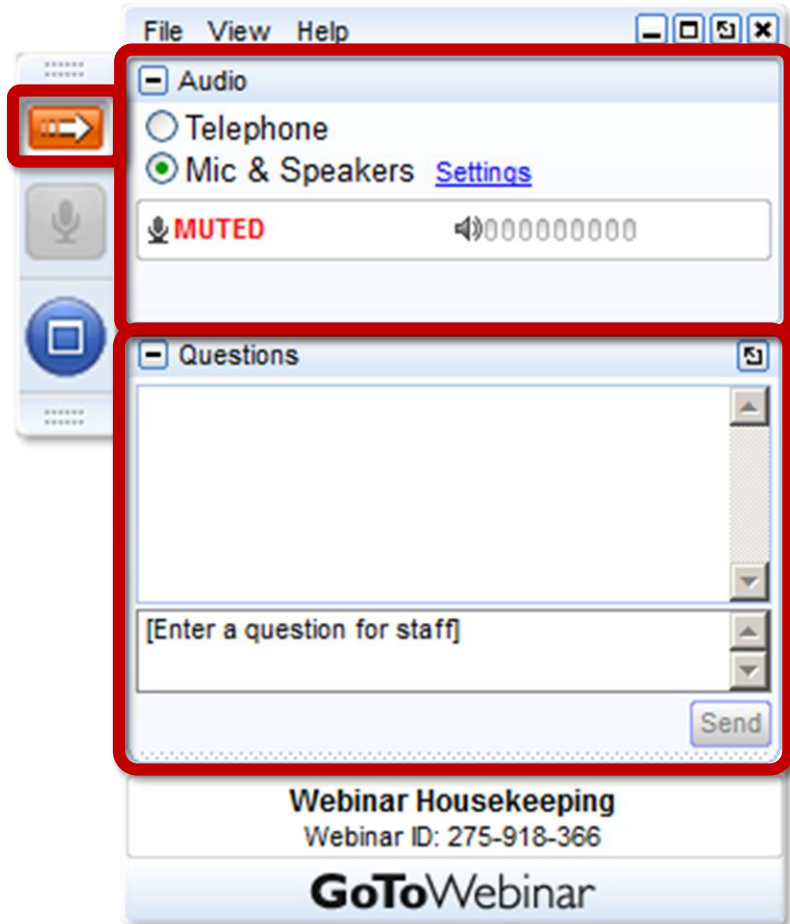


Financing Solar Projects for Public and Affordable Housing

February 15, 2018



Housekeeping



Join audio:

- Choose Mic & Speakers to use VoIP
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Use the red arrow to open and close your control panel

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Celebrating 15 Years of State Leadership

Clean Energy States Alliance



Illinois Department of Commerce & Economic Opportunity



NYSERDA



Office of the People's Counsel
District of Columbia
Advocating, Protecting and Educating DC Consumers



Sustainable Solar Education Project

A project to provide information to state and municipal officials on strategies to ensure distributed solar

- Remains consumer friendly
- Benefits low- and moderate-income households



The project is managed by the Clean Energy States Alliance (CESA) and is funded through the U.S. Department of Energy Solar Energy Technologies Office.



Sustainable Solar Education Project Resources

The project offers a variety of free resources on solar equitability and consumer protection:

- Guides
- Webinars
- Monthly e-newsletter
- In-person workshops



www.cesa.org/projects/sustainable-solar

Financing Solar Projects for Public and Affordable Housing

- **Wayne Waite**, Principal, Waite & Associates
- **Bracken Hendricks**, President and CEO, Urban Ingenuity
- **Nate Hausman**, Project Director, Clean Energy States Alliance (moderator)

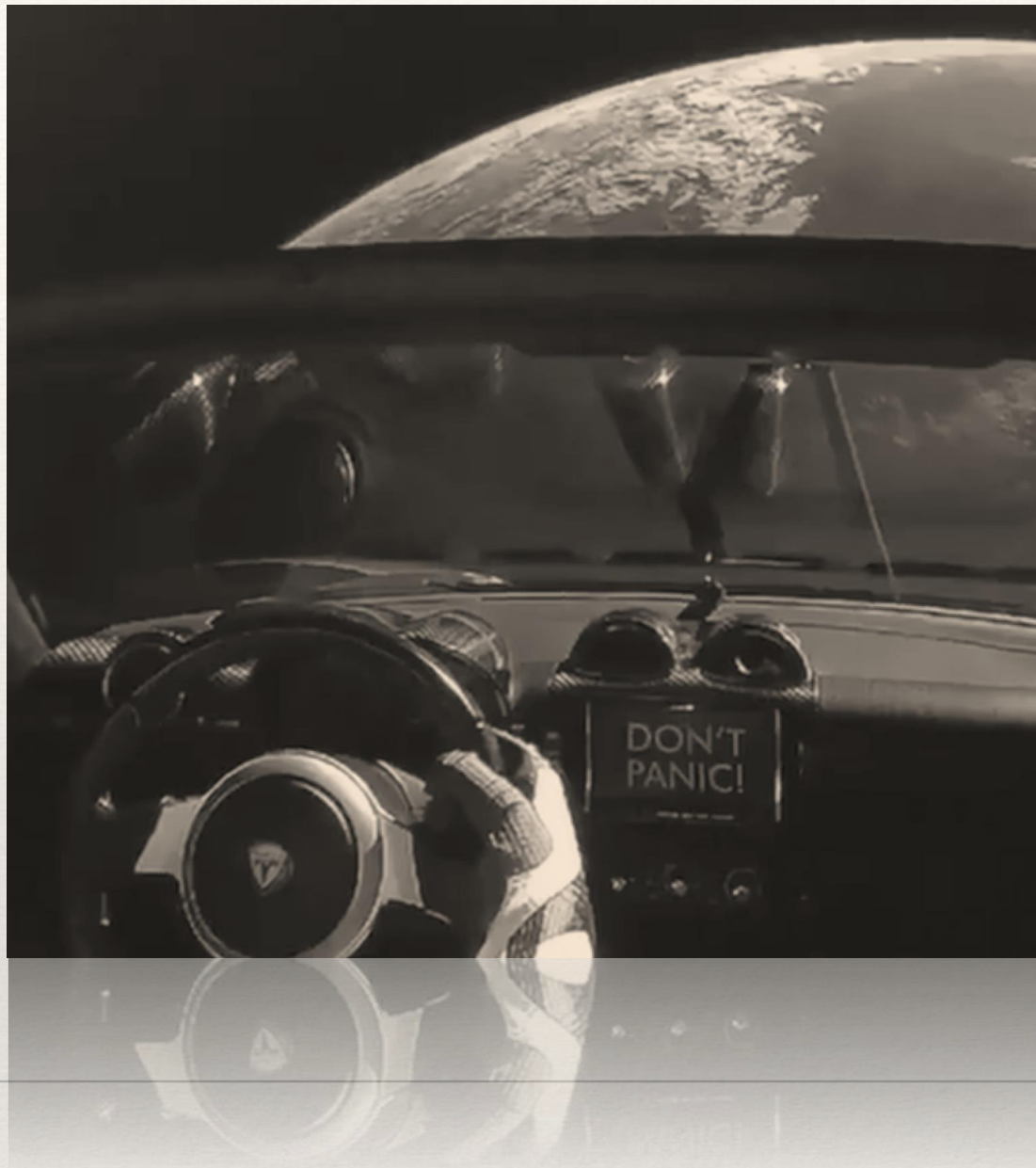
Waite &
Associates



URBAN INGENUITY



CleanEnergy
States Alliance



What's in Our Future:

