

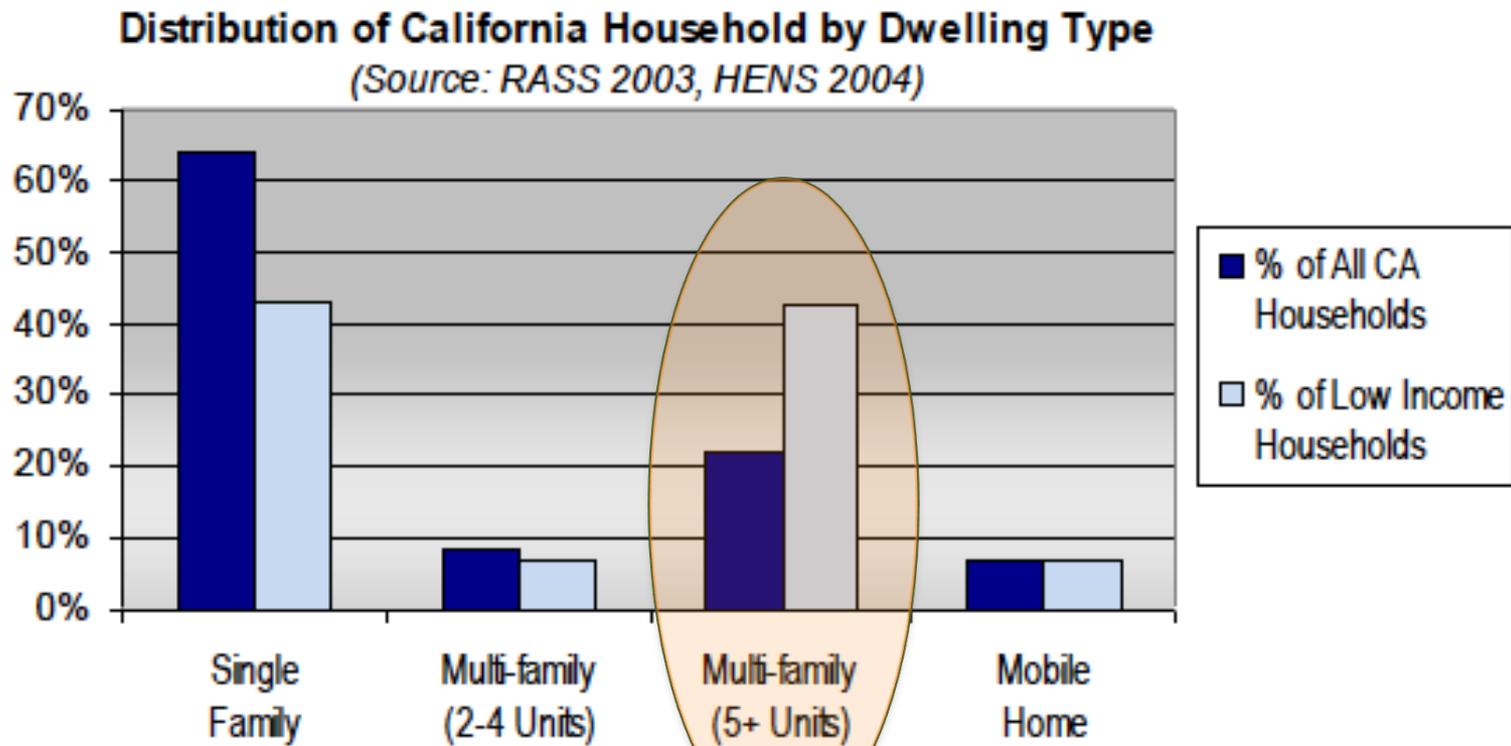
Workshop 4: Multifamily Sector Issues



October 21, 2011

**Review of multi-family sector needs,
proposals and related operational and
legal concerns.**

Workshop 4: Multifamily Sector Issues



Workshop Scope, Purpose & Format, Introductions



Goal:

- **Understand the energy retrofit needs and opportunities of the multifamily rental sector;**
- **Identify barriers; and**
- **Discuss possible changes to the current ESA Program**

I. Trends in Eligible and Served Populations



A. ELIGIBLE HOUSEHOLDS

California's Federally Subsidized Inventory (2011)

| Program | Properties | Assisted Units | Total Units |
|------------------------------|--------------|----------------|----------------|
| LIHTC | 3,285 | 260,020 | 281,826 |
| HUD Multifamily | 2,543 | 116,099 | 178,035 |
| Local Subsidies ₁ | 3,000 | 100,000 | 100,000 |
| Public Housing | 234 | 40,503 | 40,503 |
| USDA Sec. 515 ₂ | 496 | 22,912 | 22,912 |
| TOTAL | 9,558 | 539,534 | 623,276 |

Source: CHPC Preservation Clearinghouse, October 2011.

