



# Emerging Trends in Public-Private Financing Programs: Lessons Learned for PACE, On-Bill and Credit Enhancements

*Kevin Moyer, Toledo Port Authority*  
*Ben Taube, Ygrene Energy Fund*  
*Moderator: Molly Lunn, U.S. DOE*

*Greg Leventis, Lawrence Berkeley  
National Laboratory*

# Setting the PACE in Ohio “Revitalizing Communities, Businesses & Energy”

U.S. DOE Better Buildings Summit  
Washington DC  
May 8, 2014



# Toledo Energy Efficiency Success



- National recognition.
- A top PACE district in the U.S. (\$\$ and ## projects).
- 60 building completed;  
20 in construction.
- \$22,000,000 of financing issued:  
Bonds, QECBs, State Energy Funds  
& Revolving Loan Fund. Over  
\$30,000,000 of capital acquired.
- \$32,000,000 project pipeline.
- Broad customer projects.
- Strong brand recognition.
- Sustainable program.

# Toledo PACE Model Customer Value

- Simple application & documentation.
- Funding from evaluation & design, to construction to long term operation.
- Facilitate & develop projects.
- 100% funding of all project cost, when customer needs it.
- Fixed rate assessments up to 15 years.
- Funding availability & attractive terms & conditions for underserved commercial & non-profit markets.
- Savings fund building improvements.

Identify & Design Project

Simple Application & Documents

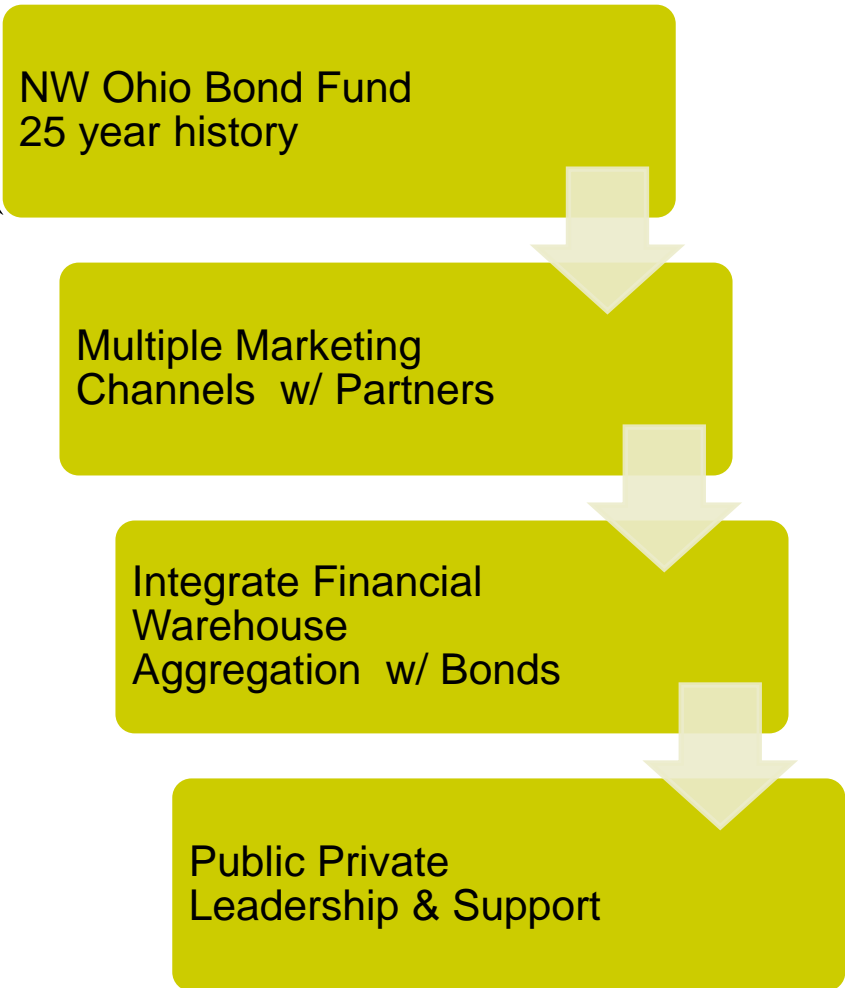
Flexible Payments  
100% Fixed Rate  
Assessment – 15yrs