Financing, Risks, and Other Conundrums Affecting Solar's Value Proposition in Multifamily Housing

**CESA Webinar on
Financing Solar Projects**

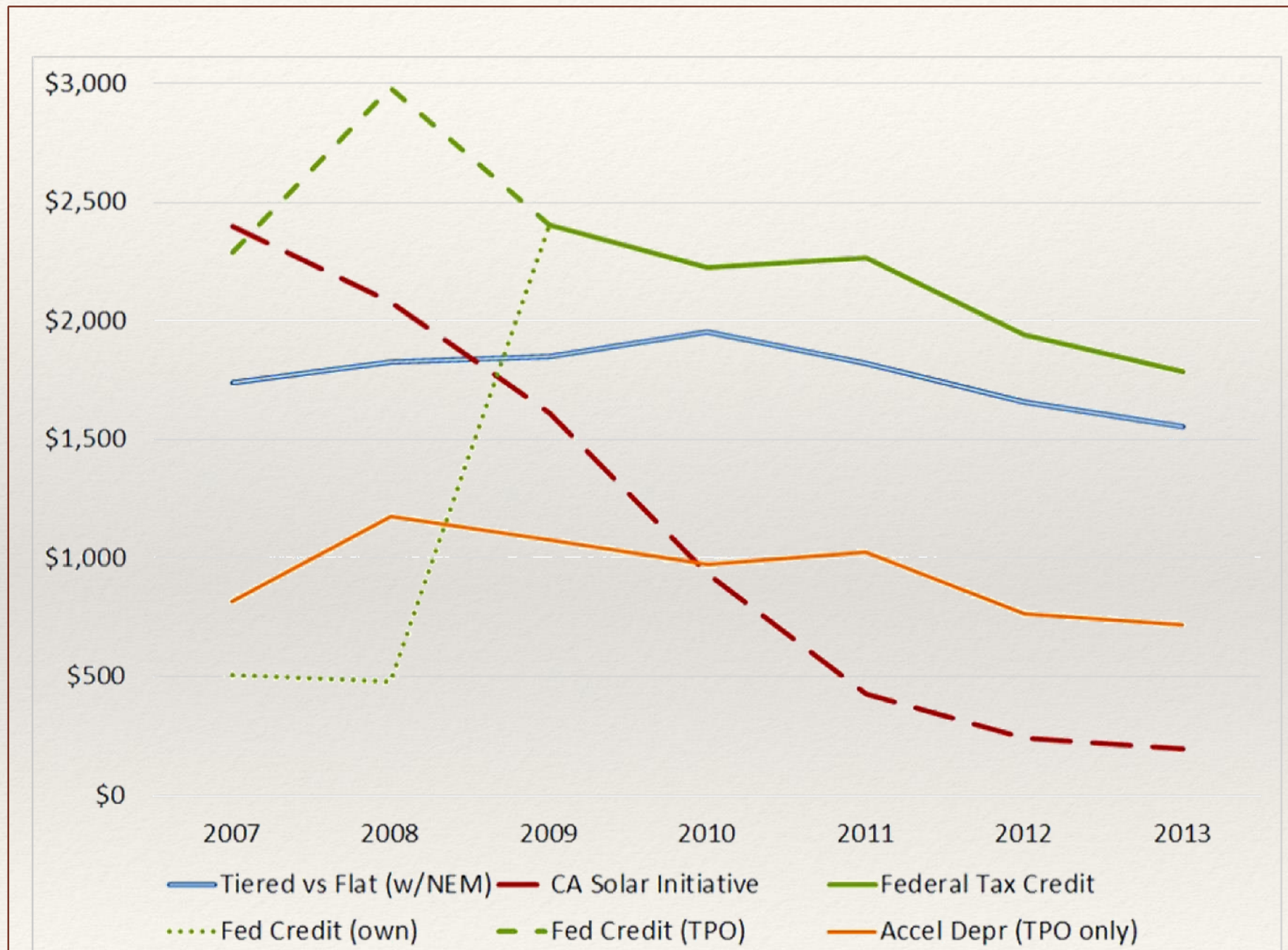
February 2018

FINANCING PATHWAYS

Solar Economic Dependencies

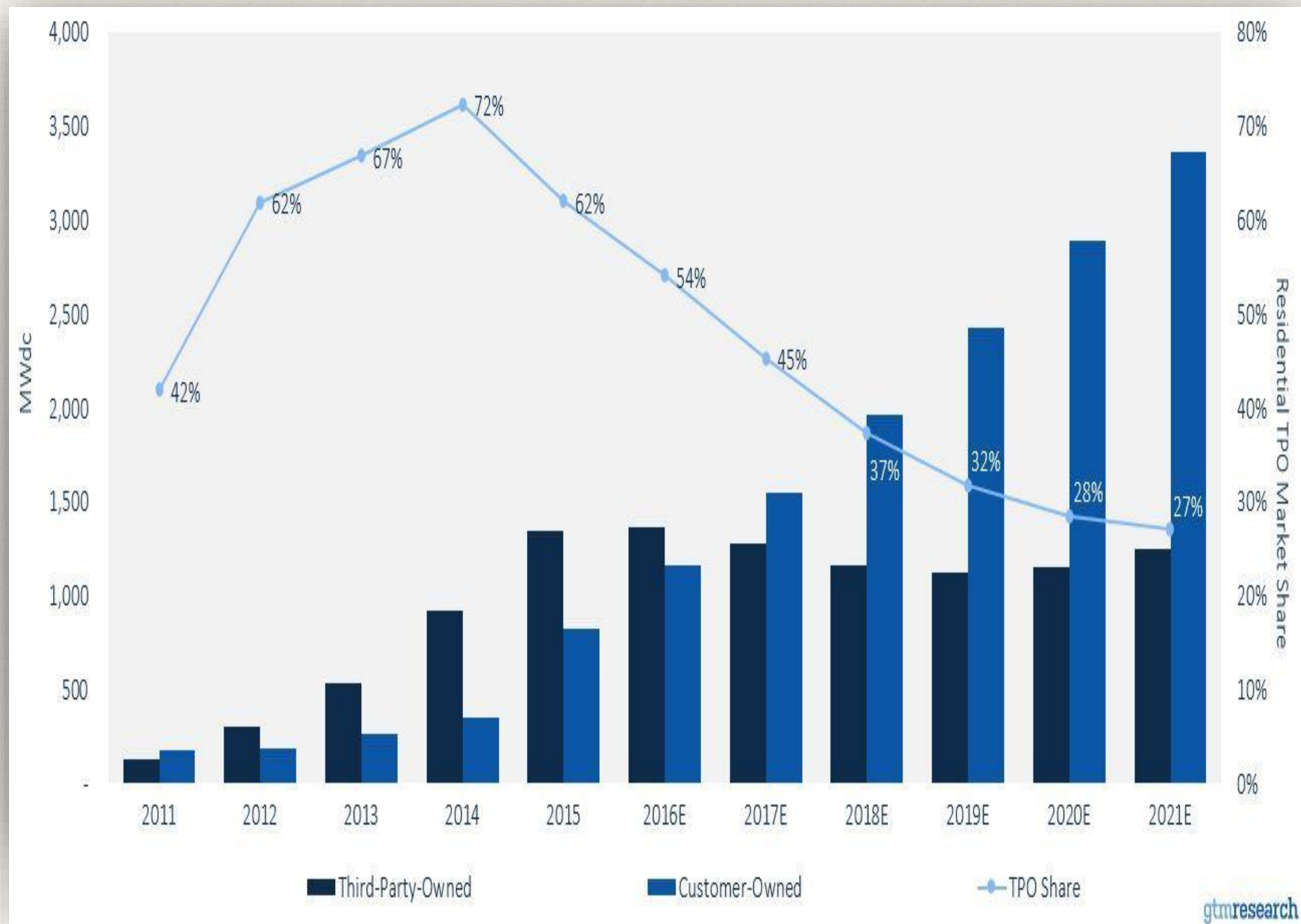
- * Federal Investment Tax Credit → *30% credits through 2019 with phased decline; ITC value question*
- * Solar PV Costs → *Continued declines but solar tariff*
- * Soar Valuation → *Net Energy Metering (NEM) in flux*
- * Utility Tariffs → *Transition to new rate structures*