1. An estimate of the number of units created by state and locally subsidized low income housing supported by a combination of the following sources: HOME, CDBG, RDA, Inclusionary housing policies, linkage programs, density bonuses, 501(c)3 bonds, FHLB Affordable Housing Program, etc.
2. 14,871 units are also supported by Section 521 rental assistance contracts

California's HUD Multifamily Inventory (2011)

| HUD Program | Properties | Assisted Units | Total Units |
|-------------------------------------|--------------|----------------|----------------|
| Sec. 8 Only | 808 | 61,603 | 69,276 |
| Sec. 8 + Sec. 202/811 | 268 | 16,821 | 17,007 |
| Sec. 8 + Sec. 515 | 45 | 2,123 | 2,219 |
| Sec. 8 + Sec. 236 or Sec. 221(d)(3) | 234 | 18,835 | 22,977 |
| Sec. 236 or Sec. 221 (d)(3) only | 32 | 0 | 2,450 |
| PRAC/202 or PRAC/811 | 385 | 13,845 | 14,089 |
| Other HUD Mortgages ₁ | 771 | 2,872 | 50,017 |
| TOTAL | 1,772 | 116,099 | 178,035 |

Source: Department of Housing and Urban Development (HUD), October 2011
 1. "Other HUD mortgages" includes properties with unsubsidized HUD mortgages.



Profile of HUD-Assisted Residents

- 96% of HUD residents earn below 50% of the Area Median Income.
- Nearly 2/3 of HUD households earn less than \$15,000.
- 60% of HUD heads of household survive on Social Security or Disability Income.
- 37% of HUD heads of household are over 62% years old.
- 67% of HUD households are persons of color.

Source: HUD Picture of Subsidized Households, 2008.



Profile of LIHTC Residents

- 74% of LIHTC households have an income at less than 50% of the Area Median Income.
- Over one-third of LIHTC households receive Section 8 assistance.
- Just over 80% of LIHTC residents are minorities.

Source: "Assessment of the Economic and Social Characteristics of LIHTC Residents and Neighborhoods", ABT Associates, 2000.