Revitalize Buildings  
w/ Energy – O&M  
Savings

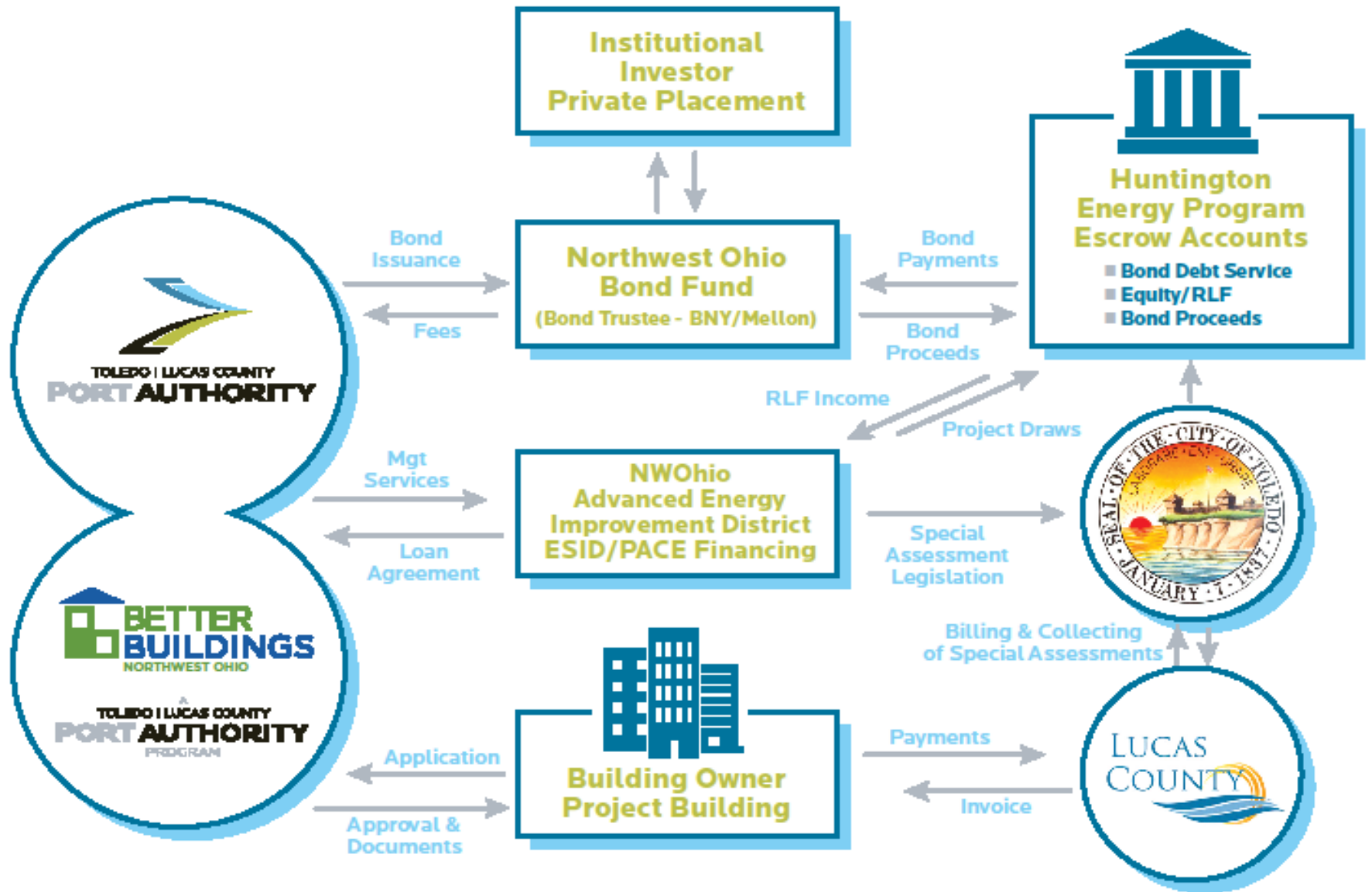


# Toledo PACE Funding Structure Efficiency

- **Strong Economic Development & Financing Reputation.**
- **Multiple Marketing Channels – Economic Development, Engineering & Contractor Professionals Are Key.**
- **Revolving Loan Fund & Warehouse Account Front End.**
- **Bond Pooling; Multiple Transactions; Several Tranches; 10% Borrower Primary Reserve, 15% Bond Reserve.**
- **Strong Public Private Leadership To Drive Local Economic Development, Capital Attraction, Community Sustainability.**



# Energy Efficiency Financing Model



# PACE Lessons Learned

- Focus on offering PACE only financing.
- Eliminate loan oriented language.
- Easy application, documentation & PACE legislation.
- Simple lender consent to placement of special assessment on property.
- Project facilitation, development & management required.
- Partnerships, support & training resources for market leverage & deal flow.

# PACE Trends in Ohio – Statute Revision

- PACE Statute Revision in process
  - New Bill – May 7, 2014
  - Adopt June 2014
- PACE District Management Flexibility
  - Non contiguous municipalities allowed
  - Owner, municipal and Port driven options
  - Reduce administrative burdens
- Financing Flexibility
  - Owner arranged, municipal directed, Port arranged
- Strength of Existing Statute
  - Easy to opt in – Easy to form & govern
  - Strong history of special assessment & lien perfection





# PACE Trends in Ohio – Rapid Growth

- Ohio Development Services Agency (ODSA)
  - \$18 million of new loan loss reserves.
  - TLCPA is master escrow agent
  - 6 major Ports have filed to receive LLRs
  - Toledo, Cleveland, Columbus, Dayton, Cincinnati, Akron
  - TLCPA select for program design & support by Columbus Franklin County Finance Authority & Dayton Montgomery County Port Authority
- PACE is poised to grow rapidly.
  - Toledo remains highly active & Cincinnati recently formed
  - Cleveland reinvigorating & Akron forming
  - Columbus & Dayton have identified projects & are forming
  - Many smaller municipalities coming forward driven by economic development, community revitalization & sustainability



