



Emerging Financing Trends in Energy Efficiency and Renewable Energy

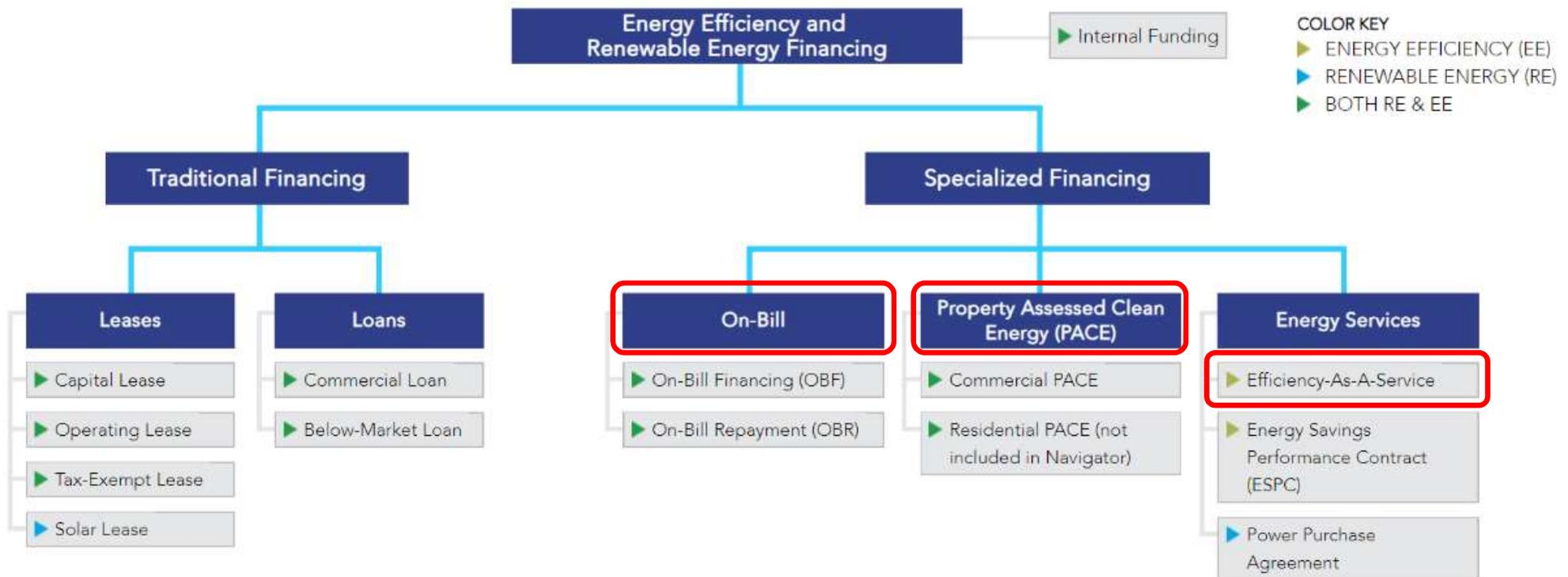
Wednesday, July 10
3:30 – 5:00 PM



Agenda

- Intro/polling questions
 - Which sector are you from?
- Efficiency-as-a-service – Bob Hinkle
- Commercial PACE – Ian Fischer
- On-bill financing/repayment – Tammy Agard
- Questions/discussion

Current Landscape for Energy Financing



Estimated Market Size by Financing Option

Type	U.S. Market	Since?	Notes
ESPCs/EPCs	~\$22 Billion	1980s	<ul style="list-style-type: none"> • ESPCs have supported investments of \$45B but only half have used third-party financing • Typically used for large scale federal & MUSH projects, but also available for C&I
Power Purchase Agreements	2 GW in 2015	2008	<ul style="list-style-type: none"> • Available in 26 states + DC • Represent a large portion of solar transactions
Residential PACE	\$5.1 Billion	2009	<ul style="list-style-type: none"> • Only currently in California, Florida, and Missouri • Majority of activity has been in California
OBF/OBR	\$1.83 Billion	1970s	<ul style="list-style-type: none"> • C&I programs in 22 states as of 2016 • \$0.8B is in commercial sector, the rest in residential
Commercial PACE	\$0.88 Billion	2009	<ul style="list-style-type: none"> • 20 States + DC have PACE programs • 36 + DC have enabling legislation
Efficiency-as-a-service/ESAs	> \$0.3 Billion	2000s	<ul style="list-style-type: none"> • High growth but high uncertainty due to poor data • Off balance sheet option • Financial Allies have completed over \$300M • Navigant expects \$1.6B global LaaS industry by 2025
Loans & Leases	Very large	~2000 BCE	<ul style="list-style-type: none"> • High uncertainty due to poor data • Are the underlying instruments behind other financing types which creates further uncertainty • Financial Allies have completed around \$3.8B • Operating leases coming on balance sheet in 2019

Source: Better Buildings Financing Navigator

Speakers

- Bob Hinkle, Metrus Energy
- Ian Fischer, Urban Ingenuity
- Tammy Agard, EEtility

Bob Hinkle

Metrus Energy



Delivering Efficiency as a Service: The Metrus ESA

July 10, 2019

Overview

- Metrus develops, finances, owns, and operates large-scale efficiency projects for customers including colleges, hospitals, and Fortune 500 companies.
- Metrus partners with leading ESCOs, contractors and lending partners to design, finance, construct and maintain projects.
- Metrus sells efficiency as a resource. We put our capital to work so our customers don't have to.
- Metrus has operational energy and water efficiency projects in 26 different states, resulting in savings over 1.1 billion kWh.