I. Trends in Eligible and Served Populations



B. TRENDS IN HOUSEHOLDS SERVED

I. Trends in Eligible and Served Populations



C. DATA AND METHODOLOGY USED

I. Trends in Eligible and Served Populations



D. PUBLIC COMMENT/QUESTIONS

II. Measures: Eligible and Delivered



A. ELIGIBLE MEASURES

II. Measures: Eligible and Delivered



B. MEASURES ACTUALLY PROVIDED

II. Measures: Eligible and Delivered

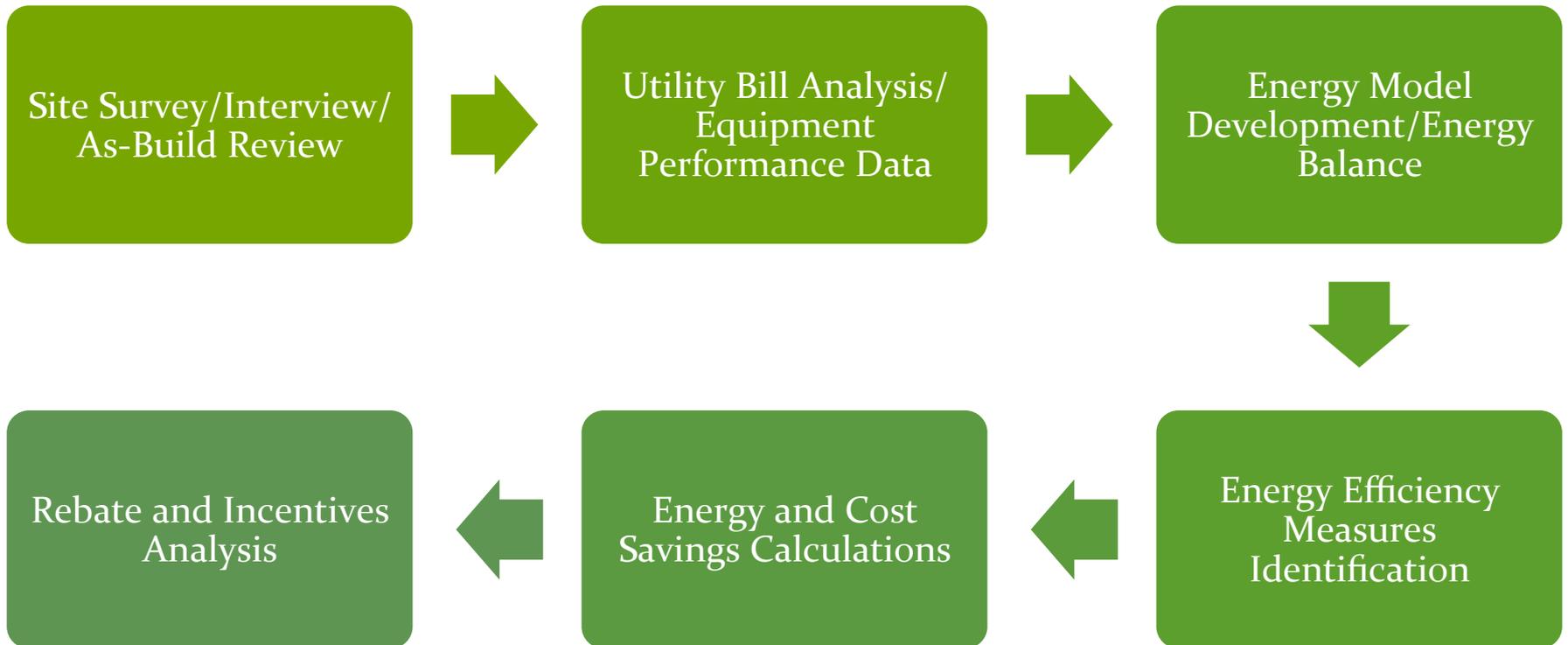


C. HOT WATER, HEATING, COOLING & BUILDING ENVELOPE

What is an Energy Audit

- Tool used by owners to make a **Business Decision** on ways to reduce energy consumption and cost and improve building performance
 - Capital Budget
 - Financing
 - Investment Return Criteria
 - Social Impact
 - Marketing

Energy Audit/Retro-Commissioning Process



Baseline

- 12 Months of Utility Data
- Building Envelope
 - Windows
 - Roof
 - Insulation
- Lighting System
- HVAC Equipment Nameplate Data
- Controls Analysis
- Operating Schedule
- Interviews -
 - Building Engineer
 - Property Manager
 - Tenant
- Plug Loads
 - Monitors
 - Refrigerators
- Water Consumption
 - Faucets
 - Showers
 - Toilets

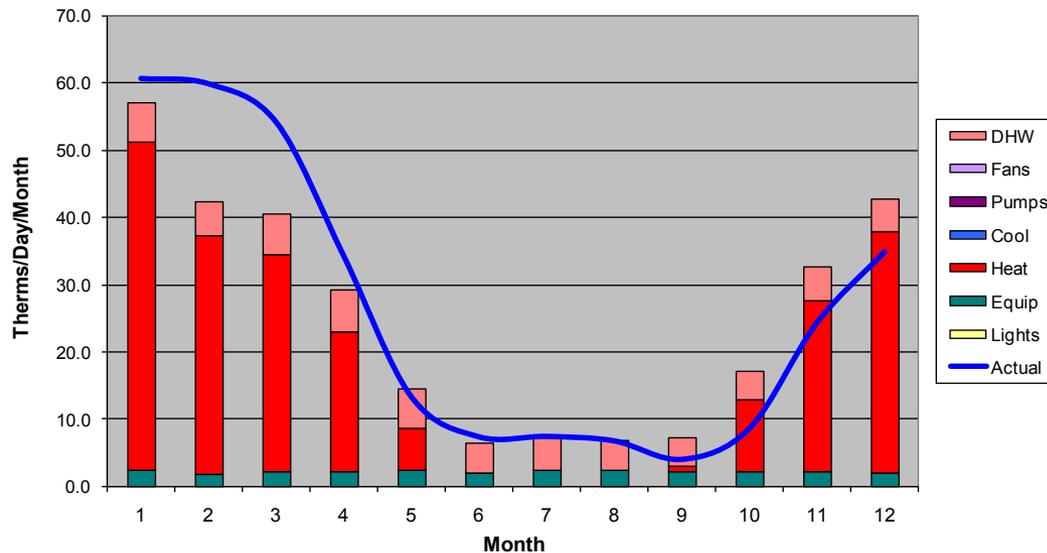
Energy Modeling

- Simulates and predicts future energy consumption and cost based building/operating characteristics and Time Of Day Billing
 - Building location and mass properties
 - Wall and Roof Insulation value
 - Window/wall ratio
 - HVAC systems – Efficiency
 - Controls
 - Set-points, schedule, setbacks, economizer
 - Lighting System