Perspective #1: Role of Tariffs and Incentives



Energy Institute at Hass, *The Role of Electricity Tariffs, Tax Incentives and Rebates*, July 2015.

Perspective #2: Role of Costs on Project Preference



Proven Solar Financing Pathways

Low Income Housing Tax Credits & PPAs

LIHTC

New construction,
Acquisition/rehab.

- High leverage
- Ownership of savings
- Tenant coverage
- Reduced pricing risks
- *Transaction complexity*
- *ITC issues on 4% LIHTC*
- *Value engineering threat*

APPLICATION

PROs

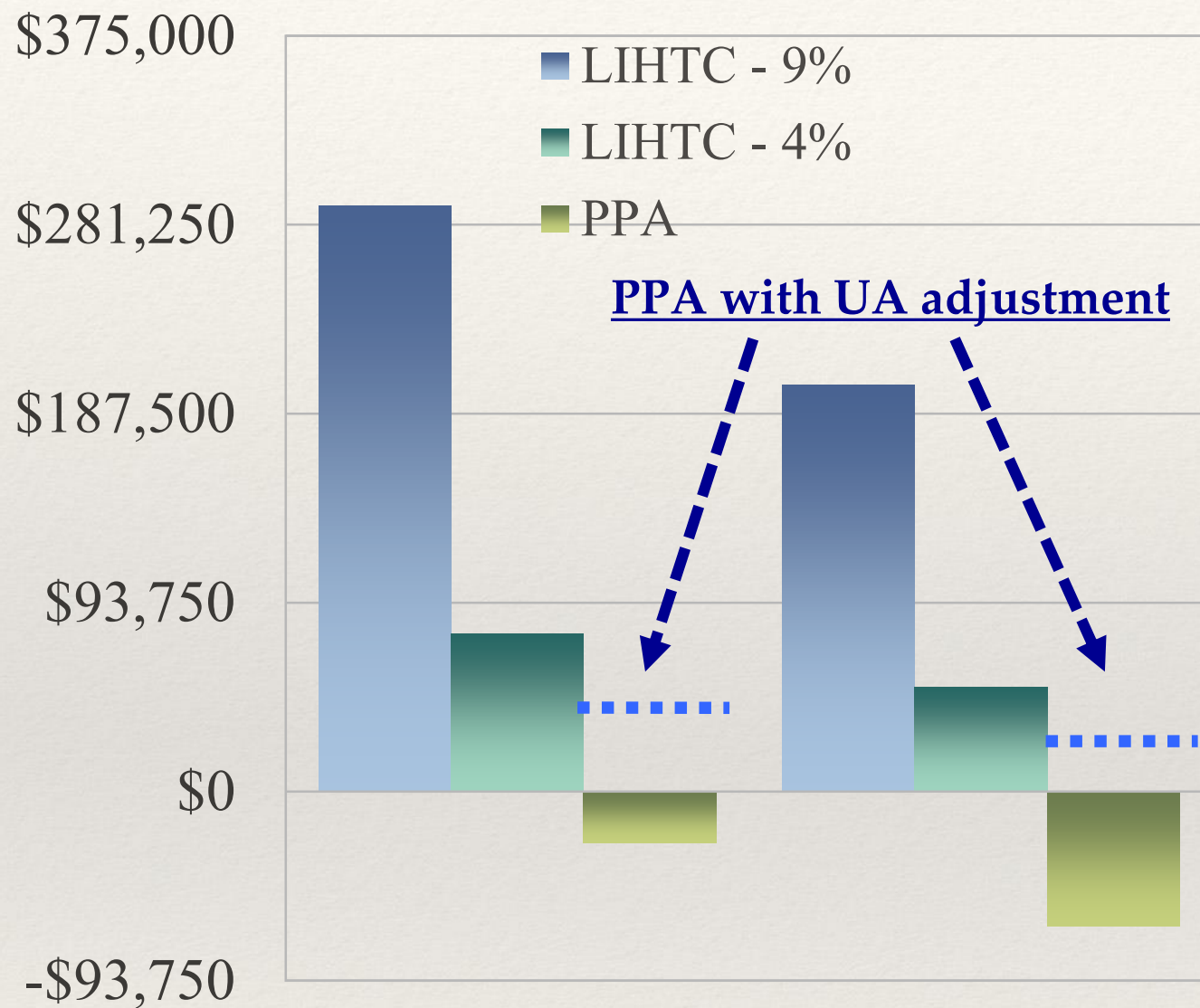
CONs

PPAs

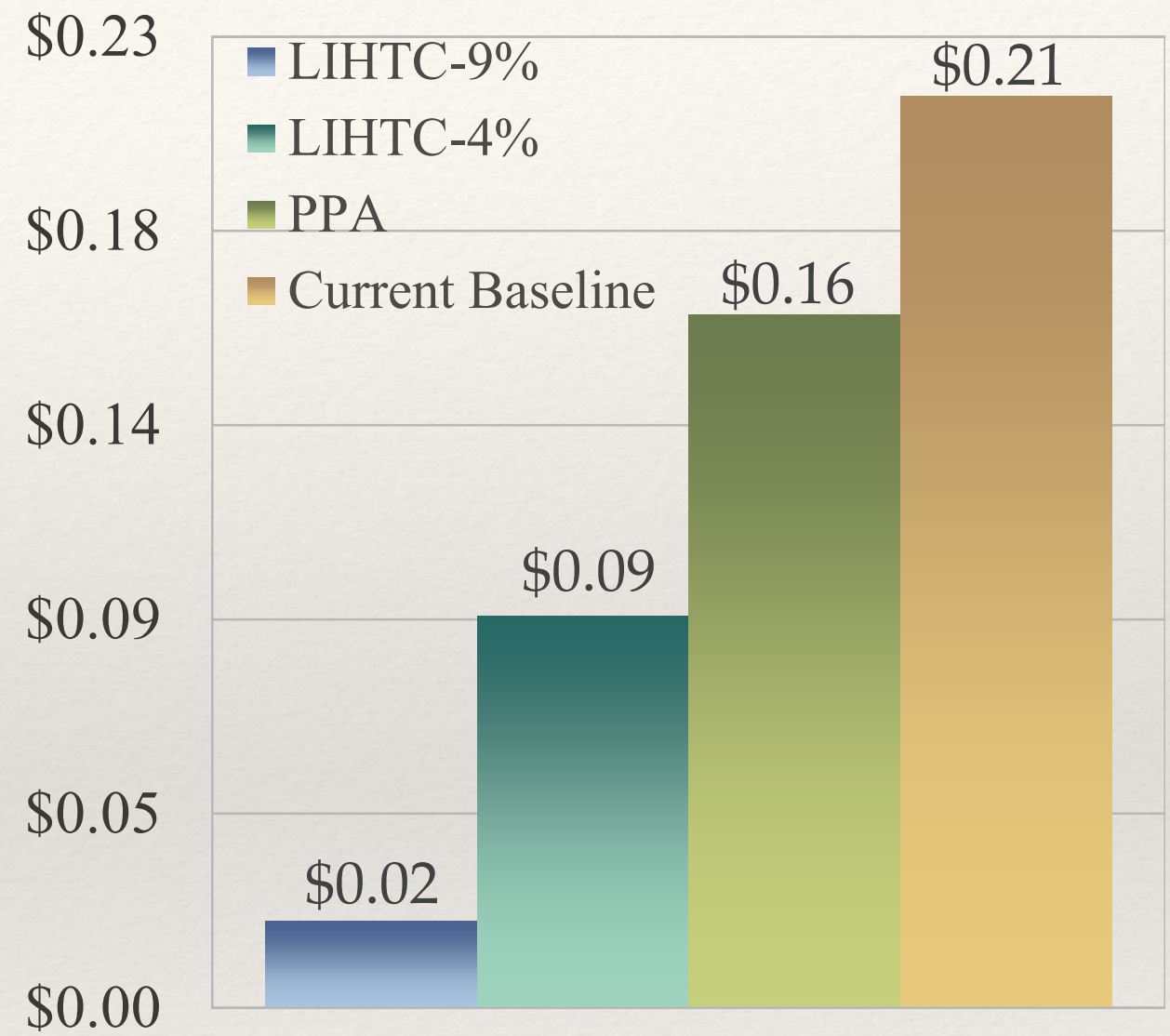
Existing property retrofits

- No upfront costs
- Turnkey service
- Off-balance sheet
- *Marginal price gains*
- *Escalators*
- *Transparency*