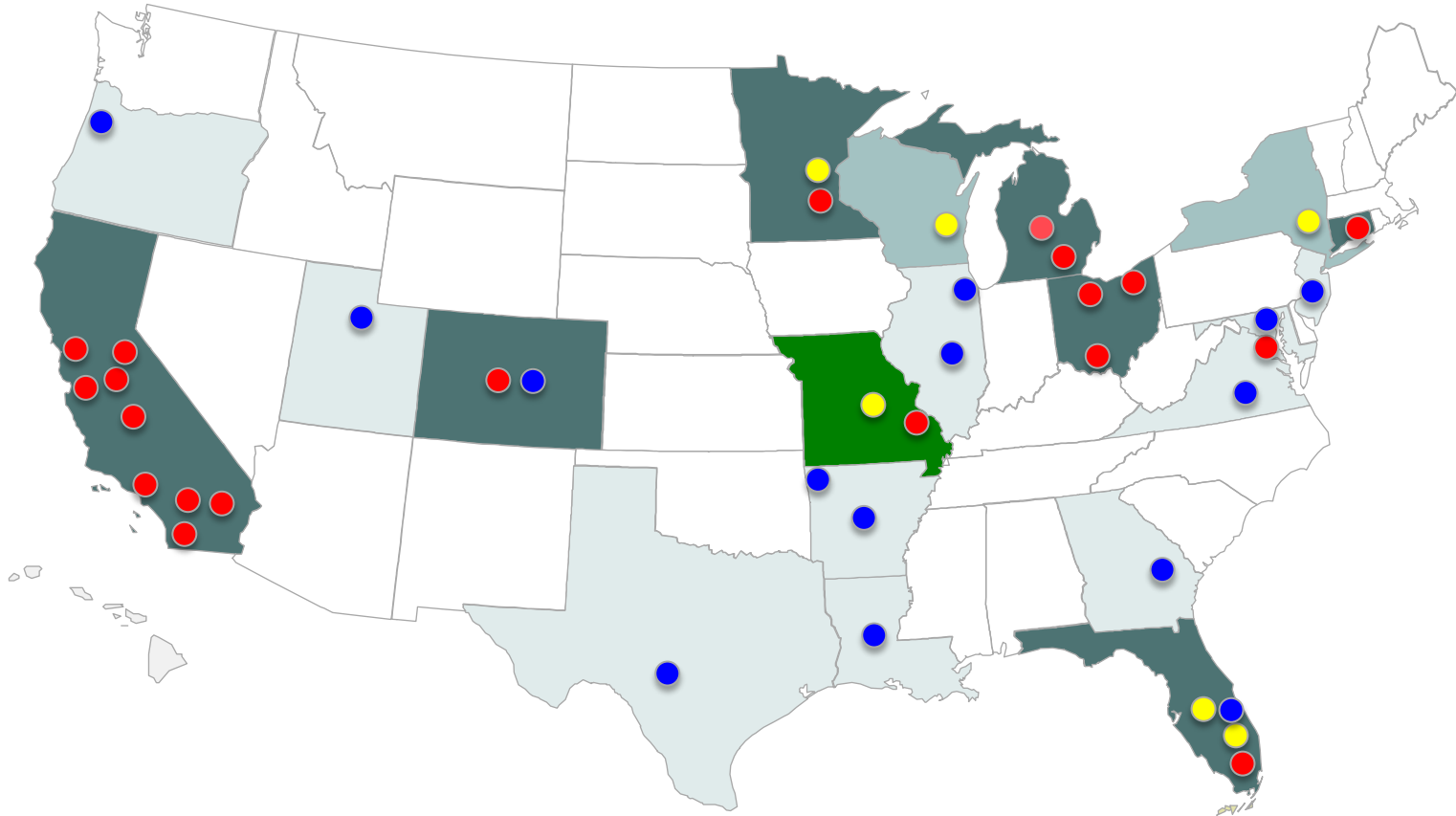
# National PACE Trends - Growing

- Market & Technology Drivers
  - PACE Acceptance & maturity as a financing tool
  - Project pipelines & completed financings are taking off
  - Aging building infrastructure & lack of commercial investment since '08
  - Building mechanical system end of life.
  - New building controls, LED & high efficiency HVAC
  - Pent-up market demand
  - Community economic development & revitalization
- Established States Exploding & New States Coming Online
  - OH, CT, CA are leading
  - TX coming online; High activity CO, FL, MN, MI, WI, NY, MO.
  - \$75M projects closed - \$250M pipeline.



# PACE Programs Today

*218 Projects Closed - \$72 mil - Pipeline of \$220+ mil*



A  
TOLEDO | LUCAS COUNTY  
**PORT AUTHORITY**  
PROGRAM

**BetterBuildings Northwest Ohio**  
Improving Buildings Across Northwest Ohio By Financing  
Energy Efficiency Technology

BRINGING AROUND REAL CHANGE  
JOBS. ECONOMY. ENVIRONMENT.



# Innovative Real Estate Finance Solutions



# THE YGRENE TAX FINANCING MODEL



## CERTIFIED CONTRACTORS

Utilize Financing to Market Energy Efficiency Upgrades

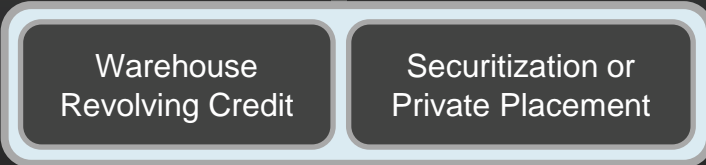


## COMMERCIAL & RESIDENTIAL PROPERTY OWNERS

Use Financing to Pay for Upgrades



LOCAL GOVERNMENT  
Form Clean Energy District



## INVESTORS

Provide Project Financing & Access to Capital Markets

# WHAT IS PACE/ TAX FINANCING?



- 100% financing for building upgrades repaid through property tax bill
- Used in municipal finance for 30+ years
  - Airports, hospitals, sewage systems and waste treatment, school districts, etc.
- Benefits of PACE Financing:
  - 100% financing with no out-of-pocket costs
  - Non-recourse to owner – stays with the building upon sale
  - Improves balance sheet (tax not debt)
  - 20-year fixed rate
  - Tax deductible
  - NNN pass-through
  - 24-hour approval
  - No payment for ~12 months

*“It saved us 6 months of due diligence knowing this finance program had already been fully vetted by the city.”*