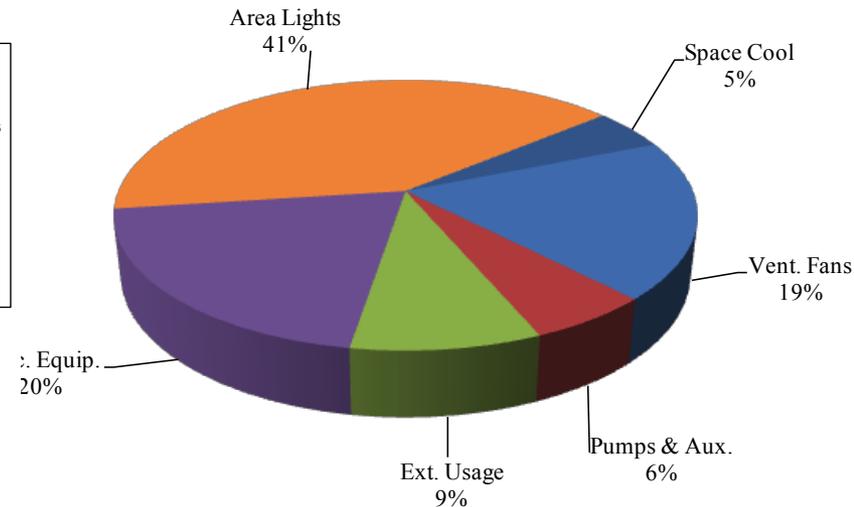
Energy Modeling

- Match actual energy consumption from utility bills
- Qualify how energy is currently consumed

Actual vs DOE-2 Predicted Natural Gas ENERGY (Therms)



Electric Consumption (kWh)



Energy Efficiency Measures

- Building Envelope
 - Weather Stripping
 - Window Film
- Lighting
 - Upgrades and controls
- HVAC
 - Equipment upgrades and maintenance
 - Variable frequency drives
- Building Controls
 - Direct digital controls
 - CO₂ economizer
 - Time of day setbacks and temperature set-points
- Energy Star Appliances

Juan Pifare Plaza



ASSOCIATION FOR
ENERGY AFFORDABILITY, INC.

Project Summary

- **Project Type:** Multifamily
- **Location:** San Francisco
- **Building Size:** 52,000 sq ft
- **Number of Units:** 30
- **Number of Stories:** 4



| | | | |
|----------------------------|-----------------|---------------------------------------|----------|
| Total Investment: | \$162,861 | Payback Period (years): | 8.3 |
| Annual Savings:* | \$15,857 | Savings to Investment Ratio: | 1.42 |
| | 405 million Btu | Net Life Cycle Savings: | \$54,411 |
| | 61,385 kWh | Discounted at 3.0% over (yrs): | 11.7 |
| Electric Reduction: | 25% | Fuel Use Reduction: | 27% |

Juan Pifare Plaza



ASSOCIATION FOR
ENERGY AFFORDABILITY, INC.

