

# Finance 101: Navigating Financing Options for Energy Efficiency and Renewable Energy

Wednesday, August 22<sup>nd</sup>, 2018



# Panelists

## Moderator

- **Holt Mountcastle**, RE Tech Advisors

## Speakers

- **Bob Hinkle**, Metrus Energy
- **Anmol Vanamali**, VEIC

# Navigating the Energy Efficiency Financing Landscape

2018 Better Buildings Summit



# The Road to Energy Efficiency

82%

of America's building stock is > 20 years old<sup>1</sup>



20-40%

annual energy savings achieved from retrofit projects<sup>2</sup>



77%

of companies cite financial constraints as obstacles to sustainability<sup>3</sup>

1. U.S. Energy Information Agency, Commercial Building Energy Consumption Survey
2. Johnson Controls, 2017 Energy Efficiency Indicator Survey
3. U.S. Department of Energy reports and Metrus Energy project data

# Methods of financing energy efficiency retrofits

## Self-Fund

Pay for efficiency upgrades with cash or credit

## Lease

Borrow for efficiency upgrades and repay by making fixed principal and interest payments

## PACE<sup>1</sup>

Fund upgrades through a third-party and repay by making fixed payments on your property tax bill

## ESA

Fund upgrades through a third party using efficiency-as-a-service. Pay only for realized savings

1. Property Assessed Clean Energy (PACE)

# Efficiency Financing Decision Matrix



# Financing options – a closer look

## Self-fund

Lease (taxable  
or tax-exempt)

Commercial PACE

ESA

- Pay for a project out of internal capital budget or by taking out corporate debt
- On-balance sheet
- Customer retains all savings but assumes project performance risk
- Capital budget constraints often lead to single-measure, short-term projects that limit savings and don't optimize total building performance

# Financing options – a closer look

Self-fund

**Lease (taxable  
or tax-exempt)**

Commercial PACE

ESA

- Up to 100% financing
- 5-10 year terms (longer terms possible for tax-exempt customers)
- On-balance sheet (accounting changes under ASC 842 eliminate operating leases)
- Relatively flexible on credit quality
- Customer owns project performance risk due to fixed lease payments

# Financing options – a closer look

Self-fund

Lease (taxable  
or tax-exempt)

**Commercial  
PACE**

ESA

- 100% financing for 15-20 year term
- Secured by priority lien on real property, requires mortgage holder consent
- PACE repayment is tied to property tax bill, not present owner
- PACE programs are launched and active in 20 states (plus D.C.)
- Emphasis on commercial real estate

# Financing options – a closer look

Self-fund

Lease (taxable  
or tax-exempt)

Commercial PACE

**ESA**

- 100% financing for 5-15 year terms
- Off-balance sheet
- Well-suited for multi-measure retrofits and multi-site portfolio rollouts
- Service charge based on cost per unit of realized savings ("negawatts")
- Can fund efficiency upgrades with longer term payback periods and add in new measures once a project is operational
- ESA providers assume performance risk and cover ongoing project monitoring and maintenance services

# Funding comparison

Key Attributes	ESA	Lease	PACE <sup>1</sup>	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 services	Yes	Sometimes*	No	No
Ongoing measurement services	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 <sup>2</sup>

Notes: (1) Property Assessed Clean Energy, (2) Weighted average cost of capital. Source: Metrus Management

# Contact

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# Estimated market size by financing option