Efficiency as a Service (EaaS)

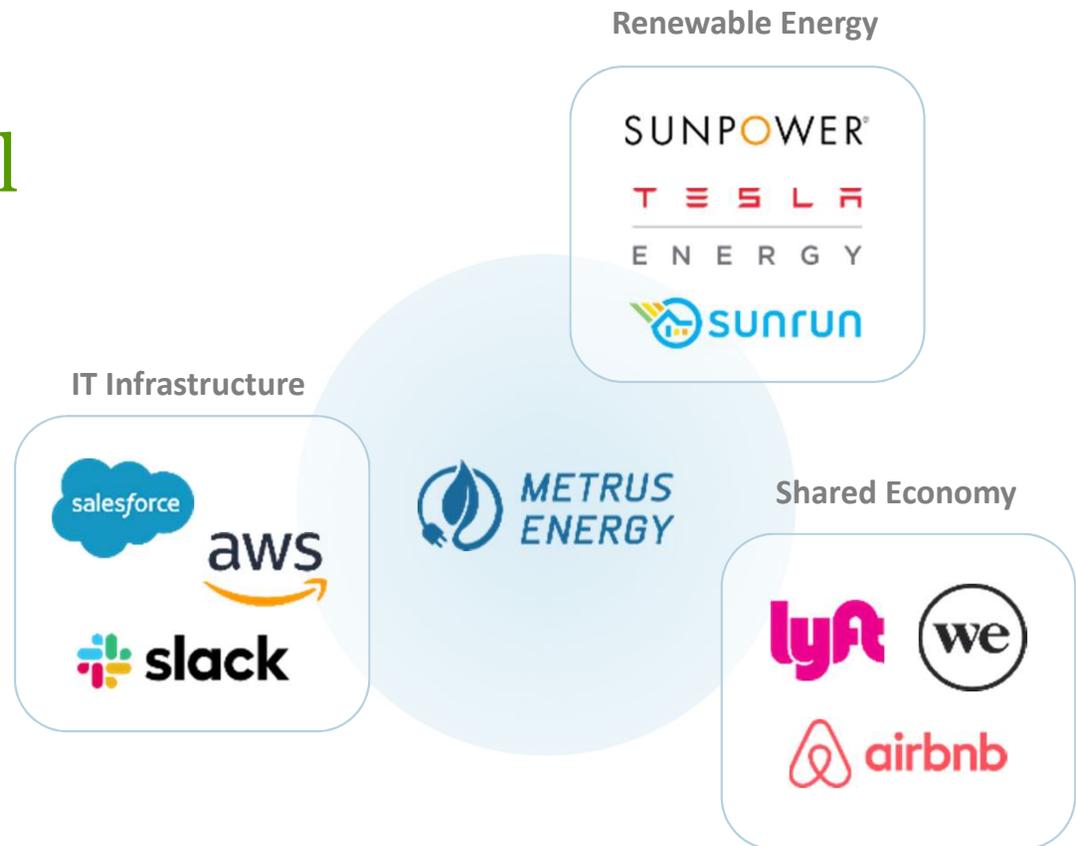


- 100% financing: no upfront project costs for customer
- 3rd party ownership: off balance sheet energy/water efficiency assets
- Open platform: technology/equipment/contractor agnostic
- Pay for performance: payments based on savings delivered
- Enterprise scale: bundle multiple upgrades or facilities in one project
- Ongoing services: includes project monitoring and maintenance
- Flexibility: ability to add in new upgrades over time