Detailed List of Recommended Measures

Juan Pifare Plaza

| Measure | Installed Cost (incl. design) | Annual Energy Savings | | Annual Water/ Sewer Savings | Annual Cost Savings | Payback | S.I.R. | Life Cycle Savings | Years for LCC | Notes | |
|--|---|-----------------------|------------|--------------------------------|---------------------|-----------------|-------------|--------------------|-----------------|------------|------------|
| | | MMBtu | kWh | 1000 gals | | | | | | | \$ |
| Measures with SIR >1 | | | | | | | | | | | |
| 1 | Install 2.0 GPM Showerheads and 1.5 GPM or Less Aerators | \$1,270 | 125 | 0 | 81.0 | \$2,590 | 0.49 | 17.4 | \$20,821 | 10 | 2,3,4 |
| 2 | Repair Heating Boiler Controls | \$1,250 | 59 | 0 | 0.0 | \$637 | 1.96 | 4.7 | \$4,646 | 11 | 2,4 |
| 3 | Replace T-12 Apartment Ballasts w/T-8 | \$2,012 | -8 | 4308 | 0.0 | \$568 | 3.54 | 3.4 | \$4,764 | 15 | 2,4 |
| 4 | Install Exterior Lighting Controls and Fixture Replacement | \$7,064 | 0 | 8138 | 0.0 | \$1,367 | 5.17 | 2.3 | \$9,257 | 15 | 2,4 |
| 5 | Replace Heating Circulators with VFD Pumps | \$30,000 | -8 | 29335 | 0.0 | \$4,842 | 6.20 | 1.9 | \$27,802 | 15 | 2,4 |
| 6 | Replace Common Area Lighting Fixtures and Add Controls | \$24,455 | -35 | 19084 | 0.0 | \$2,828 | 8.65 | 1.4 | \$9,307 | 15 | 2,4 |
| 7 | Install Demand Controlled Recirculation Pump | \$2,500 | 16 | 520 | 0.0 | \$260 | 9.61 | 1.2 | \$606 | 15 | 2,4 |
| 8 | Weatherstrip Select Doors and Air Seal Parking Garage Ceilin | \$1,300 | 14 | 0 | 0.0 | \$151 | 8.60 | 1.1 | \$99 | 11 | 2,4 |
| 9 | Insulate all DHW Piping in Boiler Room to R-6 | \$200 | 2 | 0 | 0.0 | \$22 | 9.26 | 1.0 | \$0 | 11 | 2,4 |
| Measures with SIR <1 | | | | | | | | | | | |
| 10 | Replace DHW Boilers with High Efficiency Sealed Combustion | \$60,000 | 233 | 0 | 0.0 | \$2,516 | 23.84 | 0.6 | -\$22,562 | 20 | 2,4 |
| 11 | Insulate DHW Tank with R-18 FSK Faced Insulation | \$800 | 7 | 0 | 0.0 | \$76 | 10.58 | 0.6 | -\$329 | 7 | 2,4 |
| TOTAL | | \$130,851 | 405 | 61,385 | 81.03 | \$15,857 | 8.25 | 1.42 | \$54,411 | N/A | N/A |
| Additional Health and Safety Measures | | | | | | | | | | | |
| 12 | Clean and Tune Stoves | \$5,310 | | | | | | | | | 1 |
| 13 | Install Hardwired CO Detectors (Apartments, Laundry, and Mechancial Room) | \$7,750 | | | | | | | | | 1 |
| 14 | Repair Dryer Venting System | \$4,200 | | | | | | | | | |
| 15 | Ventilation System Overhaul | \$13,000 | | | | | | | | | |
| 16 | Gas Leak Repair | \$1,000 | | | | | | | | | |
| 17 | Update/Replace Garage CO Sensors | \$750 | | | | | | | | | |
| TOTAL FOR ALL IMPROVEMENTS | | \$162,861.00 | 405 | 61,385 | 81 | \$15,857 | 8.25 | 1.42 | \$54,411 | N/A | N/A |

II. Measures: Eligible and Delivered



D. DEFINING TENANT BENEFITS THE DOE/CSD WAY



FEDERAL BEST PRACTICES: Ensuring Tenant Benefit

CHALLENGES

- **Potential for unintended restrictions on building Eligibility**
 - Tenant metered units only
- **Potential for unintended restrictions to energy investments**
 - Unit-only measures
 - Exclusion of common building systems for domestic hot water and space heating
- **Exacerbates Split Incentive problems**



DOE – HUD Tenant Benefit Objectives

- **DOE Regulation recognizes that a combination of factors can be used to demonstrate that the benefits of weatherization accrual primarily to the tenants**
 - i. Longer term preservation as affordable housing
 - ii. Continued/expanded rent increases protections
 - iii. Investment in facilities or services benefiting tenants
 - iv. Investment in health and safety improvements
 - v. Improvements to heat and hot water distribution and ventilation that improve the comfort of residents
 - vi. Establishment of a shared savings programs.

DOE Streamlined Income Eligibility

- DOE Program Notice 10-15A (issued April 8, 2010)
 - Benefits of Wx in Multi-Family Properties (MFPs) must accrue primarily to the residents
 - Requires owners of MFPs to provide sufficient detail to allow determination of benefit accrual
 - Provided examples of how benefits might accrue to residents if not through direct energy savings
- Guidance available at the following link:

<http://www.waptac.org/sp.asp?id=6878>



DOE Streamlined Income Eligibility

Accrual of Benefits

Individually–Metered Properties:

When a property is individually-metered and residents are responsible for payment of their own energy usage, the accrual of benefits are easy to demonstrate and quantify through reduced utility expenditures (utility bills.)



Accrual of Benefits – Master Metered Units:

Primary List - Established by CSD ARRA Program Guidance #13:

- ❖ Protection against rent increases beyond that required under the DOE WAP regulations (10 CFR 440.22(b)(3)(ii));
- ❖ Investment of energy savings in facilities or services that offer a measureable direct benefit to tenants;
- ❖ Establishment of a shared savings where energy cost savings are aggregated and distributed to tenants; or
- ❖ Longer term preservation of the property as affordable housing.

Accrual of Benefits – Master Metered Units:

Secondary List - Established by CSD ARRA Program Guidance #13:

- ❖ Investment of the energy savings from the weatherization work in specific health and safety improvements with measurable benefits to tenants; or
- ❖ Improvements to heat and hot water distribution, and ventilation, to improve the comfort of residents.