Type	U.S. Market	Since?	Notes
ESPCs/EPCs	~\$22 Billion	1980s	<ul style="list-style-type: none"> <li>• ESPCs have supported investments of \$45B but only half have used third-party financing</li> <li>• Typically used for large scale federal &amp; MUSH projects, but also available for C&amp;I</li> </ul>
Power Purchase Agreements	2 GW in 2015	2008	<ul style="list-style-type: none"> <li>• Available in 26 states + DC</li> <li>• Represent a large portion of solar transactions</li> </ul>
Residential PACE	\$5.1 Billion	2009	<ul style="list-style-type: none"> <li>• Only currently in California, Florida, and Missouri</li> <li>• Majority of activity has been in California</li> </ul>
OBF/OBR	\$1.83 Billion	1970s	<ul style="list-style-type: none"> <li>• C&amp;I programs in 22 states as of 2016</li> <li>• \$0.8B is in commercial sector, the rest in residential</li> </ul>
Commercial PACE	\$0.59 Billion	2009	<ul style="list-style-type: none"> <li>• 20 States + DC have PACE programs</li> <li>• 33 + DC have enabling legislation</li> </ul>
Efficiency-as-a-service/ESAs	> \$0.2 Billion	2000s	<ul style="list-style-type: none"> <li>• High growth but high uncertainty due to poor data</li> <li>• Off balance sheet option</li> <li>• Financial Allies have completed nearly \$200M</li> <li>• Navigant expects \$1.6B global LaaS industry by 2025</li> </ul>
Loans & Leases	Very large	~2000 BCE	<ul style="list-style-type: none"> <li>• High uncertainty due to poor data</li> <li>• Are the underlying instruments behind other financing types which creates further uncertainty</li> <li>• Financial Allies have completed around \$3.8B</li> <li>• Operating leases coming on balance sheet in 2019</li> </ul>

Source: Better Buildings Financing Navigator

# Challenges facing EE Finance Market

- Low energy costs (*historically and relatively speaking*)
- Political uncertainty
- Utility model disruption
- Skimming

# What the future holds for EE Finance?

- Mainstreaming
- PPPs (E.g. Green Banks)
- As a Service (EaaS) or Pay for Performance models
- Data analytics/ Building Automation Systems
- Better integration of efficiency + renewables + storage

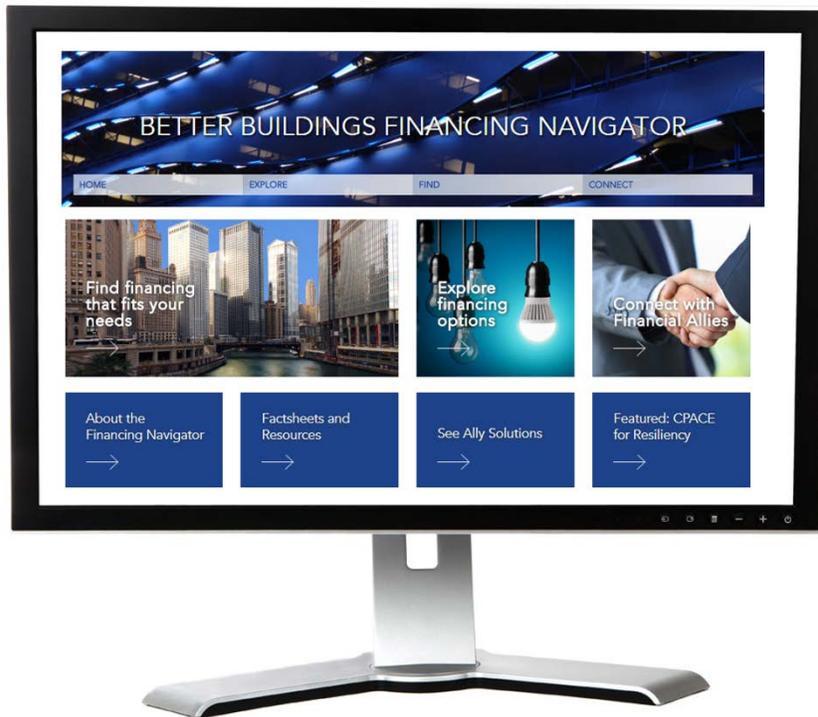
# About VEIC

- Private, nonprofit corporation founded in 1986
- Provides energy efficiency and renewable energy consulting and implementation services
- ~300 employees
- Locations: VT, DC, OH