~Dwight McRay, Managing Director,  
Metzler Real Estate Group

# IMPROVEMENTS ELIGIBLE FOR PACE FINANCING



## Building Shell

- External glass
- Windows & doors
- Roofing
- Reflective paints & coatings
- Landscaping & Irrigation
- Internal & external lighting
- Building envelope
- Sky-lighting or Day-lighting



## COMFORT & EFFICIENCY

- Energy management systems
- Insulation & air sealing
- Ducting & ventilation
- HVAC systems
- Boilers & furnaces
- Motors & drives
- Chillers & refrigeration
- Hot water (tankless, solar thermal, natural gas)
- Core Plumbing
- Graywater Systems
- Recirculation



## RENEWABLE ENERGY

- Solar PV
- Solar Thermal
- Wind
- Geothermal

## WATER CONSERVATION

(GA and CA)

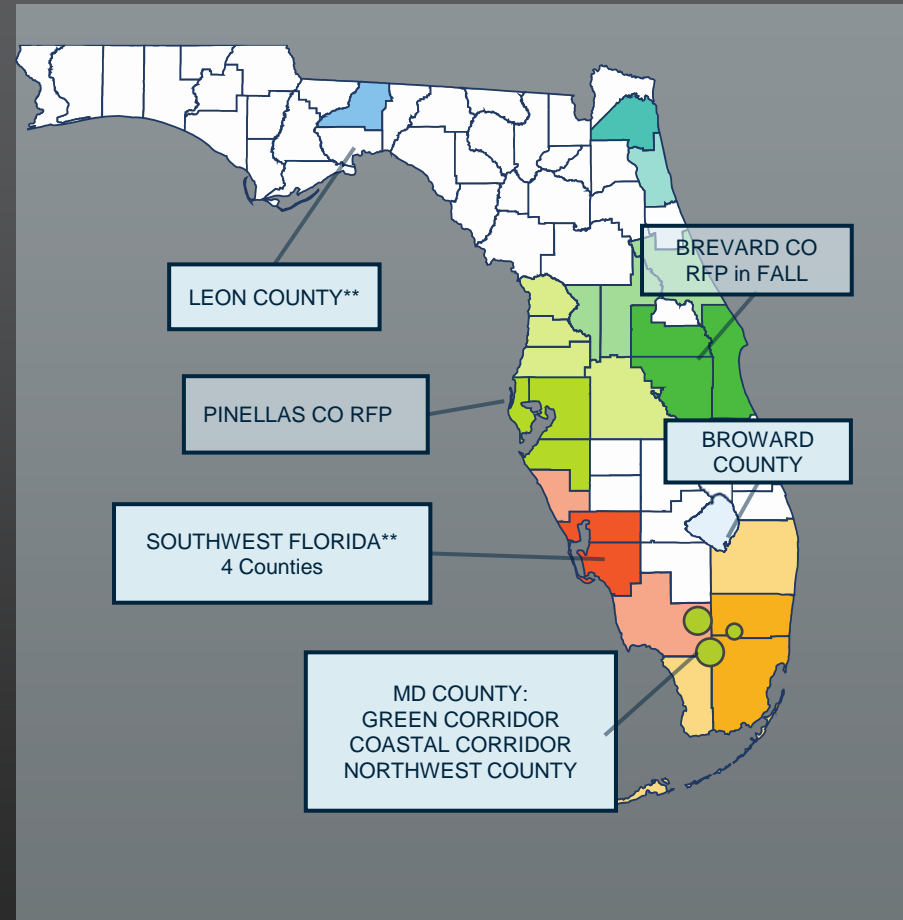
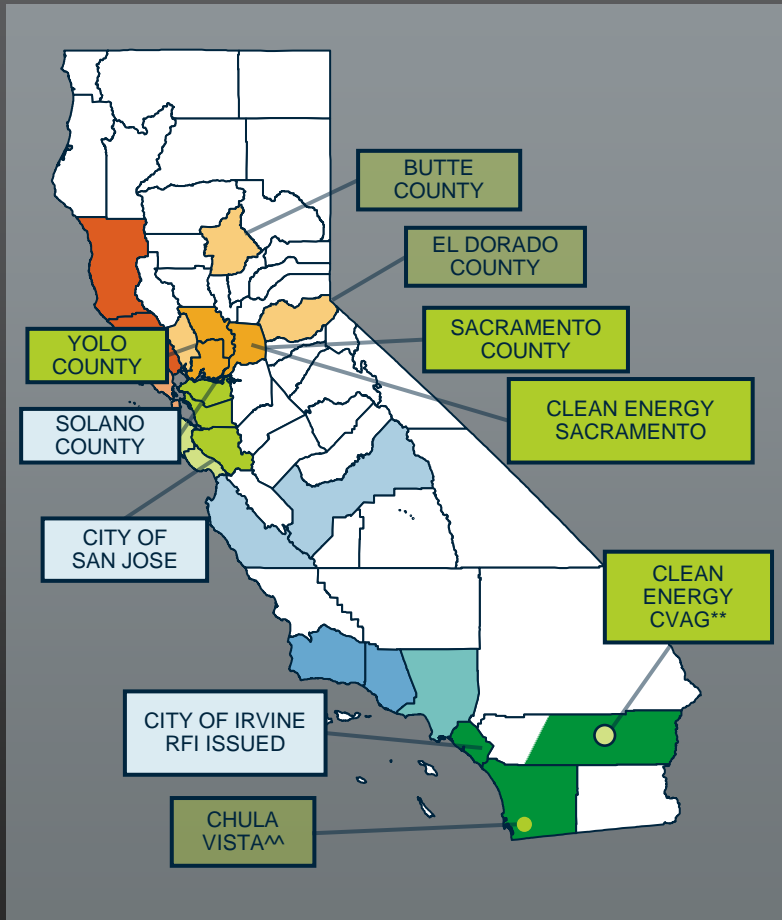
## WEATHER RESILIENCY (FL)