The Power of the 'as-a-Service' Model

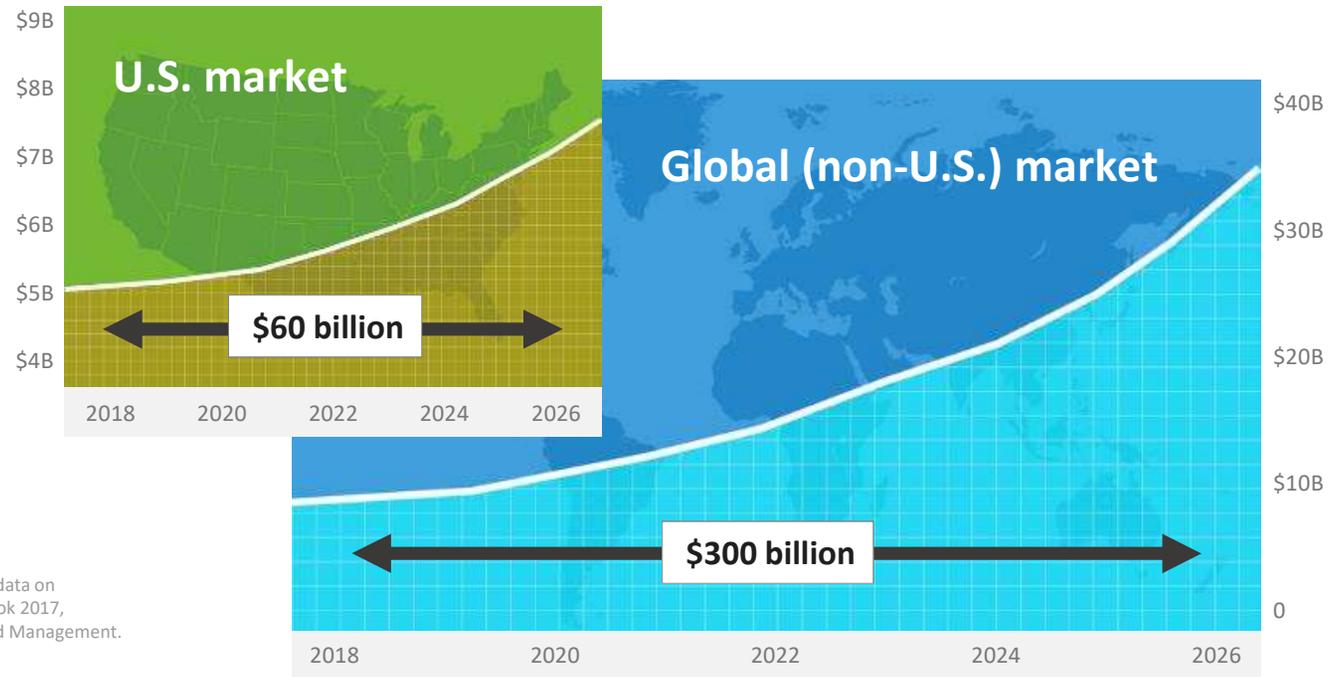
Cross-cutting innovations:

- Third-party ownership, off balance sheet
- Pay for performance (or service)
- Open source platform
- Efficient use of resources



Sizable and Growing Market for C&I Customers

- Total market for EaaS (U.S. and global) is approximately \$360 billion over the next decade
- Estimates match global market potential estimates for broader energy services industry



Sources: Market estimates prepared by Cadmus, ACEEE data on large C&I utility expenditures for 2017, IEA Energy Outlook 2017, Navigant's Global Energy Efficiency Spending Report, and Management. Note: Source estimates do not include water efficiency.

Project Lifecycle

Development:

- Identify efficiency upgrades
- Design project scope
- Structure financing solution

Financing:

- Fund 100% of project costs
- Own project assets
- Monetize available incentives

Operations:

- Measure performance and savings
- Cover ongoing maintenance costs
- Identify new savings opportunities

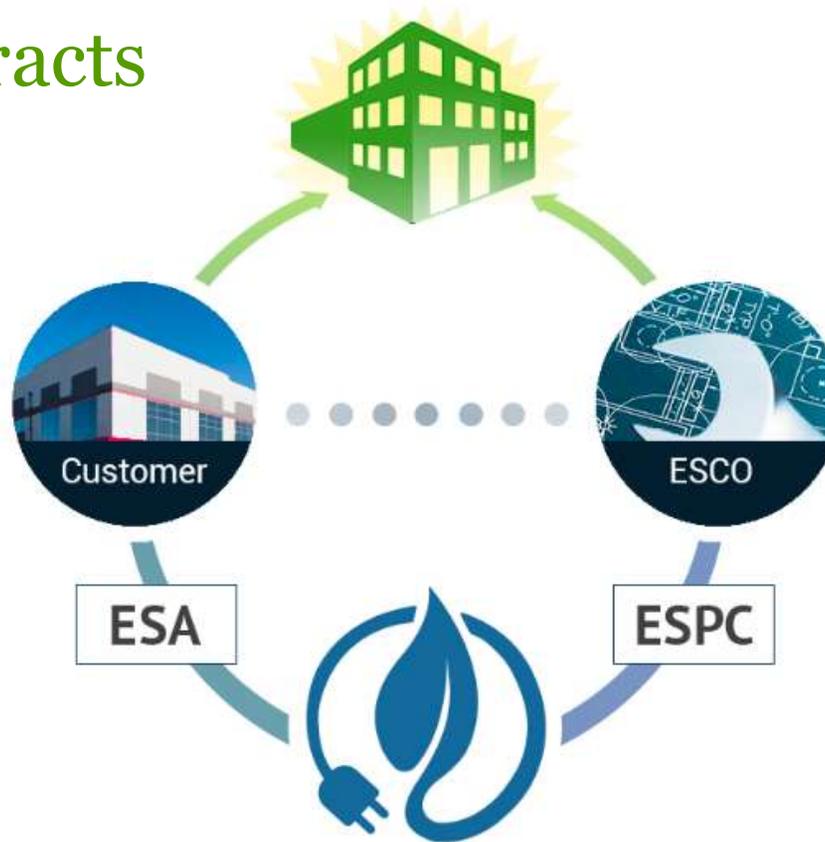
Project Contracts

Efficiency Services Agreement (ESA)

Metrus funds 100% of project cost, takes title to equipment, and pays for ongoing maintenance and monitoring. Customer pays service charge for realized savings.

Energy Services Performance Contract (ESPC)

ESCO (contractor) designs project, installs efficiency equipment, and provides long-term maintenance and monitoring services.