II. Measures: Eligible and Delivered



E. PUBLIC COMMENT/QUESTIONS AND WRAP-UP

III. Barriers and Solutions to Serving LI MF Renters



A. DEFINING INCOME IN ESAP

LIEE Policy and Procedures Manual

2.2.2 Types of Income Included in Household Income (p. 12, August 2010)



Table 2-2: Items Included in Income

| | |
|---|--|
| Wages, salaries and commissions | 401K payments or withdrawals ¹ |
| Alimony payments | Rental income and royalties ² |
| Child support payments | School grants, scholarships or other aid ¹ |
| Disability benefits | Self-employment earnings ² |
| Foster care payments | Social security payments |
| Realized capital gains on assets | Housing subsidies |
| Interest and dividends on assets | Supplemental Security Income (SSI) payments and State Supplemental Payments (SSPs) |
| Food stamps | Temporary Assistance to Needy Families (TANF) payments |
| Gambling/lottery winnings | Unemployment Benefits payments |
| General relief | Veterans Administration Benefit payments |
| Monetary gifts (both one-time and recurring) | Workers Compensation payments |
| Insurance settlements or legal settlements ¹ | Union strike fund benefits |
| Pension payments or withdrawals ¹ | |

¹ Other than loans.

² For rental income and self-employment income, only positive values of income are included. Negative net rents and negative self-employment income are ignored.

Examples

| Program | Tenant Contribution | Market Rent | Value of Housing Subsidy |
|-------------------------------------|--|---------------|--------------------------------------|
| Public Housing | 30 percent of family income | ? | ? |
| HUD Project-Based Section 8 | 30 percent of family income | Contract rent | Amount of Housing Assistance Payment |
| Low-Income Housing Tax Credit | Set based on percentage of area median income (e.g. 50% or 60% of AMI) | ? | ? |
| Housing Choice Voucher | Based on 30 percent of income | Contract rent | Amount of Housing Assistance Payment |
| HUD or RD Mortgage Subsidy Programs | Based on cost of running project with reduced interest rate | ? | ? |

Department of Community Services and Development

6

DOE WAP – Countable / Non-Countable Income (Partial List)

| Income Type | Definition | Yes | No |
|---|--|-----|----|
| Adoption Assistance / Foster Care | | | X |
| Annuities, Pensions, Retirement | | X | |
| Assistance payments | Retirement Survivor Disability Insurance, Supplemental Security Insurance (SSI), TANF, General Assistance, Cal Works | X | |
| Food or rent received instead of wages | | | X |
| Irregular cash gifts or payment on behalf of the household | | | X |
| Payments from government sponsored programs | Such as agricultural programs | X | |
| Social Security Benefits | Net amount of the check, excluding the amount deducted for Medicare | X | |
| Spousal support | | X | |
| Child support | Deduct child support from the household paying it | | X |
| | Include child support for the household receiving it | X | |
| Wages, salaries, commissions, bonuses, profit sharing, tips. Etc. | Count all gross income received for the period used to determine income eligibility | X | |
| Federally Mandated Exclusions | | | |
| Agent Orange Settlements | | | X |
| Disaster Relief | FEMA | | X |
| Food/Meal Programs | School breakfast, school lunch, milk programs, WIC, meals for older Americans | | X |
| HUD subsidies | | | X |
| Food Stamps | | | X |
| Senior Companion Program | | | X |



FEDERAL BEST PRACTICES: Defining Incomes

- **Common definition used on the types of income included or excluded from income calculations**
- **Federally subsidized rents are NOT included in household income calculations by HUD or DOE**
- **Greater income Due Diligence performed for federally regulated housing programs because housing subsidy levels are based on income**
 - Documentation and reporting subject to federal regulations
 - Incomes are verified
 - Incomes are annually recertified

III. Barriers and Solutions to Serving LI MF Renters



B. DETERMINING ELIGIBILITY AND PERMISSION



FEDERAL BEST PRACTICES: Determining Eligibility

CHALLENGES

- **Higher transaction costs to collecting data from multiple units**
 - Delays project implementation
- **Privacy issues to sharing tenant information maintained at property level**
 - Requires federal action
- **Split incentive dynamics**
 - Constrain resident participation and whole building approaches



Assessment of Federal Data Sources on Household Income

- **Actual households incomes are available for each subsidized unit at each property subject to federal requirements**
- **Greater income Due Diligence is performed for federally regulated housing programs**
 - Gross and adjusted income documentation and reporting subject to federal requirements
 - Incomes are verified through income matching protocol using independent sources
 - Incomes are recertified
- **Income data bases subject to federal requirements are accurate and reliable and a sound basis for determining eligibility for DOE WAP**