Financial Resilience of Scaled Projects LIHTC and PPA Models*



Energy Savings Over 20 Years **Discounted Cash Flow**



Estimated \$/kWh Over 20 yrs.

* Modeled results for 100kW systems with allocations to common area (45%) and tenant units (55%).

* Baseline utility rate reflects combined weighted utility costs for tenants and property.

Emergent Approaches

- * **Self Financing
(PACE)**

Asset investment strategy to secure greater savings through owned or pre-paid acquisition with active property financing

- * **Master Service Develop.
(Blocker Corporation)**

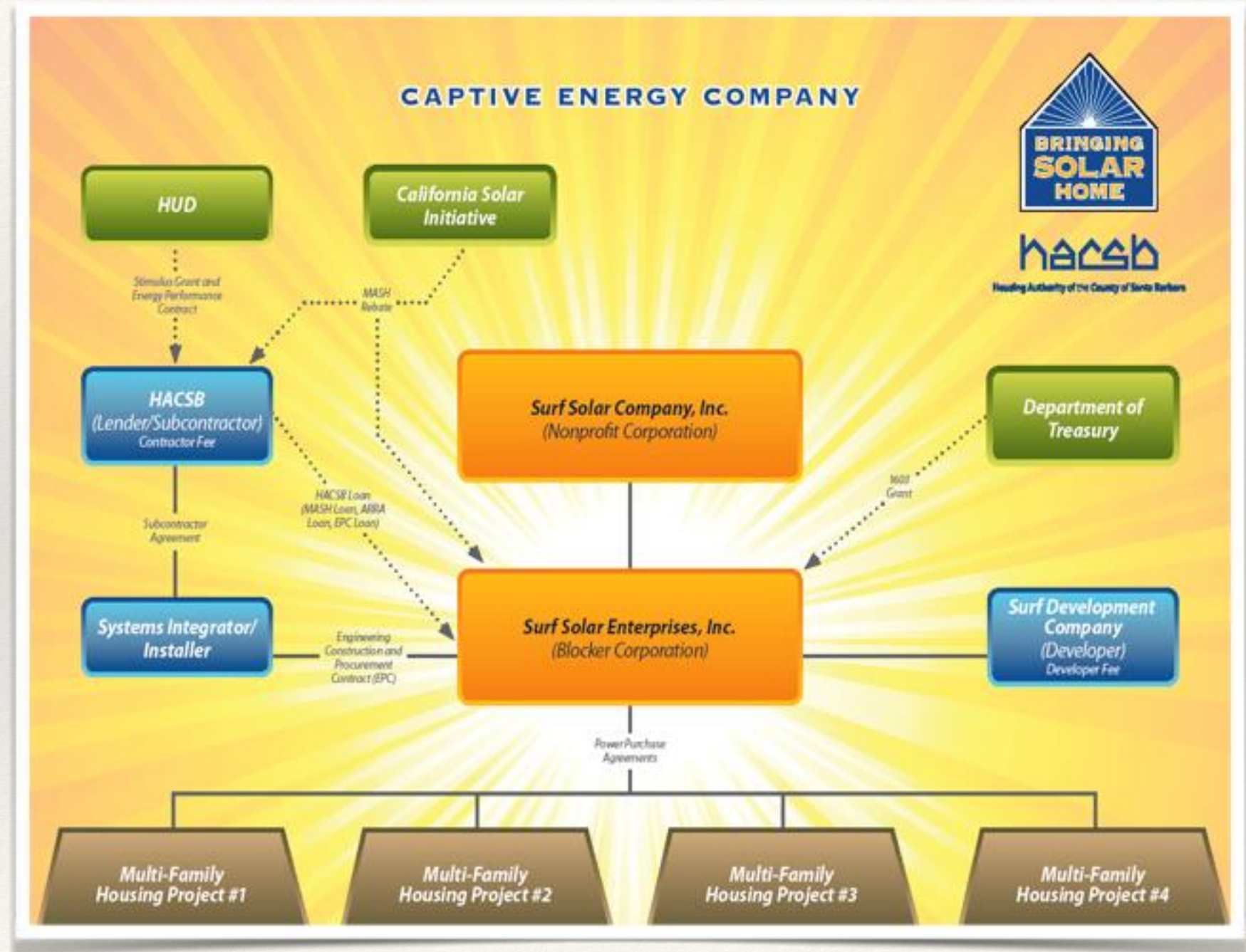
Structural strategy to develop and manage of solar assets across a portfolio to optimize (and safeguard) financial returns