Key Customer Benefits

FINANCIAL

- No capital outlay (cap-ex dollars can be invested in core business)
- Preservation of debt capacity
- Immediate positive cash flow through energy and water savings
- Pay-for-performance ESA removes risk
- Incorporates available utility incentives

OPERATIONAL

- Key equipment upgrades that increase resiliency and reliability
- Improved efficiency of building operations and systems
- Ongoing maintenance and monitoring services
- Flexibility to add new upgrades

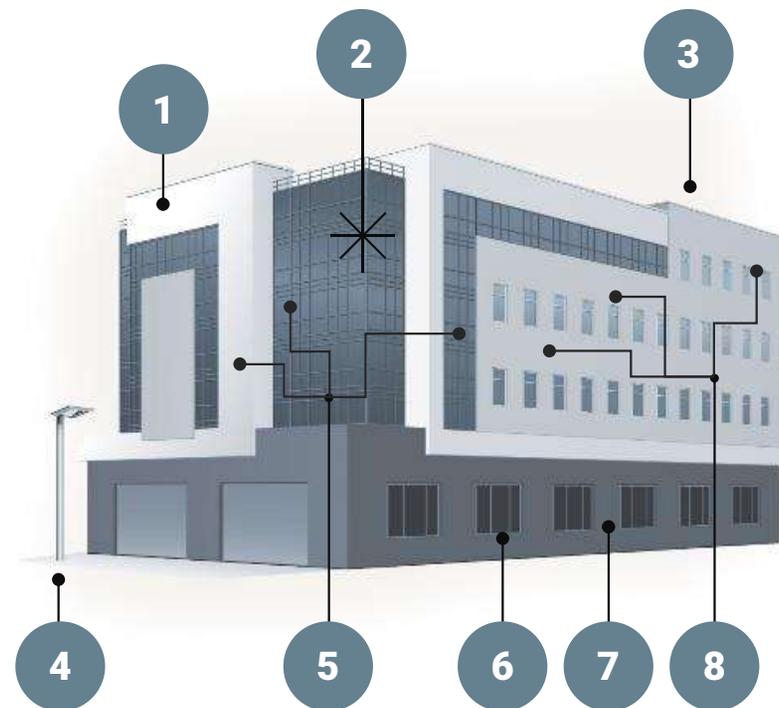
Typical Project Profile

- Integrated energy and water efficiency retrofits
- Project size is generally \$1-10 million
- Upgrades from different buildings on campus are bundled into a single project
- Typical weighted average payback period is 7-10 years
- ESA project term is generally 10-15 years (20 year term is possible)



Typical Efficiency Measures

- 1 Building envelope upgrades
- 2 BMS and controls
- 3 Rooftop HVAC
- 4 Exterior lighting
- 5 LED lighting
- 6 Chiller replacement
- 7 Boiler replacement
- 8 Water efficiency



Funding Options Comparison

Key Attributes	ESA	Lease	PACE ¹	Cash
100% third-party financing	Yes	Yes	Yes	No
Off balance sheet	Yes	No	No	No
Pay for performance	Yes	No	No	No
Ongoing Maintenance	Yes	Sometimes	No	No
Ability to add new upgrades	Yes	No	No	No
Term (years)	5-15 years	5-15 years	5-20 years	N/A
Cost of capital	5-7%	4-6%	5-7%	WACC ²

(1) Property Assessed Clean Energy.

(2) Weighted average cost of capital.

Contact

Metrus Energy

5 Third Street, Suite 822
San Francisco, CA 94103
Tel: 415-284-5000

<http://www.metrusenergy.com>
sales@metrusenergy.com

Bob Hinkle

bob.hinkle@metrusenergy.com

Ian Fischer

Urban Ingenuity

U.S. DEPARTMENT OF
ENERGY

Better Building Summit

July 10, 2019



URBAN INGENUITY

Urban Ingenuity: Our Expertise

PACE Financing:

- Program administrator for DC PACE, under contract to District Department of Energy & Environment



Solar Development & Investment Platform:

- Open-source solar finance for affordable housing portfolios & non-profit organizations
- Joint venture with National Housing Trust



Microgrid Advisory Services:

- Technical assistance, owner's agent, and development services to institutions (Gallaudet University, Walter Reed)
- Advisory services for local governments (DC DOEE, NYC ORR)

PACE: A New Use for an Old Concept



DC PACE is the District's clean energy financing program for building upgrades.