# 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.

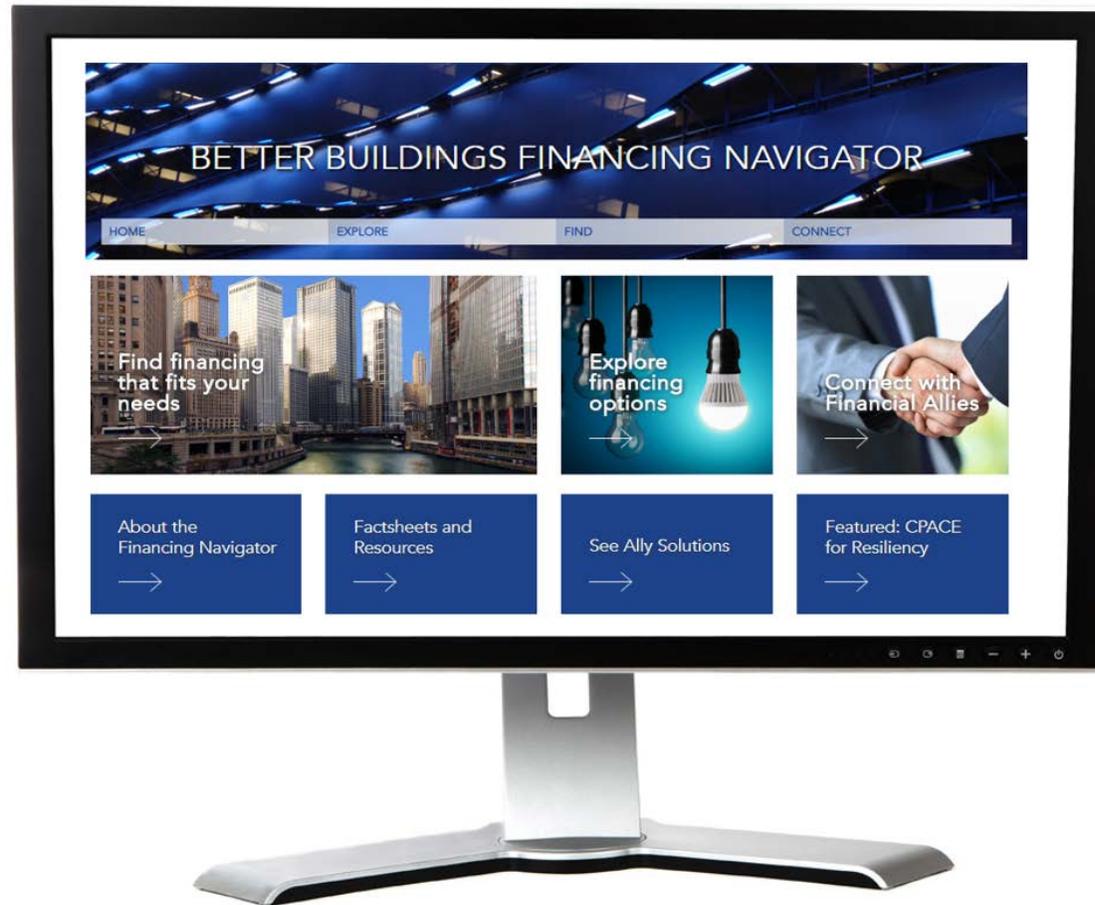


With the Navigator, you can...