- * **Community Solar
(Multifamily Hosting)**

Market strategy to leverage and aggregate subscriber markets to facilitate community solar development and tenant access

The “Blocker Corporation”

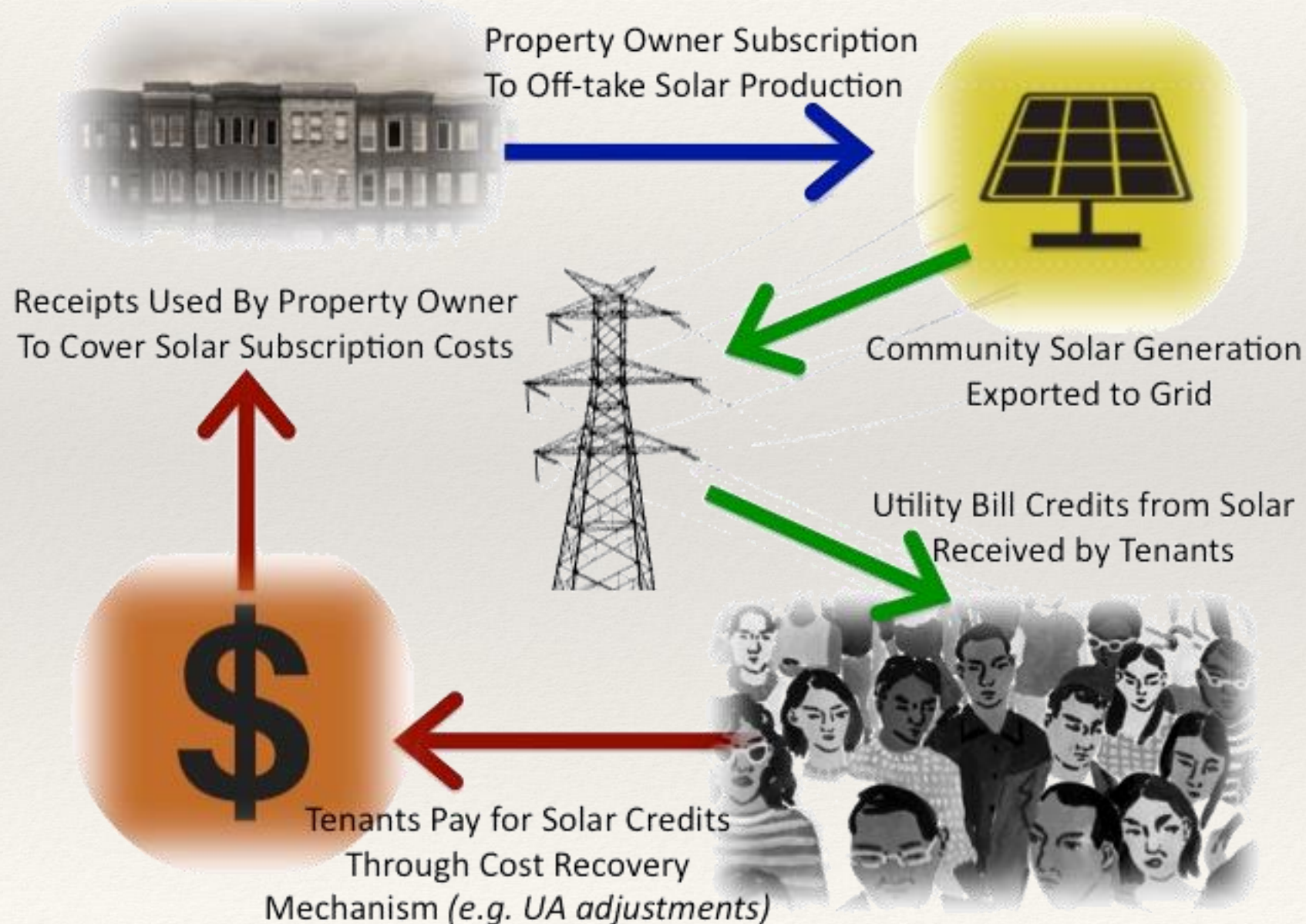
- * Project Scope:
 - 21 properties;
 - 250 buildings;
 - 863 units
- * System Size:
 - 1.7 MW; 7,300 panels
- * Generation:
 - 2.6 million kWh/yr.
- * Offset:
 - 100% of tenant use
- * Savings: \$300,000/yr.
(@\$0.015/kWh)



From Housing Authority for the County of Santa Barbara, 2011

Multifamily Shared Community Solar

Multifamily Shared Community Solar



How Important Are Utility Allowances?

- * MF Interconnection via Virtual Net Metering
 - *In front of utility meter*
 - *Solar credits allocated to tenant meters*
- * Pre solar utility allowances
 - *2 bedroom units: \$44/mo (Electricity)*
 - *3 bedroom units: \$52/mo (Electricity)*
- * Reported costs after solar
 - *2 bedroom units: \$ 6.25 (Electricity)*
 - *3 bedroom units: \$14.45 (Electricity)*
- * **Just How Important?**
 - *Captured savings from 72 units can leverage \$251,000 in added debt*
 - *60% of tenant related PV costs*



Assumptions: Avg. \$30 UA adjustment; DSCR 1.2;
Financing @ 6%/20 years;
PV installation avg. 1.6kW per unit @ \$3.50/watt DC.

Is Utility Allowance Cost Recovery A Thing?

Can tenant benefits support solar?