Urban Ingenuity is the DC PACE program administrator, under contract to DOEE



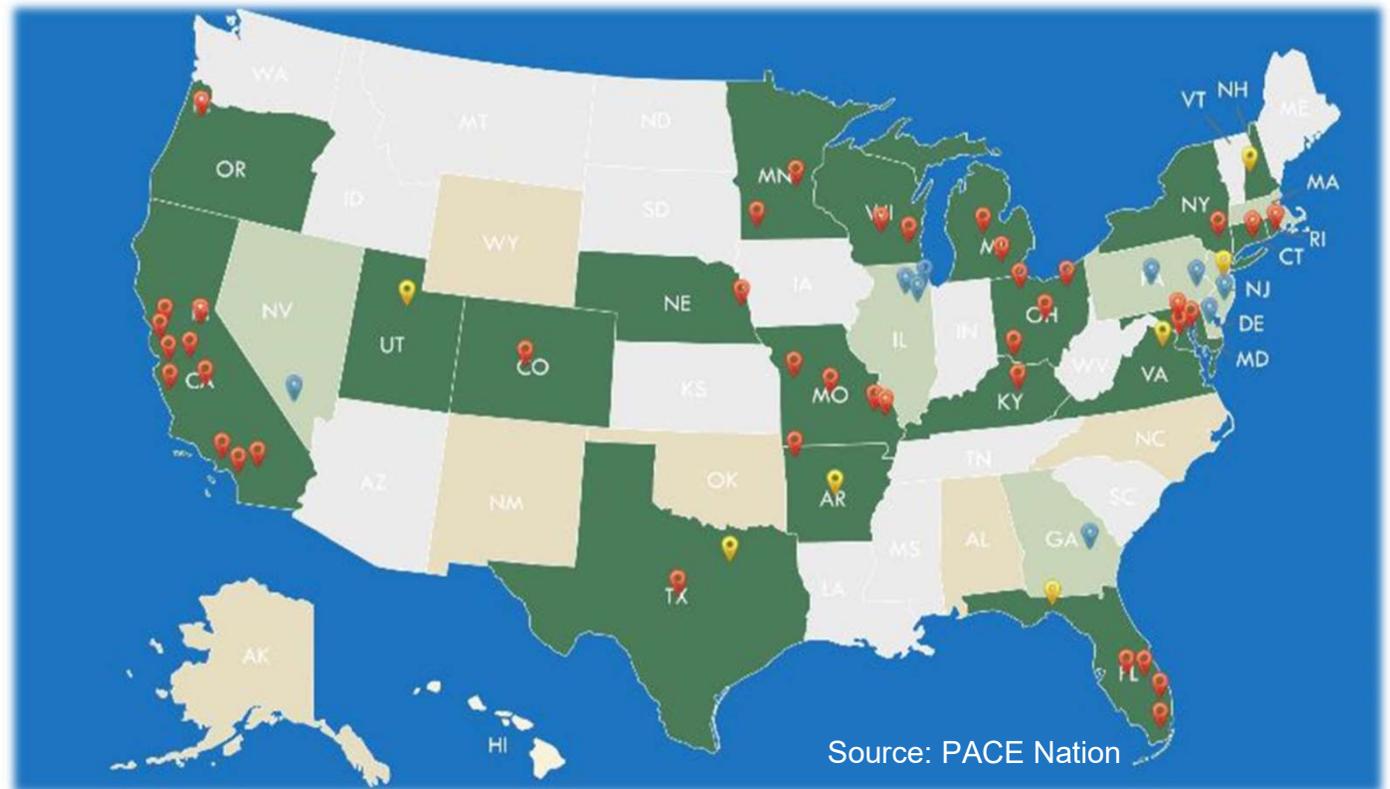
Philadelphia first used this mechanism for an opt-In Fire District in 1736

About Property Assessed Clean Energy

- **Zero Dollars Out-of-Pocket:** PACE provides property owners with up to 100% financing for energy, water, and resilience upgrades at long (15 - 20 year+) terms
- **NOI Positive:** Owners realize savings immediately, and use those savings to pay back the cost of the measures through a special assessment that is placed on the property
- **Off-Balance Sheet:** Extend the capital budget and finance comprehensive projects with potentially off-balance sheet financing – PACE is not conventional debt

Commercial PACE Programs Nationwide

- **Commercial PACE available in 36 states + DC**
- **20 active programs**
- **\$887 Million funded for 1,938 C-PACE projects**



How it works: *DC PACE transaction structure*

What projects can be financed?



Office



Institutional



Multifamily



Industrial

Properties

- Most commercial properties in the District of Columbia (many MD counties too)
- Both for profit and tax-exempt properties are eligible
- Stand alone / part of larger capital stack
- Must be current on taxes
- Not owned by govt. (but groundlease may be okay)

Measures:

- Almost anything tied to an energy or water saving
- Large multi-measure retrofits
- Single-measure like solar panels, boiler replacements, etc.
- Clean energy improvements
- Energy efficiency upgrades (HVAC, lighting, envelope, controls, etc.)
- Water conservation measures
- Rehab or new construction

How PACE Works: *Sizing the Financing*

ECMS	Cost
Lighting	\$150,000
Water conservation	\$25,000
HVAC improvements	\$775,000
Roof rehab	\$550,000
Building controls	\$100,000
Total	\$1,600,000

Annual Savings	
Energy	\$100,000
Water	\$10,000
O&M	\$60,000
Total	\$170,000



PACE Eligibility

- Savings can offset annual payments up to \$170,000
- That finances up to \$1,950,000 (20 year term)



FSFSC

Gut rehabilitation &
tax-exempt PACE in
Washington, DC



PACE for a Sustainable Gut Rehab

Challenge: Fill a financing gap in a gut rehab / expansion of a vacant building to be the new HQ of a local non-profit

Solution: \$2.2M in PACE prevented value engineering given limited capital budget, lower op ex over time

Key measures:

- HVAC
- Envelope improvements
- Green roof
- Low flow fixtures
- LED interior and exterior lighting
- High efficiency commercial kitchen equipment

Sources & Uses	
IRB (tax-exempt)	\$6,000,000
IRB (taxable)	\$2,000,000
Local Govt. Grant	\$3,000,000
Financing Gap	\$3,000,000
Project Cost	\$14,000,000

\$2.9 M savings above code over 20 years supported \$2 M+ in PACE

PACE Financing	
Tax-Exempt PACE	\$1,600,000
Taxable PACE	\$600,000
Total PACE	\$2,200,000



Audi Stadium

New construction in
Washington, DC



URBAN INGENUITY

Greening a Stadium

Challenge: Unlock additional funds to green the stadium to LEED Gold standards and extend sustainability commitments

Solution: \$25M in PACE (part of ~\$350M project)

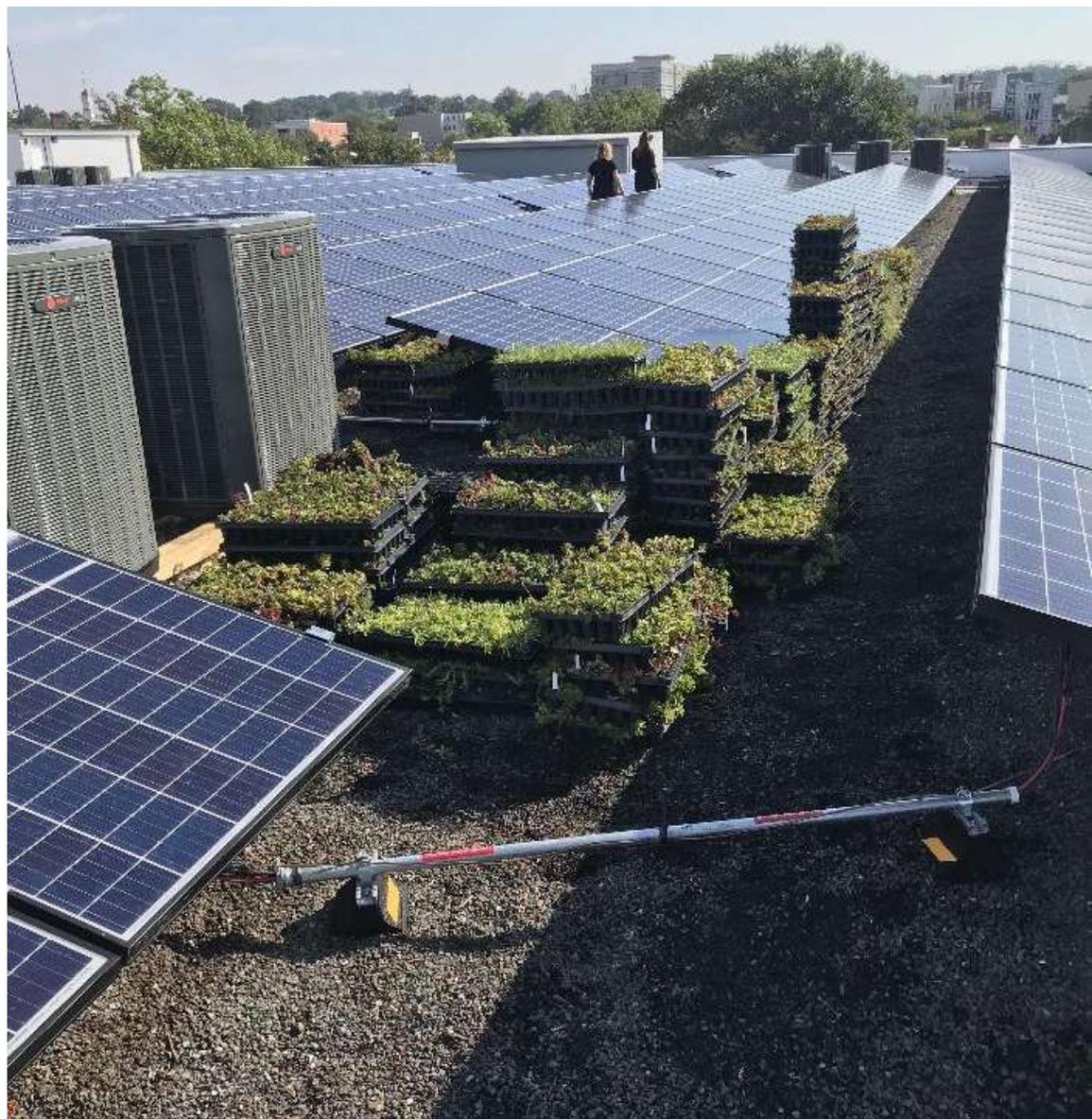
Key measures:

- Storm water retention
- Insulation
- Solar PV
- Green roof
- LED field lighting
- HVAC
- Low-flow fixtures



1250 Taylor St

Solar + green roof in
Washington, DC



Solar + Green Roof

Challenge: Take advantage of solar PV economics while meeting District stormwater retention requirements without increasing out-of-pocket costs

Solution: PACE financing for 134 kW green roof ballasted solar PV allowed developer to add solar PV without increasing size of construction loan or owner's equity contribution

Thanks!