- 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

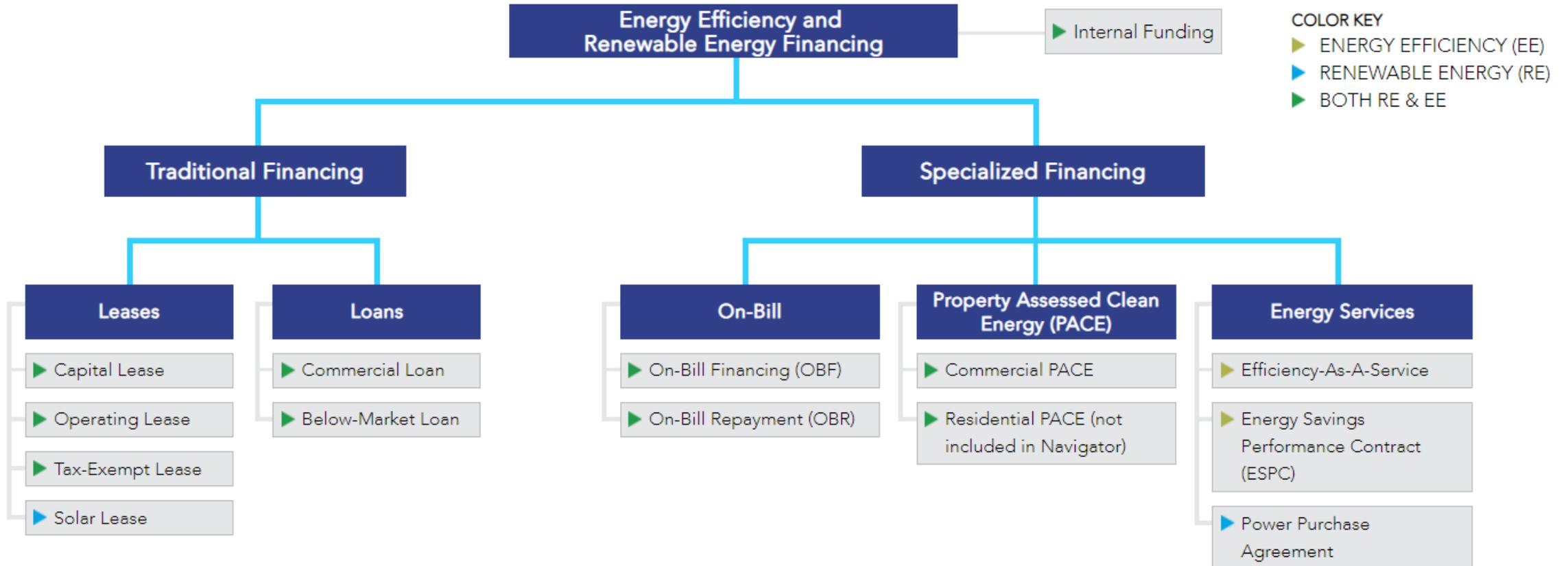
Available at: <https://betterbuildingsolutioncenter.energy.gov/financing-navigator>

# Live Demo



# FINANCING LANDSCAPE

The diagram below summarizes the energy efficiency and renewable energy financing options available in the market. "Traditional" options are commonly used to finance energy projects in addition to other types of goods and services, whereas "specialized" options are specifically designed for energy projects. Organizations can also fund projects internally without seeking third-party financing. For a more detailed typology of financing options, see LBNL's "[Current Practices in Efficiency Financing](#)" report.



## TELL US ABOUT YOUR ORGANIZATION

1) Sector (required) ?

- Select -

## TELL US ABOUT YOUR PROJECT

2) Project Cost (required) ?

\$

3) Building Ownership ?

- None -

4) Project Type (required) ?

- Select -

- Select -

Energy Efficiency

Renewable Energy

Other Generation

## YOUR PREFERENCES

5) Do you want the financing to be on or off balance sheet? ?

- None -

6) How important is it to minimize your performance risk? ?

- None -

		OPTION 1	OPTION 2	OPTION 3	OPTION 4
		POWER PURCHASE AGREEMENT (PPA)	SOLAR LEASE	OPERATING LEASE	COMMERCIAL PROPERTY ASSESSED CLEAN ENERGY (CPACE)
		CONNECT WITH PROVIDERS	CONNECT WITH PROVIDERS	CONNECT WITH PROVIDERS	CONNECT WITH PROVIDERS
BASIC ATTRIBUTES	Applicable Sectors	✓	✓	✓	✓
	Building Ownership	—	—	—	—
	Typical Project Size	✓	✓	✓	✓
	Project Type	✓	✓	✓	✓
CONTRACT STRUCTURE	Contract Complexity	—	—	—	—
	Performance Risk	✓	✗	✗	✗
TAX & BALANCE SHEET	Balance Sheet Treatment	✓	✓	✓	○
	Tax Deductions	—	—	—	—
CONTRACT TERMS	Typical Duration	—	—	—	—
	Typical Close Time	✓	✓	✓	✓

VIEW ALL

 MATCH
  PARTIAL MATCH
  NOT A MATCH
  NOT IMPORTANT

**FILTER:**

Products



Sectors



Technologies



Location

 SELECT ALL Leases Debt or Loans Bonds Energy Performance Contracts (EPCs) Efficiency-as-a-service Property Assessed Clean Energy (PACE) On-Bill Financing/Repayment Grants or Below-Market Loans Power Purchase Agreements (PPAs) Performance Insurance Secondary Market Investment & Services

### Abundant Power

Abundant Power Solutions designs and delivers energy efficiency financing programs in partnership with states, local governments...