- Super-seniority lien status
- Pari passu with ad valorem property taxes
- Maximum 10% lien secured by entire value of real property
- Rigorous national underwriting standard
- Non extinguishable through bankruptcy or other means
- Foreclosable upon single missed payment, no acceleration
- Historical repayment rates essentially 100%
- Credit Enhanced
- Indicative Rating: AA - AAA





## California, Florida, and Georgia



Fully Funded Program

Rigorous Underwriting & Standardization

Project Management & Funding Platform

Local Presence, Contractor Training & Support

Marketing, Lead Generation & Origination



*"The PACE Commercial Consortium is the missing piece in the jigsaw puzzle for cities looking to implement green plans"*

**-SIR RICHARD BRANSON**  
FOUNDER, CARBON WAR ROOM



# YGRENE ORIGINATION & PROJECT MGT PLATFORM



DISTRICT LOCALIZATION



FUNDING APPLICATION & APPROVAL PROCESS



PROJECT WORKFLOW & APPROVAL PROCESS



CONSTRUCTION FUNDING

**Apply Now (Home Owner)**  
We've identified your property and we're in your area.  
To apply, we need to do a credit check and we need to collect an application fee payment from you.  
Property Address:  
1020 Marinova Street  
San Francisco, California 94107  
Disclosures  
In order to participate in this program, please confirm that the following statements are true.  
1. I am current on my property taxes  
2. I am current on my mortgage payments  
3. I have never filed for bankruptcy  
Can you confirm the statements above are true?  
Yes No  
Terms and Conditions  
Terms of Service...  
Do you agree to the terms and conditions?  
Yes No  
Primary Property Owner  
\* First Name \* Last Name  
\* Email



**Project Approval Overview**  
What's New  
New Messages  
Project Status  
Bids Approved  
PM Assigned  
Actions  
Please upload the following financing documents:  
Financing Agreement  
Truth in Lending  
Submit for Approval  
Bid Totals  
Acme Construction Bid \$30,000.00  
Project Total \$30,000.00  
Approved Funding \$0,000.00  
BID DOCUMENTS  
FILE ADDED VERSION AMOUNT STATUS  
Acme Construction Bid 07/05/11 05:40 PM 1 \$30,000.00 Approved  
FINANCING DOCUMENTS  
FILE ADDED VERSION STATUS  
Truth in Lending 07/05/11 05:40 PM 1 Pending  
Financing Agreement 07/05/11 05:42 PM 1 Pending

**CONSTRUCTION & FUNDING OVERVIEW**  
What's New  
New Messages  
Project Status  
Contributions  
No PM Assigned  
Actions  
Upload change order or payment request  
change order payment request  
Project Transactions  
Total Change Orders: \$0.00  
Total Payment Requests: \$0.00  
Project Total to Date: \$30,000.00  
Funds Remaining: \$15,000.00  
CHANGE ORDER DOCUMENTS  
FILE ADDED TRANSACTION ID  
Change order for additional... 07/05/11 05:44 AM 1 \$0.00.00  
Total \$0.00  
PAYMENT REQUEST DOCUMENTS  
LIEN RELEASE DOCUMENTS

# YGRENE LEAD GENERATION & ORIGINATION



**CLEAN ENERGY  
SACRAMENTO**  
by Ygrene

Clean Energy Sacramento  
2600 Capitol Avenue  
Sacramento, CA 95816  
Phone: (916) 444-9700  
Fax: (916) 444-9701  
info@CleanEnergySacramento.com  
www.CleanEnergySacramento.com

Jane Smith  
2600 Capitol Avenue  
Sacramento, CA 95816

Dear Jane Smith,

The City of Sacramento recently launched Clean Energy Sacramento to make it easier for homeowners like you to obtain 100% financing to save energy, lower utility costs and make your home safer and healthier.

**Your home has been pre-qualified for clean energy financing up to \$36,600.**  
Go to [www.CleanEnergySacramento.com](http://www.CleanEnergySacramento.com) or call (916)444-9700 to get started.

The financing offered by Clean Energy Sacramento can be used for all types of clean energy home improvements, including solar panels, new windows, heating and air conditioning systems, water heaters, pool pumps, ducting and insulation, new roofs, lighting, and much more.

You get to choose your own contractor and make the improvements you want. The project cost is repaid on your property tax bill over periods of up to 20 years - and will remain with the property, not you, if you sell your home.

To make it easier for Sacramento property owners to make clean energy improvements, we will waive the \$50 fee for applications received before April 1.

I hope you will take advantage of this tremendous opportunity by going to [www.CleanEnergySacramento.com](http://www.CleanEnergySacramento.com) and getting started on your clean energy improvement project today.

Your Clean Energy Sacramento team,  
*John Kaufman*  
John Kaufman  
Ygrene Energy Fund  
Regional Director

**P.S. Start making your property less costly, more energy efficient and healthier today at [www.CleanEnergySacramento.com](http://www.CleanEnergySacramento.com).  
Or visit the Energy Center in person at 2600 Capitol Avenue to find out more.**

www.ygrene.org

**CLEAN ENERGY  
SACRAMENTO**  
by Ygrene

April 15, 2013  
DATE

YOUR PROPERTY MAY BE ELIGIBLE FOR

**\$36,000**

GO TO THE OFFICE OF  
**Lisa Archer**  
2600 Capitol Avenue  
Sacramento, CA 95816

*for Energy Efficiency Upgrades*

(SEE REVERSE)

⑆02154⑆ 987143251⑆ 1234

**CLEAN ENERGY  
SACRAMENTO**  
by Ygrene

**INTRODUCING A SIMPLE, SMART, AFFORDABLE WAY  
TO FINANCE CLEAN ENERGY HOME IMPROVEMENTS**

The City of Sacramento has made it easy for you to obtain financing so you can improve the performance of your home, save energy and live in a healthier, safer environment.