Ian Fischer, COO

ifischer@urbaningenuity.com

Urban Ingenuity

DC PACE Program Administrator

www.urbaningenuity.com

202-796-8925



NHT – Ingenuity Power (NHT IP) Solar Partnership



NHT INGENUITY **POWER**



- ✓ *Develop solar for affordable housing*
- ✓ *Treats solar as a development project*
- ✓ *Benefit streams allocated based on risks / reward*
- ✓ *Building a scalable platform in DC, CA, CO, NY, NJ, and more*



URBAN INGENUITY

Tammy Agard

EEtility

U.S. DEPARTMENT OF
ENERGY



EEtility
EFFICIENCY IS POWER

Basics of PAYS[®]: Overcoming Financial Barriers for all!

“Pay As You Save”

- ▶ PAYS is NOT financed as a loan – it’s an opt in fixed monthly tariff charge attached to a metered location (and is considered an essential Utility service)
- ▶ PAYS is great for everyone but unlike most EE programs- PAYS is particularly helpful for lower income populations (Rural and Urban)
- ▶ The tariff charge on the bill is less than the estimated savings at a 80/20 split so people save money from day one
- ▶ The tariff charge is associated with the meter and survives homeownership/tenant changes (YES, renters can participate!)
- ▶ PAYS requires no personal debt obligation; no credit check; no homeownership requirement!

What are the benefits of PAYS[®] To Participants?

- ▶ Immediate net savings (20% of estimated mo. savings immediately accrue to participants)
- ▶ 100% of savings accrue to participant when Utility cost recovery is complete
- ▶ More comfortable and healthier homes/buildings
- ▶ No upfront cost for cost effective upgrades
- ▶ No credit check, debt to income ratios, homeowner requirements
- ▶ Non participants don't subsidize participants upgrades (unlike incentive or rebate programs)
- ▶ High, middle and low income ALL have equal access. No one is left behind!



Easy Plan



Name
Address
Phone Number
Email

Account Number

Built in 1960
1406 sq ft
One Story
Single Family
With Crawl
3 Occupants

This page of your report shows current conditions observed during your home energy assessment on

April 26, 2019

By: Walter Farmer

Your Home's Annual Energy Use

Ouachita Electric Cooperative	\$	2,806.23
Gas	\$	823.20
	\$	3,629.43

Your Home's Attic Insulation

The current R value of your home's attic insulation is R-5. It has been proven by the Department of Energy that R-38 is the most cost effective R value for Arkansas' climate.

Your Home's Duct System

17% Leakage, Rigid Duct, 75% Access to Ducts

Your Home's Health, Safety & Comfort

No unvented gas heaters in home., No comfort issues, HVAC is Operational, All Health and Safety Tests Passed

Your Home's Air Leakage

The current ventilation rate for your home is 3785 cfm50 cubic feet per minute which is equivalent to a 1.45 square foot hole. The minimum rate for your home is 1097 CFM.

Your Home's Lighting

You currently have 18 incandescent light bulbs, 0 CFL bulbs and 0 LED bulbs. Of the incandescent light bulbs, 0 of them are not standard base bulbs.

Your Home's Heating and Cooling

3 Ton 8 SEER 78 AFUE Package Whole House Window Unit

Appliances In Your Home

Fridge 1, Side-by-side w/ TDI, Kitchen, 23, \$88
Freezer 1, Chest freezer, Bonus, 12, \$58

Easy Plan was created on
April 29, 2019

Below is a summary table of the most cost effective energy upgrades identified for your home. Each upgrade shows the energy savings estimation that each one should yield.

NOTES:

Recommend: HVAC system works but not very good. East end of the home always feels cold. Upgrade system to new Heat Pump, Air Seal, Duct Seal, Attic Insulation, Lighting, CO Detector.

Estimated Annual Energy Savings and (One Time) Cost

	* Includes all program fees	Electric Savings	Fuel Savings	Payback (Years)	Costs For Work
Reduce ventilation rate by 20% leakage or better.	\$	40.00			
Seal duct system 1 to 10% leakage or better.	\$	48.23	\$ -		
Increase Attic Insulation to 38	\$	204.19			
Install 18 LED bulbs	\$	86.05			
				7.7	*\$3,379
Upgrade HVAC 1 with a 16 SEER, 3 Tons, 8.5 HSPF.	\$	16.83	\$ 727.74	6.8	\$ 5,075.20
	\$	395.30	\$ 727.74		\$ 8,454.38
Total Estimated Annual Energy Savings:		\$	1,123.04		

Your HVAC Quote is provided by Hampton Heat and Air and includes a 2 Year preventive maintenance agreement

Easy Plan was created on
April 29, 2019

Current and Estimated Future Electric Use



When you make energy upgrades to your home you help the environment too! Here is a look at the annual environmental impact that can occur by having this work completed.

KWH Reduction

3,437

CO2 Reduction

4,469

lbs of Coal Saved

3,094

Veh. Miles Offset

4,911

This page explains the on-bill payment option being offered to you by Ouachita Electric Cooperative and gives you an estimate of what your future energy cost would be if you choose to move forward with the work recommended on page 2.