- * Where Most Feasible:
 - LIHTC (Check SHFA)
 - Energy Performance Contracts
 - Tenant vouchers
- * Where Most Problematic:
 - HUD-assisted housing

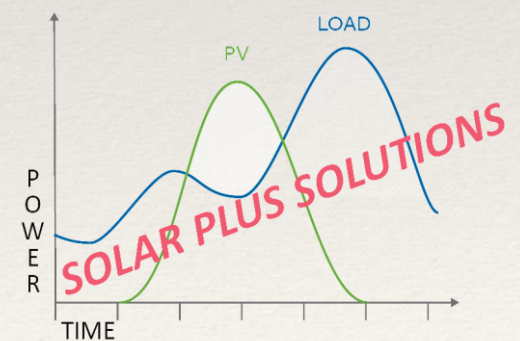
Issues

- * Transfer of benefits raise energy equity concerns.
- * Technical complexities and tenant protection risks.
- * Federal leadership: Regulatory reform for market-based solutions.
- * Solar sub-metering: Guidance and tenant safeguards.
- * Alternatives:
 - On Bill Payment (OBP)

QUESTIONS



Wayne Waite
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Research and Analysis
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775-771-5550



RISK

Solar Devaluation/Deflation

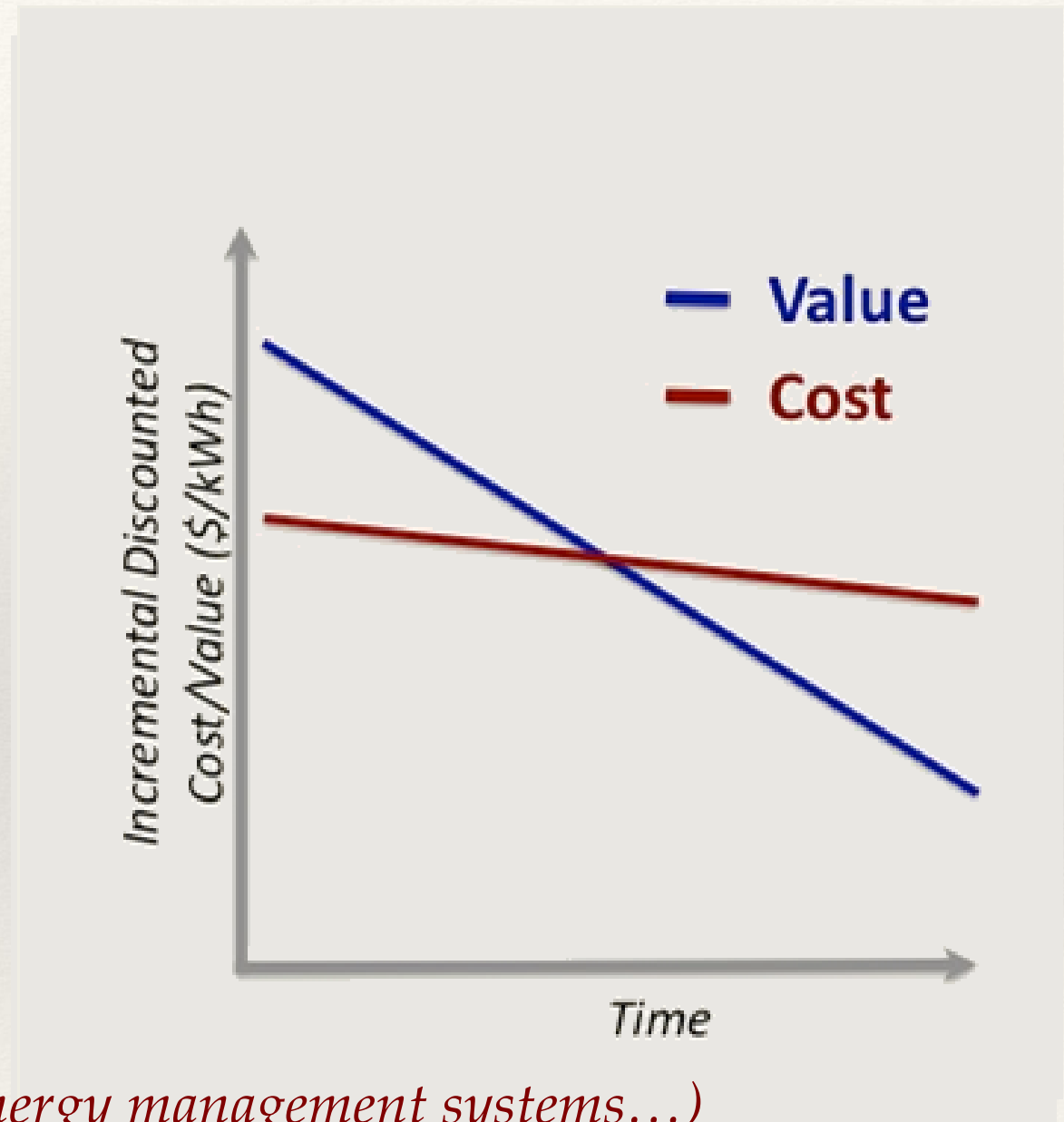
- * Changing tariff structures and solar valuation policies reduce solar value relative to cost.

- * Strategies to control cost risks can extend incremental value gains from solar.

- *Performance guarantees*
- *Escalator Caps*

- * Integrated strategies improve alignment of value to cost and project's long-term resiliency.

- *Energy Efficiency (e.g. Smart appliance, energy management systems...)*
- *Energy storage*
- *EV charging*



Risk Mitigation Roadmap

* Performance Risk

- Performance requirements (guarantees) in contract
- Maintenance service contracts

* Payment Risk

- Increase coverage ratio
- Dedicated reserves from residual receipts
- On bill payment (OBP)
- Performance tracking of actual to projected savings

* Pricing/ Value Risk

- Utility cost literacy
- Reliable baseline cost/saving estimates (*Genability*)
- Indexed utility inflation/savings guarantees (*Certain Solar*)
- Integrated investment strategies to optimize returns