DOE-HUD Process for Qualifying Eligible Properties

HUD Databases

Public Housing

- Public Housing Developments and Units in PHA Inventories

Multifamily housing

- MF Properties and Units with Assistance Contracts

DOE Filters

UNIT BY UNIT review of income records for each property/building using DOE eligibility criteria*

BASIC INCOME ELIGIBILITY REQUIREMENT:

200% of the Federal Poverty Level based on Household Size

PROPERTY ELIGIBILITY REQUIREMENT:

66% of households in each buildings/ property meet basic income requirements

*** Vacant/Market rate units not counted towards meeting eligibility requirements**

Benefits of HUD-DOE Eligible Properties List Streamlined Qualification Process

- Expedited Intake Process – Shortens lead-time considerably (Income info, demographics, energy usage collection, client education)
- Establishes cooperative working relationship with owner or management.
- Enables a whole-building approach to weatherization – Individual Units, Common Areas & Centralized mechanical systems.

Historical Approach to Multi-Family Buildings

- MF Resident (Single-Unit) qualifies for Cash Assistance or Weatherization;
- Energy Service Provider contacts building owner / manager – receives approval – gauges interest for additional unit weatherization;
- Unit by Unit Intake & Income Certification (Lengthy Process);
- Property / building is assessed for services;
- Prescriptive Measure List utilized for units;
- Common Areas & Central Systems untouched.
- Lost Opportunities for expanded weatherization scope.

New MF Streamlined Approach – Energy Audit

- Energy Service Provider identifies HUD-DOE qualified project or is contacted by qualified building owner / management representative;
- Cooperative relationship develops;
- Management assists with streamlined data collection (demographics, income, energy usage)
- Energy audit identifies cost-effective individual unit and common area measures for installation;
- Measures installed by Energy Service Provider and trade-specific subcontractors (mechanical systems, etc.)
- Residents benefit from more comprehensive services..

III. Barriers and Solutions to Serving LI MF Renters



C. UNDERSTANDING SPLIT INCENTIVES

III. Barriers and Solutions to Serving LI MF Renters



D. DETERMINING ELIGIBLE MEASURES

MF HERCC

Executive Summary (p. 4, April 2011)



Program Design

- **Design individual measure-based incentive programs and whole-building performance-based programs to be complementary and parallel offerings.**
 - Utilize a rater/verifier and energy consultant delivery model for whole-building performance programs and continue to utilize a contractor delivery model for individual measure programs.
 - Take into account the conditions under which a contractor-delivery approach may be appropriate for whole-building performance programs.
- **Provide a single point of customer interface for multifamily property owners to streamline their participation.**

MF HERCC

Executive Summary (p. 6, April 2011)



Whole-Building Performance Approach

- Offer funding programs based on a whole-building performance approach for multifamily energy efficiency improvements, rather than a prescriptive approach.
- Ensure that program total resource costs are minimized by eliminating administrative inefficiencies and optimizing leveraging among programs.
- Provide utility-funded incentives for the whole-building performance approach to stimulate demand for comprehensive energy upgrades.

LIEE Policy and Procedures Manual

2.2.2 Types of Income Included in Household Income (p. 12, August 2010)



Application for Housing Development Funds
Green Retrofit Initiative

SF Mayor's

Application Date: 5/21/10
Project Name: SRO Hotel
Project Address: San Francisco
Project Sponsor: Non-profit Housing Provider