Today, you can upgrade your home with no out-of-pocket costs and 100% financing for qualified improvements.

**YOU CAN NOW ENJOY THE MANY BENEFITS OF AN ENERGY EFFICIENT HOME:**

- Lower your utility bills
- Increase your home's value
- Help create a cleaner environment
- Improve the air quality and comfort of your home

**IT'S EASY TO GET STARTED:**

- 1 Visit us online at [www.CleanEnergySacramento.com](http://www.CleanEnergySacramento.com) to apply online and get connected with financing.
- 2 Choose your contractor.
- 3 Make the clean energy improvements of your choice.
- 4 Repay the financing through your property tax bills over periods of up to 20 years.

Or visit us in person to speak with a knowledgeable member of our staff. The Ygrene Energy Center is located at:

**2600 CAPITOL AVENUE  
MIDTOWN SACRAMENTO**  
www.CleanEnergySacramento.com  
Phone: (916) 444-9700

Clean Energy Sacramento • 2600 Capitol Avenue • Sacramento, CA 95816 P: (916) 444-9700 • F: (916) 444-9701 • www.CleanEnergySacramento.com

# CASE STUDY – METRO CENTER, SACRAMENTO



**\$3,160,000 FINANCING**

MECHANICAL SYSTEMS, INTERIOR  
AND EXTERIOR LIGHTING

WITH JOHNSON CONTROLS,  
COLLIERS INTERNATIONAL, METZLER  
REAL ESTATE

**ANNUAL ENERGY  
SAVINGS:  
27%  
\$140,000**

**JOBS CREATED:  
50**

GREEN TECH | 7/31/2013 @ 10:36PM | 1,241 views

## Sacramento Unveils Nation's Largest Clean Energy PACE Retrofit

# Forbes

[+ Comment Now](#) [+ Follow Comments](#)





Environmental Energy Technologies Division Lawrence Berkeley National Laboratory

# Financing Energy Improvements on Utility Bills: Market Updates and Key Program Design Considerations for Policymakers and Administrators