Innovations in Solar Finance for Non-Profits & Affordable Housing

**CESA Workshop on Deploying Solar
In Public and Affordable Housing**



URBAN INGENUITY

Bracken Hendricks
CEO, Urban Ingenuity
February 15th, 2018

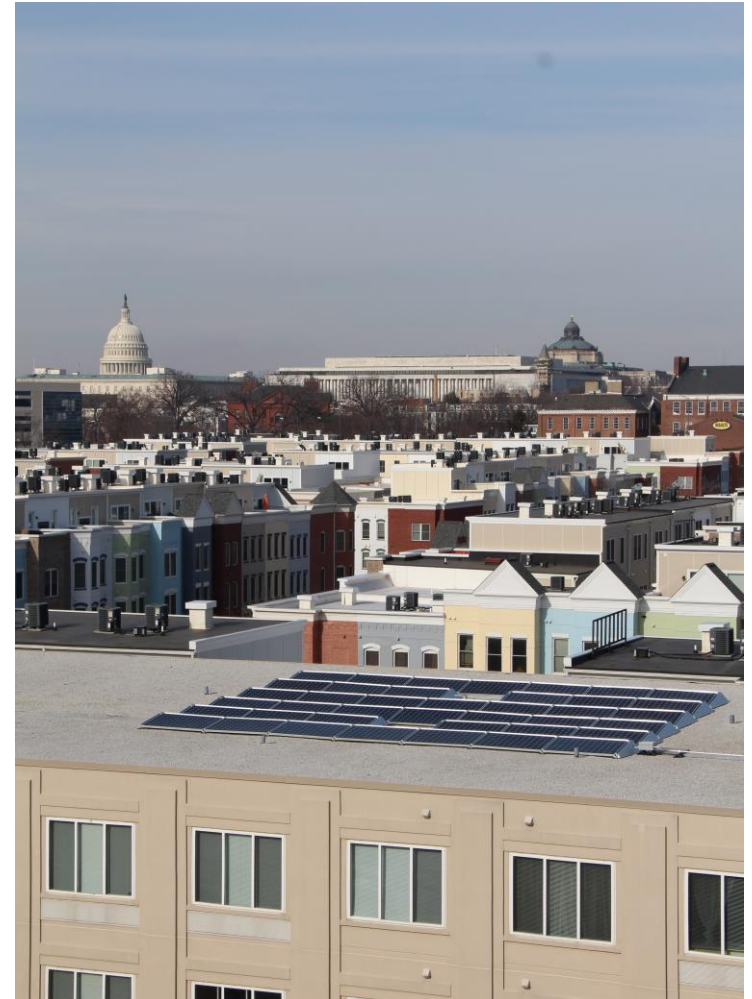
Market Need: *Barriers to Deployment*

- X ***No Tax Appetite:*** Can't monetize solar tax incentives
- X ***Small Size:*** Small individual projects across portfolios
- X ***Complex Ownership:*** Many owners & SPEs
- X ***Credit Quality:*** Unconventional cash flows & credit profiles
- X ***Misaligned Incentives:*** Utility allowances & capturing savings



Market Opportunity: *Targeted Solutions*

- ✓ **Aggregation:** Package project pools with channel partners
- ✓ **Standardization:** Streamline ownership & documentation
- ✓ **Asset Management:** Uniform, quality management of projects
- ✓ **Creative Structuring:** Cash flows to owner, benefits to residents
- ✓ **Credit Enhancement:** Impact PRI with financial & mission returns



NHT Ingenuity Power – Solar Platform



NHT-Enterprise.

Urban Ingenuity: Project oversight,
Legal, Energy & Financial Underwriting

National Housing Trust: Lead developer,
Debt origination, Strong balance sheet



Pilot: DC Low-Income Housing

- ✓ *Co-development with housers*
- ✓ *Solar for All grant to enable free power to tenants*
- ✓ *Cuts bills 50% in 400+ homes*
- ✓ *Builds scalable platform replicable in other markets*

Pilot Project: Multifamily Affordable Housing

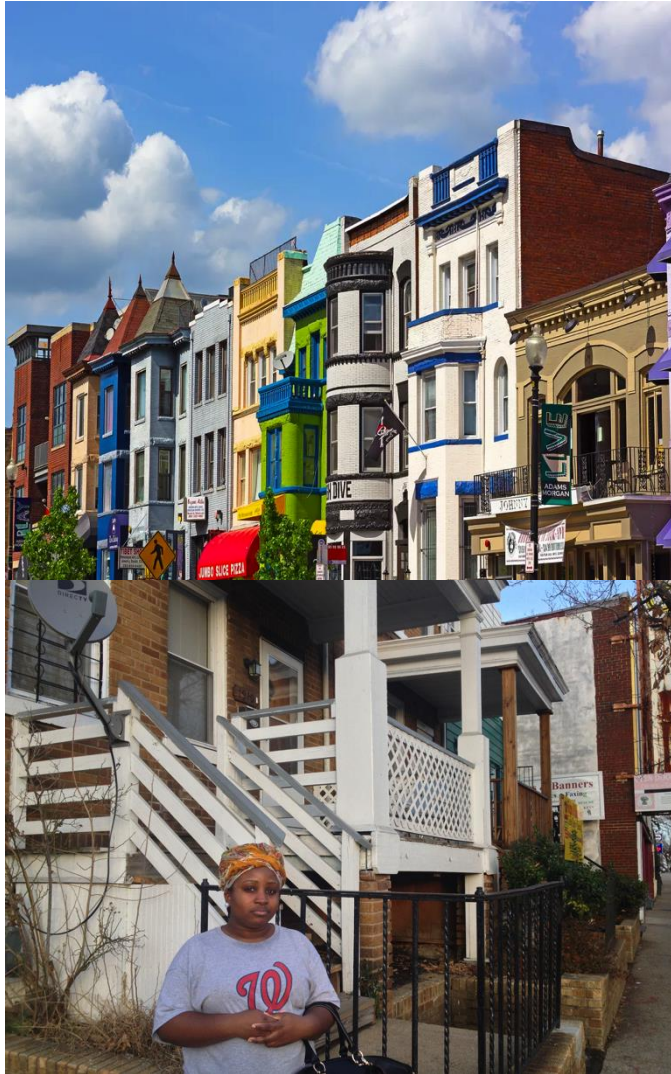
Bldg. Type: Affordable Multifamily Housing
Owner: 5 Housing Developers (Committed)
System size: 3.5 MW
Location: Washington D.C.
Sites: Distributed Portfolio (~50 Buildings)
PPA Term: 15 Years at \$0.06/kWh (50% savings)

Capital Investment Structure

<i>Tax Equity</i>	\$3,896,000
<i>Cash (Sponsor) Equity</i>	\$1,079,000
<i>Traditional Debt</i>	\$7,000,000
<i>Grants</i>	\$1,000,000
System Cost	\$12,975,000



