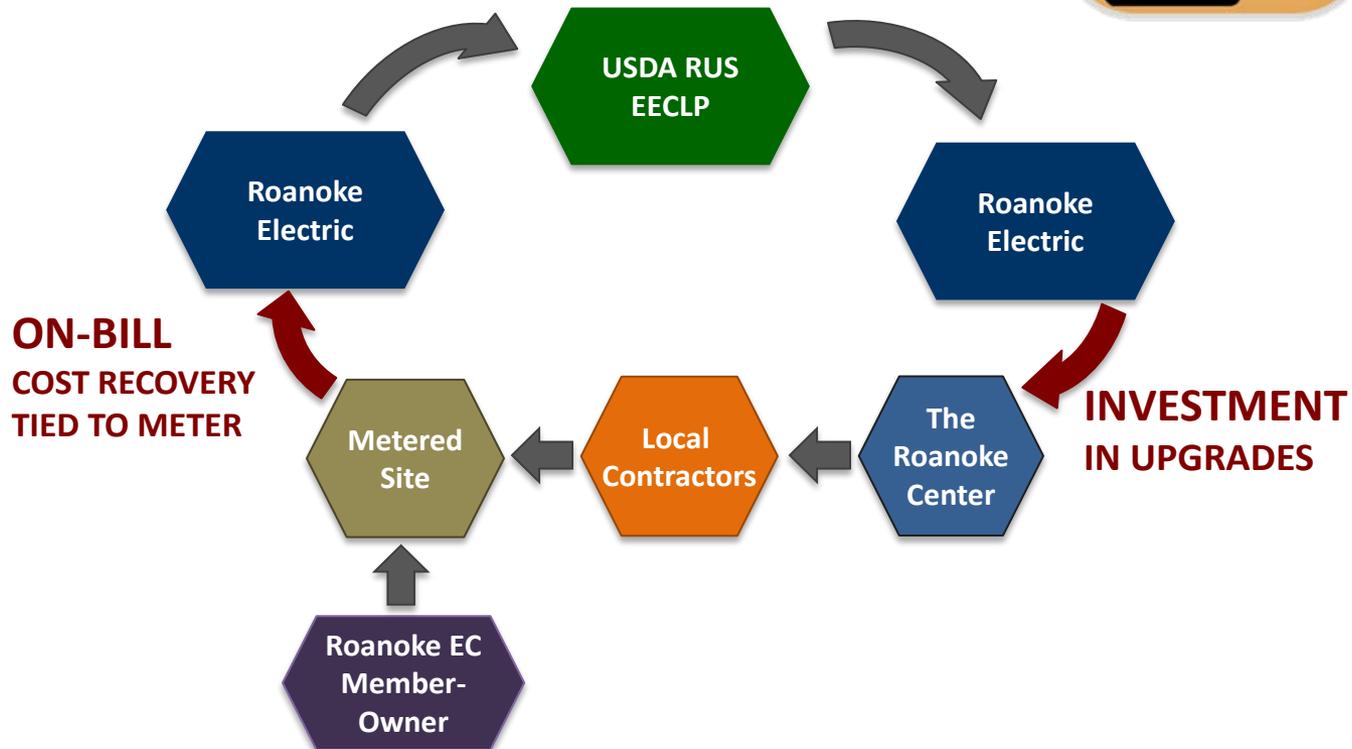
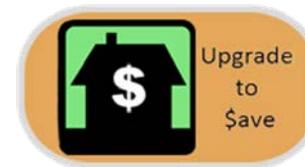
- Even though we offered:
 - Cost effective upgrades for high consumption member-owners
 - On-bill financing
- Major barriers remained:
 - Creditworthiness
 - Renter eligibility
 - Members declining additional debt
- So, we sought a solution that would be *more inclusive* and generate *more value for more members*

Opt-In Tariffed Approach



Based on the Pay As You Save[®] system developed by EEI.

Upgrade to \$ave



Based on the Pay As You Save[®] system developed by EEI.