Greg Leventis

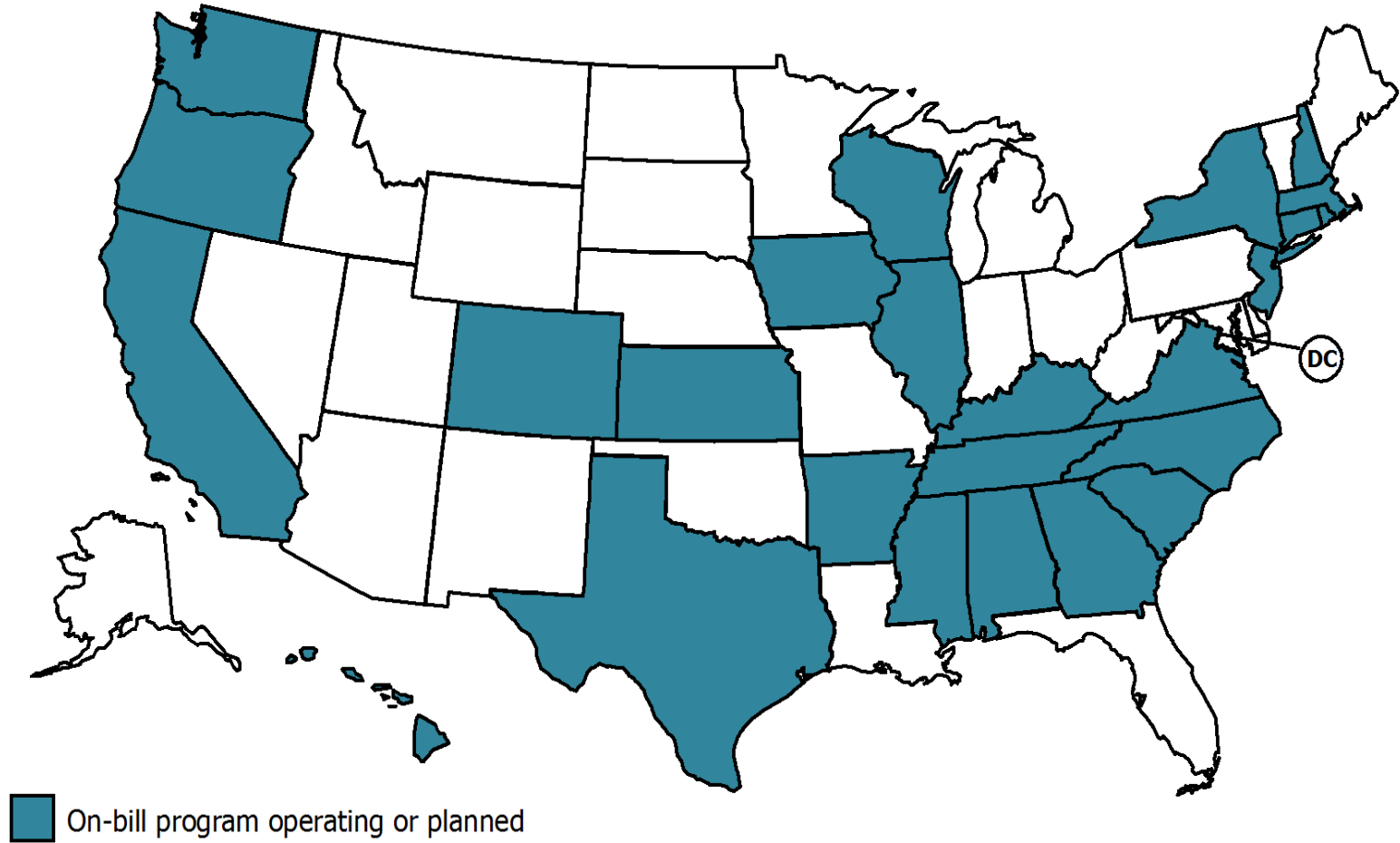
May 8, 2014

- Objectives and approach
- Overview of the current state of on-bill programs
- 4 key program design features
- Case study:
  - Tennessee Valley Authority (TVA)



- Objectives
  - Update landscape of on-bill lending
  - Actionable insights for stakeholders
- Approach
  - Baseline data from 30 on-bill programs
  - Interviews and case studies on 13 of these programs

# Overview of current on-bill geography



# Overview of historic on-bill activity

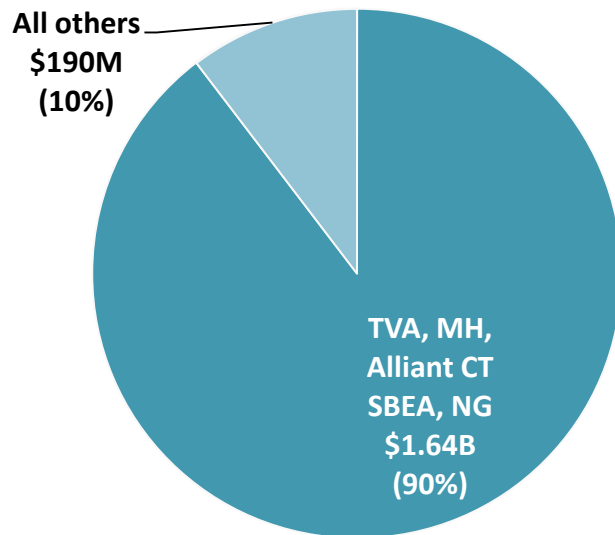
Sector	Number of participants	Lifetime volume	Average financial product size	Default rate ranges
<b>Residential</b>	182,324	\$1.055B	\$5,787	0%-3%
<b>Non-residential</b>	50,339	\$775M	\$15,400	0.57%-2.9%
<b>Total</b>	232,663	\$1.83B	\$7,867	0%-3%

\*Note: Not all programs reported default rates. Three had not launched at the time of writing.

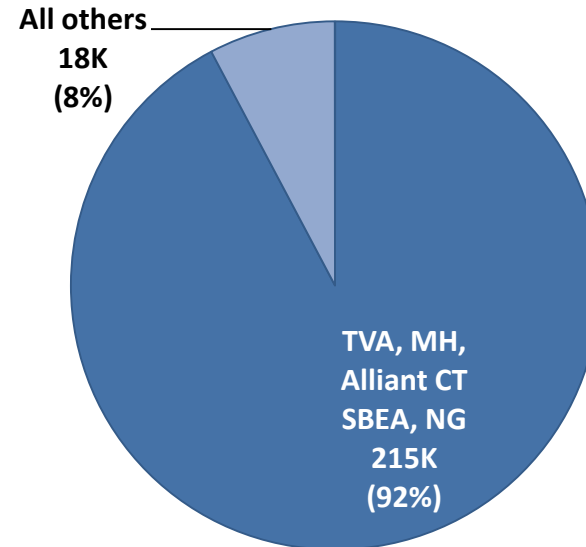
# On-bill activity is heavily concentrated in a few initiatives

- Just 5 initiatives account for over 90% of on-bill activity
  - Tennessee Valley Authority (TVA)
  - Manitoba Hydro (MH)
  - Alliant Energy Wisconsin (Alliant)
  - United Illuminating/Connecticut Light & Power (CT SBEA)
  - National Grid (NG)

### Dollar Amount



### Number of Loans



# Summary of top 5 programs

	Residential		Non-Residential		
	TVA	Manitoba Hydro	Alliant Energy	United Illuminating	National Grid
Lifetime Volume	\$500M	\$290M	\$524M	\$39M	\$44M
Interest Rate	6% - 8%	4.8%	0% - 3%	0%	0%
Default Rate	3%	0.48%	2.68%	0.9%	2.9%
Source of Capital	OBR (Private capital)	OBF (public monies)	OBF (utility monies)	OBF (utility & utility bill-payer monies)	OBF (utility bill-payer monies)

- 1. Disconnection and Meter Attachment: How is the Product Structured?**
- 2. Capital Sources: Where Does the \$\$ Come From?**
- 3. Customer Creditworthiness: Who is Eligible?**
- 4. Eligible Measures: What Can They Do?**

# 1. Disconnection & Meter Attachment: How is the product structured?

Features/Issues	Line Item Billing	On-Bill Loan w/ Disconnection	On-Bill Tariff
Loan paid on utility bill	✓	✓	✓
Potential power disconnection		✓	✓
Loan tied to the meter			✓
Survives bankruptcy/foreclosure			?