Payback Summary

Improvement Cost	\$ 8,454.38
	\$ -
Copay Requirement	Zero
Balance	\$ 8,454.38
Interest Rate	0.50%
Total Interest Paid	\$ 214.88
Total Amount Paid Including Interest	\$ 8,669.27
Terms Of Payback (Mo)	120
Cost added per (Mo)	\$ 72.24
Estimated Savings per (Mo)	\$ 93.59
Estimated Savings Still Remaining (Mo)	\$ 21.34
% Savings Not Used	22.81%

Estimated Annual Return On Investment

Your Home Intervention	8.6%
Average 401K	6.1%
Average Treasury Bond	2.7%

Estimated Energy Savings Analysis

12 Year Energy Savings	\$ 16,104.42
12 Year Cash Flow	\$ 7,435.15

Estimated Electrical Summary After Upgrades



We rely heavily on our heating and cooling systems, which is why our energy bills tend to be higher during the winter and summer months. For this reason, participants typically experience the majority of estimated annual energy savings during the heating and cooling seasons.

Energy Savings Disclaimer

While Electric cooperatives and affiliates offering this program rely on industry best practices and energy savings modeling software to make energy savings predictions as accurate as possible, it is important to understand that the Easy Plan report is intended to inform participants on the **ESTIMATED** energy cost savings they should expect to realize—assuming all recommended work is done. The estimated savings reflected in the Easy Plan therefore are in no way a guarantee of the actual savings.

The estimated annual energy savings numbers reflected in the Easy Plan are in large part based on using the last 12 months weather and behavior patterns as well as the last 12 months costs for energy. Since future weather and behavior patterns and energy costs cannot be accurately predicted, there will be a variable difference between estimated and actual savings.

Scope of Work

The Scope of Work outlined below represents the literal tasks that contractors have been authorized by Ouachita Electric to perform at your home. Please review these tasks carefully. In an effort to minimize confusion, we have tried to use descriptive language that the general public speaks. It is important to ask for clarification if you are not certain what each task means.

If, as the work is performed, the contractor determines that ANY change to the Scope of Work is needed, a change order form must be provided and signed by you and the program operator prior to additional work being authorized.

Air Sealing

Weatherstrip Front Door, Weatherstrip Rear Door, Seal plumbing under 1 sink/s, Seal plumbing at 1 toilets and showers, Seal 2 Window A/C units with foam board and drywall, Seal all accessible top plates and penetrations, Blower door direct air seal

Duct Sealing

Seal air return on system 1, Seal 9 register boots to ceiling on system 1, Seal 9 duct boots from the inside as far as can reach on system 1,

Attic Insulation

Increase 1406 SQ FT of attic insulation from R-5 to R-38, Install R-sticks, Install insulation shield around 1 exhaust flue/s,

New LED Lighting

Standard	16
Vanity Globe	NA
Recessed Can	NA
Exterior Flood	2
Candelabra	NA

HVAC

16 SEER, 3 Tons, 8.5 HSPF
NA
NA

Health & Safety/Other

CO Detector ,,

The Upgrades itemized on this page of my Easy Plan are the Upgrades I will be authorizing to be installed at my residence if/when I choose to have work done through Ouachita Electric's HELP PAYS® Program. Should I choose to execute the Ouachita Electric Easy Plan (Legal Agreement indicating you are electing to have this work done) any changes to this Scope of Work that result in higher costs must be authorized by myself and the Program Operator in writing as stated on the HELP PAYS® Change Order form.

Here's what happened

Comparing the same 9 months for **HELP PAYS** to **HELP**:

- ✓ **Participation doubled:** 30% were renters in multi-family housing
- ✓ **Conversion rate:** 90% of the customers who received an offer for investment accepted it, and that figure was 100% in multi-family housing
- ✓ **Investment tripled:** More than \$1.5 million in approved efficiency upgrades, one third of which was in the commercial sector (college and municipality)
- ✓ **Bigger projects, deeper savings:** average residential upgrades jumped from \$2,280 to more than \$5,600 once HVAC became eligible
- ✓ **Utility Peak Demand savings:** KW per household

All this was achieved in a service area where median income is \$29,000.

Here's what's next...

EEtility currently operates PAYS programs in 3 States (and is actively talking to 6 others). Lots of National interest

Still much confusion as to what differentiates a Tariff from a Loan

- On bill finance (Loan) has stigma
- Misperceptions of “defaults”

Fear of success (true kWh reductions that will be massive at scale)

- mentalities from yesterday
- Utility business model is changing

Short term trajectory: 3 launches in 2019, 6 or 7 more in 2020, including 1st IOU and Muni.



Thank You

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The Better Buildings Financing Navigator

The Better Buildings Financing Navigator is an online tool that helps public and private organizations find financing solutions for energy efficiency and renewable energy projects.



With the Navigator, you can...

- 1 Explore:** Learn the basics of the clean energy financing market
- 2 Find:** Answer a few simple questions to see which financing options might be a fit for your project
- 3 Connect:** Speak to Better Buildings Financial Allies who may be able to finance your project

Available at: <https://betterbuildingsolutioncenter.energy.gov/financing-navigator>

Questions

Thank You

Provide feedback on this session
in the Summit App!

Download the app to your mobile device or go to
event.crowdcompass.com/bbsummit19