Typical Efficiency Upgrades



Insulation



Duct Sealing



Air Sealing



Heat Pump Upgrades



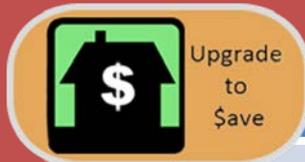
Water Heater Wraps



LED



Summary of Investments for Initial Participants

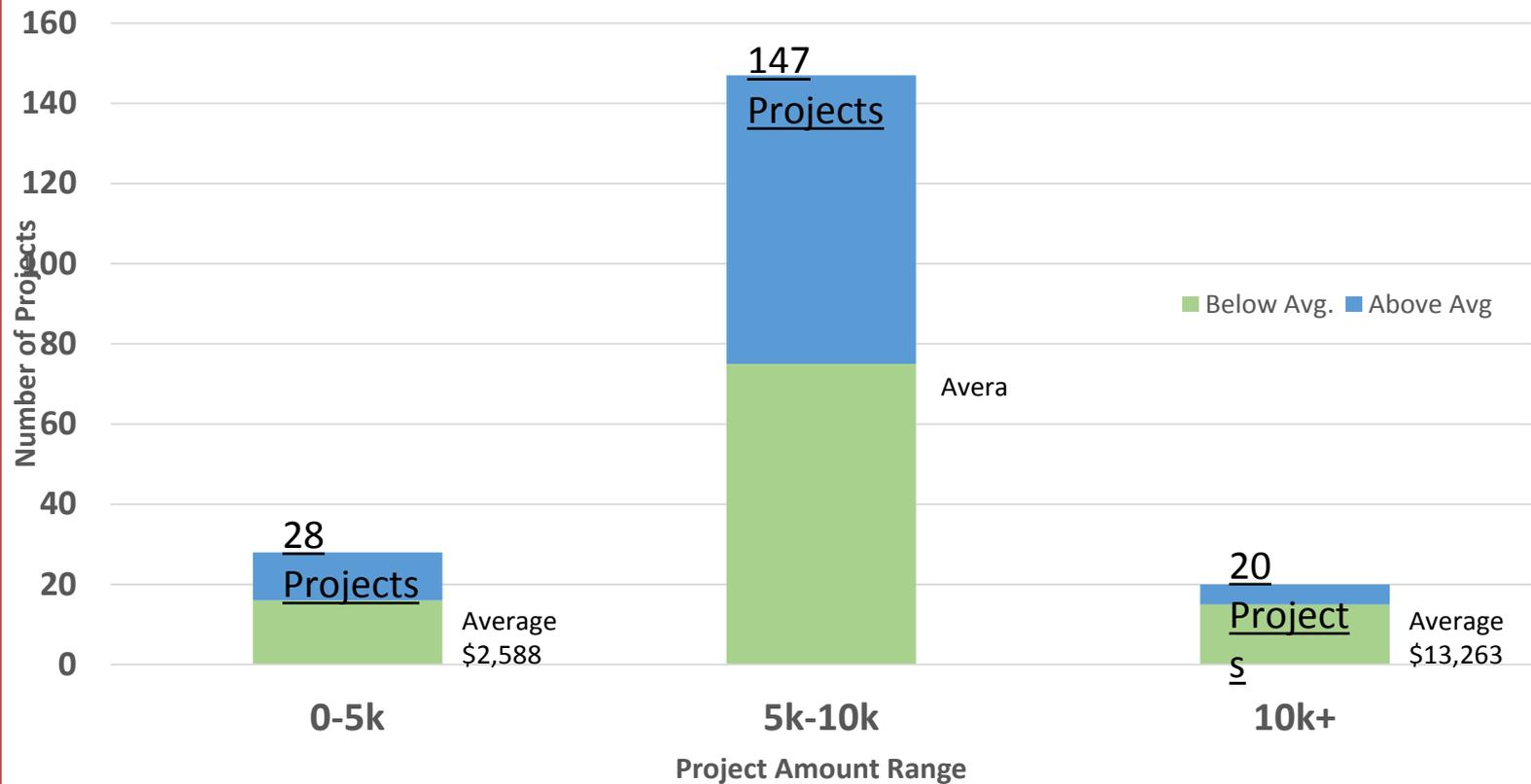


Sample of over 200 homes

Average cost of upgrades	\$7,200
Average buy-down for EE Credits *	\$325
Average monthly savings per site	\$80+
Average monthly tariff	~\$60
Average monthly savings for member	\$20+
% of estimated savings kept by member during cost recovery	25%