- Uncertainty about whether an on-bill tariff will survive a bankruptcy
- The value of disconnection as a risk management tool is still uncertain

## 2. Capital Sources: Where does the \$\$ come from?

Program Type	Source of Capital
On-Bill Financing (OBF)	Public or Utility (bill-payer or shareholder) funded
On-Bill Repayment (OBR)	Private Investors

- Some programs using utility capital have done substantial volume
- Many paths to private capital



### 3. Assessing customer creditworthiness: Who is eligible?

Underwriting Approach	Criteria
Standard metrics/criteria	Credit scores (e.g. $\geq 640$ FICO) Debt-to-income level (DTI) (e.g. $\leq 50\%$ )
Expanded	Same metrics, relaxed criteria (e.g. $\geq 625$ FICO, $\leq 70\%$ DTI)
Alternative	Bill payment history

- Default rates low regardless of underwriting but...
- Application approval rates higher for programs using alternative underwriting

## 4. Eligible Measures: What can participants do?

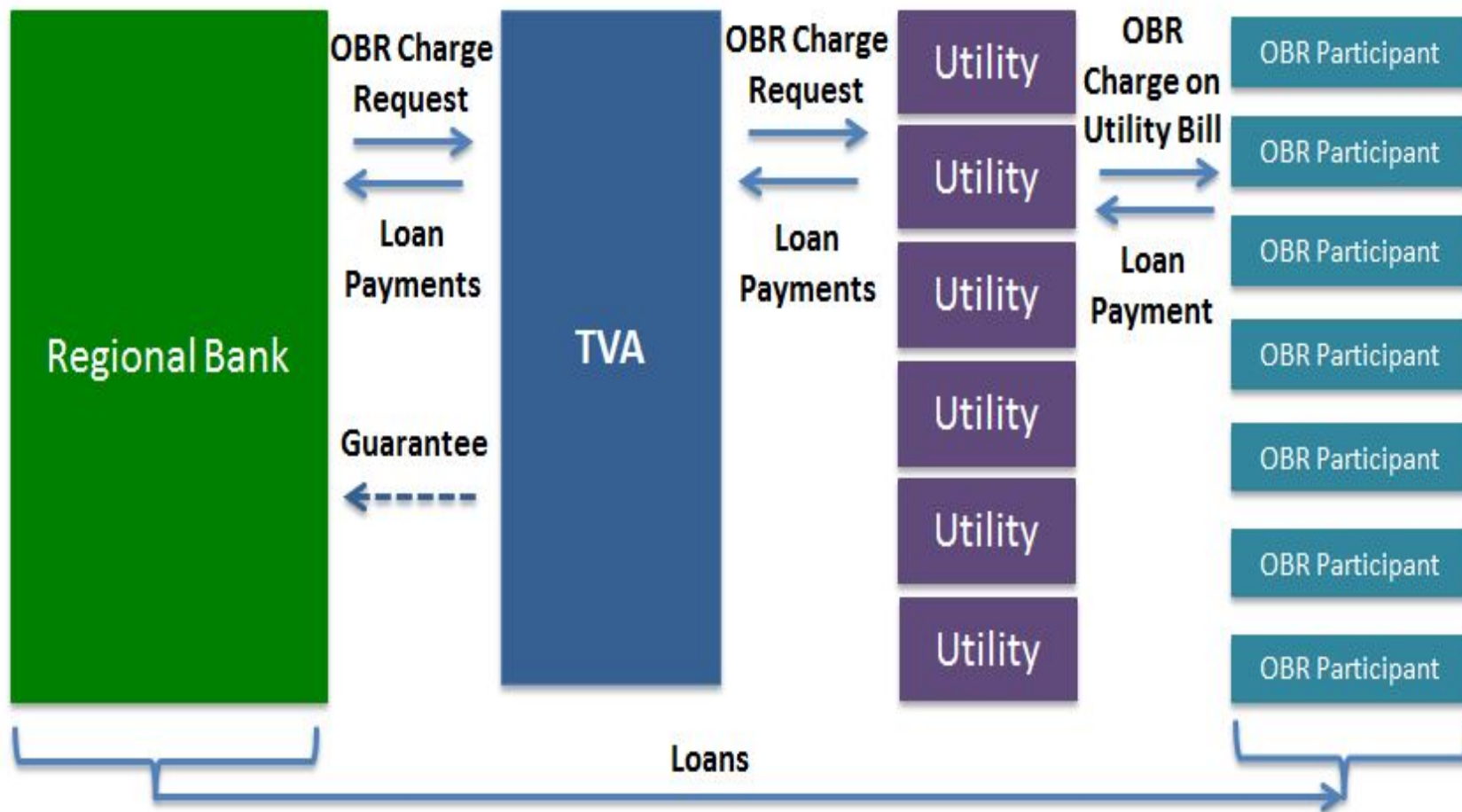
- Key considerations:
  - **Types of eligible measures**
  - **Single-measure vs. comprehensive retrofits**
  - **Bill impacts**

# Key findings from TVA

# Key Findings from TVA

	Energy Right Solutions
Target Sector	Residential
Lifetime Volume	Over \$500 million since 1997
2012 Volume	\$45 million
Interest Rate	6% - 8%
Default Rate	3%
Source of Capital	OBR (private capital with a TVA guarantee)

# Schematic of TVA's Energy Right Solutions



# Contacts and further info

## Contacts:



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Greg Leventis  
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[glevantis@lbl.gov](mailto:glevantis@lbl.gov)

For more information about on-bill programs see:

SEE Action Financing Solutions  
Working Group  
[http://www1.eere.energy.gov/seeaction/financing\\_solutions.html](http://www1.eere.energy.gov/seeaction/financing_solutions.html)

LBNL Electricity Markets & Policy  
Group  
<http://emp.lbl.gov>

**Questions?**