[Learn More »](#)

### Advantage Energy

Advantage Energy provides full life-cycle fund and asset management services for long-lived infrastructure assets, especially on-...

[Learn More »](#)

### AFL-CIO Housing Investment Trust

The AFL-CIO and its affiliated labor unions are engaged in energy-saving building retrofits and infrastructure improvements...

[Learn More »](#)

### All American Investment Group

All American Investment Group, LLC (AAIG) was formed in 1999 to provide true capital markets access for privately placed debt...

[Learn More »](#)

### Allumia

Allumia is an efficiency-as-a-service provider focused on making it simple, affordable, and painless for small and mid-sized...

[Learn More »](#)

### Bank of America Merrill Lynch

Bank of America is one of the world's largest financial institutions, serving individual consumers, small businesses, middle-...

[Learn More »](#)

### BioStar Renewables

BioStar Renewables is a renewable energy investment firm that specializes in energy infrastructure projects and companies.

[Learn More »](#)

### Blue Hill Partners LLC

Blue Hill Partners is a green sector investment firm which provides capital, management support, and strategic guidance to...

[Learn More »](#)

### BlueFlame Energy Finance LLC

BlueFlame Energy Finance LLC is a specialty finance company focused on low-cost, low-friction financing solutions for distributed...

[Learn More »](#)



## WHAT IS EFFICIENCY-AS-A-SERVICE?

Efficiency-as-a-service is a pay-for-performance, off-balance sheet financing solution that allows customers to implement energy and water efficiency projects with no upfront capital expenditure. The provider pays for project development, construction, and maintenance costs. Once a project is operational, the customer makes service payments that are based on actual energy savings or other equipment performance metrics, resulting in immediate reduced operating expenses. The energy services agreement (ESA) is the most common type of arrangement, but other models such as lumens-as-a-service and energy subscription agreements are also in use.

SEE CASE STUDIES



CONNECT WITH PROVIDERS



### EFFICIENCY-AS-A-SERVICE MAY BE A GOOD FIT IF YOUR ORGANIZATION...

- ▶ Wants to pursue retrofits across your portfolio without spending your own capital
- ▶ Prefers off-balance sheet treatment for the delivery of efficiency services
- ▶ Wants a pay-for-performance solution where a third party takes on performance risk and provides project management and maintenance
- ▶ Is looking for a financing mechanism with a contract term ranging from 5 to 15 years, with periodic buy-out options
- ▶ Wants a new way to procure energy efficient technologies across your portfolio without the hassle of ownership

To compare efficiency-as-a-service to other financing options that might be a good fit, [answer a few questions](#) about your organization.

## SECTOR-SPECIFIC FINANCING RESOURCES

This section contains energy efficiency and renewable energy financing resources designed specifically for certain sectors. To view the resources for a sector, click on the title to expand the accordion.

- > [Affordable Multifamily](#)
- > [Commercial](#)
- > [Government](#)
- > [Healthcare](#)
- > [Higher Education](#)
- > [K-12](#)
- > [Multifamily](#)
- > [Non-profit](#)

## PROGRAMS AND POLICIES BY LOCATION

This section contains resources related to energy efficiency and renewable energy financing policies and programs in specific regions, states, and cities.

### [Coalition for Green Capital](#)

This website includes information about green bank programs in the U.S. and globally.

### [DSIRE Database](#)

This searchable database provides information on incentives and policies that support renewables and energy efficiency in the U.S.

### [On-bill Financing: Cost-Free Energy Efficiency Improvements](#)

This website provides information on state legislation relevant to on-bill financing.

Questions?