* Capped at the amount needed for investment to pencil out without a copayment

Typical Efficiency Upgrades





Roanoke Electric Cooperative

Your Touchstone Energy® Partner 

Curtis Wynn

President & CEO

Office: 252-209-2236

Toll-Free: 1-800-433-2236

Post Office Drawer 1326 Ahoskie, NC 27910

518 NC 561 West Aulander, NC 27805

Website: www.roanokeelectric.com

www.roanokeelectric.com/pays

Karyn Sper

Fannie Mae



Fannie Mae®

Better Buildings Summit

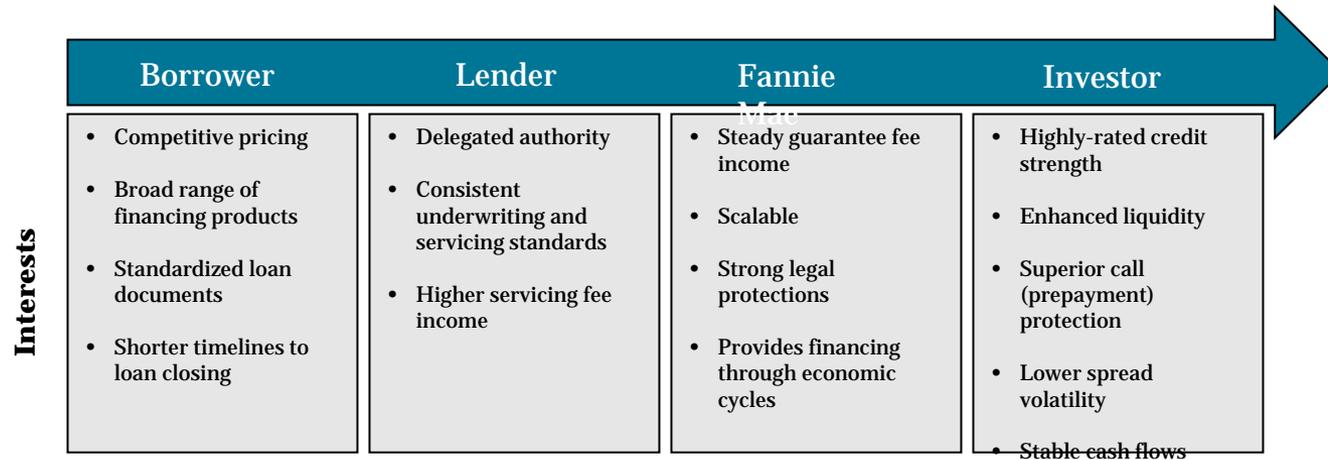
May 16, 2017





Fannie Mae Multifamily Stakeholder Interests and Risk-Sharing

- For nearly 30 years, Fannie Mae Multifamily has relied on its Delegated Underwriting and Servicing (DUS®) program to finance multifamily rental housing
- DUS is a unique model that relies on three core principles:
 - Leveraging private capital; aligning interests through risk-sharing; and providing superior asset management



DUS® is a unique business model.



Fannie Mae Multifamily Green Financing Framework

Fannie Mae Multifamily Green Financing targets a **positive, measureable** impact to each pillar of the **Triple Bottom Line**.

Financial

- Lower credit risk
- Higher cash flows
- Higher property value

Social

- Greater affordability for tenants
- Higher quality, more durable housing
- Healthier housing

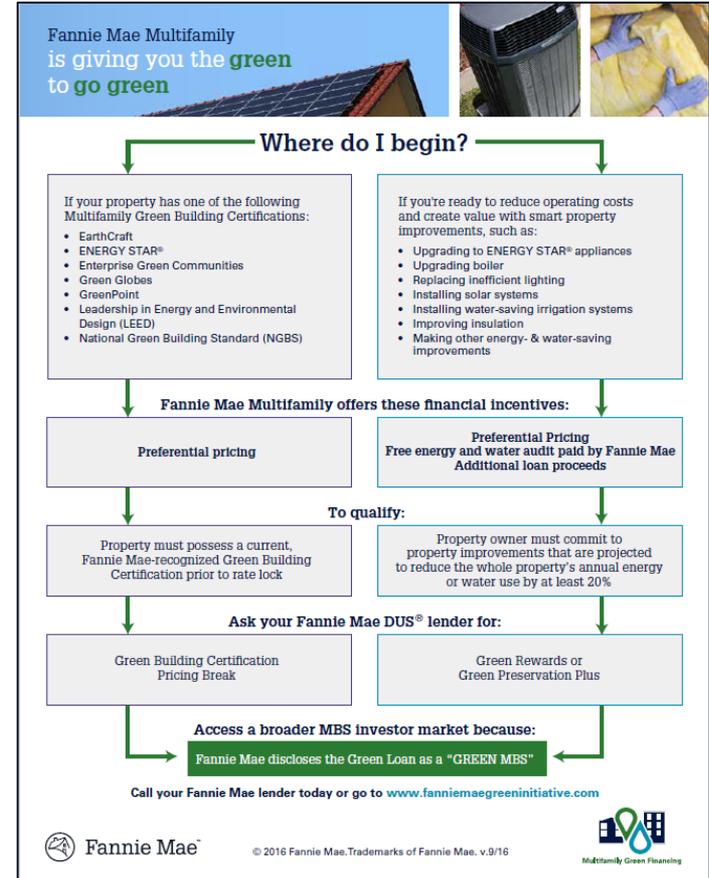
Environmental

- Lower use of energy, water, and natural resources
- Greater resiliency to natural disasters



Green Financing succeeds because we pilot products and keep them simple

Total \$ in Millions **Green Financing Volume 2012-2016**





Green Financing solutions to meet every borrower need

Solution	Green Rewards	Green Building Certification	Green Preservation Plus
Purpose	Reward renovations, retrofits, repairs	Recognize owner's initiative to certify to LEED, ENERGY STAR®, et al.	Preserve quality Affordable properties
Financial Incentives	<ul style="list-style-type: none"> ✓ Energy and Water Audit paid 100% by Fannie Mae ✓ Lower interest rate ✓ Extra loan proceeds: Net Cash Flow may include 75% of owner and 25% of tenant projected cost savings ✓ No minimum Green Improvement Budget 	<ul style="list-style-type: none"> ✓ Lower interest rate ✓ No minimum Green Improvement Budget 	<ul style="list-style-type: none"> ✓ Energy and Water Audit paid 100% by Fannie Mae ✓ Lower interest rate ✓ Up to 85% Loan to Value ✓ Down to 1.15x DSCR

Green financing solutions may be used with acquisitions, refinances, supplemental loans and workforce housing, small loans, student, seniors, affordable and more.

Thank You

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