Pilot Project: *Platform Benefits*

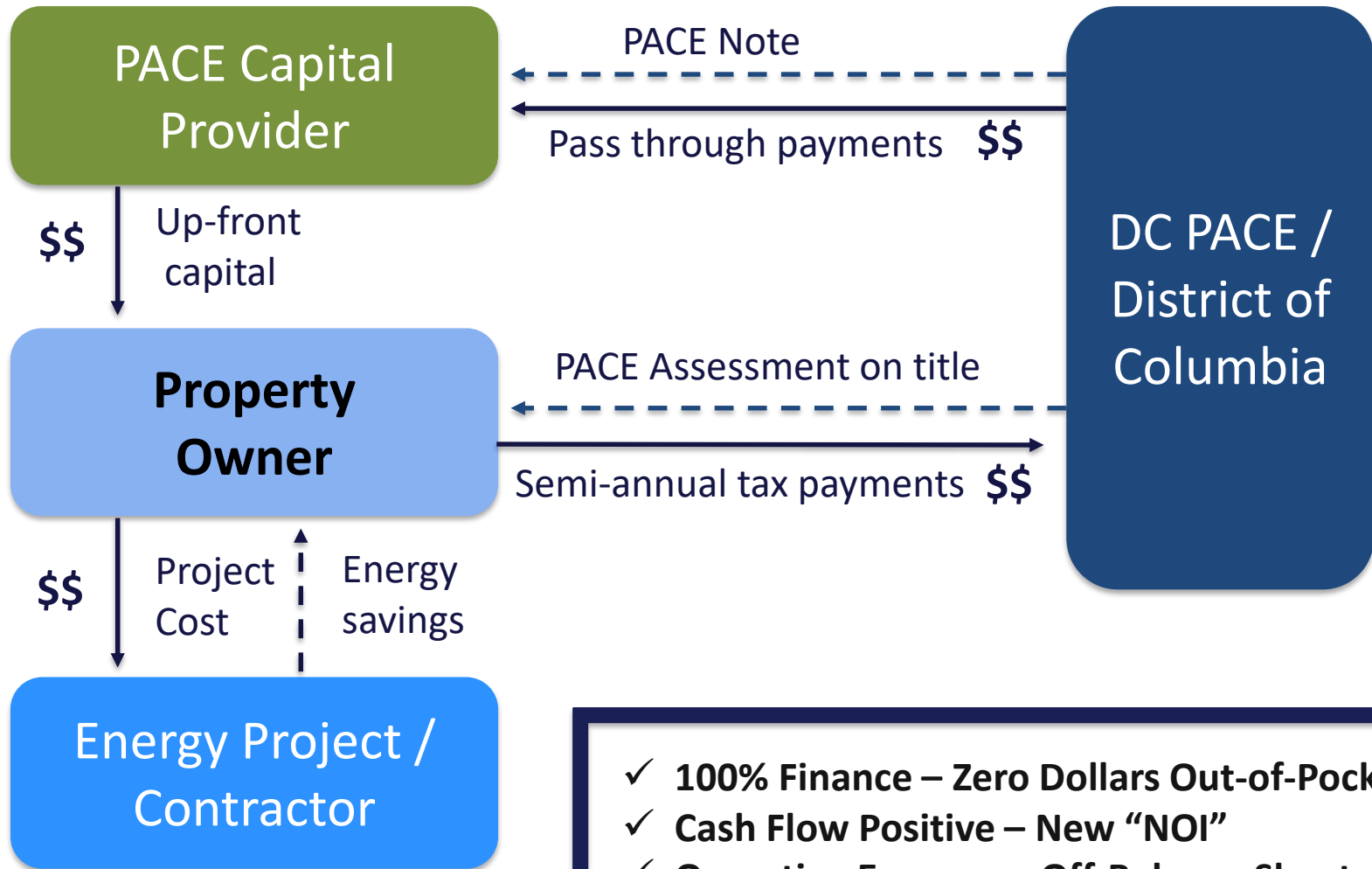


Benefits of Pooled Third-Party Ownership

Initial Investment by Houser	\$0
Co-Developer Fees to Houser	\$1,008,000
Community Benefits (15 yrs)	\$5,237,000
<i>Tenant Energy Bill Savings</i>	<i>\$3,040,000</i>
<i>Property Energy Bill Savings</i>	<i>\$2,197,000</i>

- ✓ Aggregation = economies of scale
- ✓ Creative approach to benefits provides revenues to housers and stream of savings to tenants
- ✓ Increased housing affordability and resilience to rising utility costs

How it works: *PACE* Transaction Structure



- ✓ **100% Finance – Zero Dollars Out-of-Pocket**
- ✓ **Cash Flow Positive – New “NOI”**
- ✓ **Operating Expense – Off-Balance Sheet**

PACE for Solar and Resilience: Case Study

Solving to the Challenge:

- 4% LIHTC Financing
 - Shrinking Tax Equity
 - Declining Subsidies
- = *Capital Gaps !!!*

Opportunity for Innovation:

- Large solar PV
- Tenant community solar
- Battery storage
- Green building ECMs
- Tax-exempt PACE = in basis



PACE in the Capital Stack: *Affordable Rehab*

Uses	
Acquisition	\$16,000,000
Hard Costs	\$29,000,000
Soft Costs	\$7,000,000
Total Costs	\$52,000,000

Sources	
LIHTC (4%)	\$22,000,000
Tax-Exempt Mortgage	\$18,000,000
Local Govt. Soft Debt	\$10,000,000
Total Sources	\$50,000,000
Gap	\$2,000,000

Options for addressing a \$2M gap...

1. **Do Nothing:** *Project stalls or dies*
2. **Owner's Equity:** *High opportunity costs*
3. **Value Engineering:** *Lock in high operating costs*
4. **Tax-Exempt PACE:** *Increase NOI & Displace equity*



PACE in the Capital Stack: *Increasing NOI*

Project Basics

Gap filled	\$2,000,000
+ 350 kW solar	\$1,000,000
Total PACE =	\$3,000,000

**PACE improves project
& property value**

Average Annual Cash Flow	
Utility Savings	\$110,000
O&M Savings	\$80,000
Solar (Energy + RECs)	\$120,000
Total Savings	\$310,000
PACE Payments	-\$240,000
Net Cash Flow	\$70,000

- **\$190K in annual savings offsets debt service for \$2M+ in PACE**
- **Self financing \$1M more in solar PV further improves cash flow**
- **Solar tax credits are attractive to LIHTC investors**

PACE in the Capital Stack: *Affordable Rehab*

Uses	
Acquisition	\$16,000,000
Hard Costs	\$29,00,000
Soft Costs	\$7,000,000
Solar	\$1,000,000
Total Costs	\$53,000,000

Sources	
LIHTC (4%)	\$22,300,000
Tax-Exempt Mortgage	\$18,000,000
Local Govt. Soft Debt	\$10,000,000
PACE	\$2,700,000
Total Sources	\$53,000,000

Options for addressing a \$2M gap...

- 1. Do Nothing:** *Project stalls or dies*
- 2. Owner's Equity:** *High opportunity costs*
- 3. Value Engineering:** *Lock in high operating costs*
- 4. Tax-Exempt PACE:** *Increase NOI & Displace equity*



PACE in the Capital Stack: *Displacing Equity*

	Self-Funded	PACE
Investment by Property Owner	\$3,000,000	\$0.00
Annual Benefits	\$310,000	\$310,000
Annual PACE Payment	\$0.00	\$(240,000)
Net Benefit Year 1	\$(2,690,000)	\$70,000
Annual Net Benefit Years 2-20	\$310,000	\$70,000
5-year NPV of Cash Flows (@ 6% discount rate)	\$(1,524,000)	\$295,000
10-year NPV of Cash Flows (@ 6% discount rate)	\$(549,000)	\$515,000
5-year IRR	-19%	Infinite
10-year IRR	1%	Infinite

PACE is a valuable structure for multi-family housing!

Thank you!

Bracken Hendricks
President & CEO, Urban Ingenuity

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Upcoming Webinars



Solar+Storage for Public and Affordable Housing

Thursday, February 22, 1-2pm ET

Promising Solar PV Financing Strategies for Low- and Moderate-Income Customers

Thursday, March 1, 1-2pm ET

Read more and register at www.cesa.org/webinars