Units: 77

SOURCES

| Scope of Work | Bid Costs | SIR | EUL | savings/yr | NPV | WAP | CDBG | Non Fed \$ | SEP Loan | Total Sources |
|---|------------------|------|-----|-----------------|------------------|------------------|------------------|----------------|-----------------|------------------|
| WAP ITEMS | | | | | | | | | | |
| Lighting Replacement (Outdoor) | \$860 | 2.16 | 15 | \$92 | 1,855 | 860 | | \$0 | | \$860 |
| Install High Efficiency Condensing DHW Boiler | \$40,527 | 1.99 | 20 | \$4,724 | 80,749 | 40,527 | | \$0 | | \$40,527 |
| Install 1" Fiberglass Insulation on DHW Pipes | \$805 | 1.90 | 11 | \$144 | 1,531 | 805 | | \$0 | | \$805 |
| Insulate Roof w/ 16" Loose Cellulose R-60 | \$5,422 | 1.58 | 20 | \$500 | 8,547 | 5,422 | | \$0 | | \$5,422 |
| Install Vendisensor on Vending Machines | \$600 | 1.55 | 5 | \$120 | 928 | 600 | | \$0 | | \$600 |
| Install 2" Fiberglass Insulation on Heating Pipes | \$1,206 | 1.18 | 11 | \$134 | 1,425 | 1,206 | | \$0 | | \$1,206 |
| Installation of TRV Air Vents | \$15,719 | 1.08 | 15 | \$1,236 | 16,953 | 15,719 | | \$0 | | \$15,719 |
| Lighting Replacement (CA) | \$47,120 | 1.04 | 15 | \$2,438 | 49,155 | 47,120 | | \$0 | | \$47,120 |
| Install Outdoor Reset System + Clean and Tune | \$8,125 | 0.96 | 20 | \$454 | 7,760 | 7,760 | | \$365 | | \$8,125 |
| Replace Mini Fridges | \$1,200 | 0.42 | 19 | \$21 | 508 | 508 | | \$692 | | \$1,200 |
| Lighting Replacement (In-Unit CFL's) | \$2,400 | 0.30 | 2 | \$225 | 727 | 727 | | \$1,673 | | \$2,400 |
| Water Heater Set Point Adjustment | \$2,670 | 0.05 | 5 | \$23 | 121 | 121 | | \$2,549 | | \$2,670 |
| WAP subtotal | \$126,654 | | | \$10,111 | \$170,258 | \$121,375 | \$0 | \$5,279 | \$0 | \$126,655 |
| NON WAP ITEMS | | | | | | | | | | |
| Midori: Replace Windows | \$147,679 | 0.18 | 20 | \$1,584 | 27,076 | | \$59,296 | | \$88,383 | \$147,679 |
| Install Security Camera and Monitoring | \$3,500 | | | | | | \$3,500 | | | \$3,500 |
| Painting | \$14,700 | | | | | | \$14,700 | | | \$14,700 |
| non WAP subtotal | \$165,879 | | | | | | \$77,496 | \$0 | \$88,383 | \$165,879 |
| Contingency | \$43,880 | | | | | | \$43,880 | | | \$43,880 |
| MIDORI TOTAL | \$336,413 | | | 11,695 | 197,333 | \$121,375 | \$121,376 | \$5,279 | \$88,383 | \$336,413 |

LIEE Policy and Procedures Manual

2.2.2 Types of Income Included in Household Income (p. 12, August 2010)



SF Mayor's Office Of Housing
Green Retrofit Initiative
Audit Summary
11 of 24 audits

| Building | Tower Apartments | | St. Clair Apartments | | Consortia Apts | | California Street | | Canon Kip | | Esperanza | | Betel Apartments | | Hotel Madrid | | Hotel Parkview | | Juan Pifare | | Abel Gonzalez | |
|--------------------------------------|------------------|------------|-----------------------|------------|----------------------|------------|-----------------------|------------|------------------|------------|-----------------|------------|----------------------|------------|-----------------|------------|-----------------|------------|------------------|------------|-----------------------|------------|
| No. Units | 34 unit | | 41 unit | | 24 unit | | 49 unit | | 104 unit | | 39 unit | | 50 unit | | 45 unit | | 40 unit | | 30 unit | | 30 unit | |
| Description | 3 Story SRO | | 6 story studios/1 brs | | 3 story studios/1brs | | 4 story studios/1 brs | | 5 story SRO | | 4 Story Family | | 4 buildings - family | | 3 Story SRO | | 4 Story SRO | | 4 Story Family | | 4 Story studios/1 brs | |
| Master Metered | E/G/W | | G/W | | G/W | | G/W | | E/G/W | | G/W | | W | | E/G/W | | E/G/W | | G/W | | W | |
| Common Measures | Cost | SIR | Cost | SIR | Cost | SIR | Cost | SIR | Cost | SIR | Cost | SIR | Cost | SIR | Cost | SIR | Cost | SIR | Cost | SIR | Cost | SIR |
| Low Flow Fixtures | \$221 | 18.1 | \$2,096 | 4.1 | \$1,922 | 1.6 | \$2,712 | 9.3 | \$3,500 | 2.9 | | | \$1,250 | 5.5 | \$350 | 39.8 | \$350 | 31.4 | \$1,270 | 17.4 | \$350 | 7.5 |
| In-Unit Lighting Upgrades | \$2,162 | 12.6 | | | | | | | | | \$756 | 7.8 | \$1,756 | 4.3 | \$7,530 | 2.0 | \$8,999 | 1.4 | \$7,064 | 2.3 | | |
| Common Area Lighting Upgrades | \$2,582 | 2.5 | \$1,628 | 3.1 | | | | | \$10,239 | 1 | \$5,756 | 2.2 | \$1,898 | 9.4 | \$11,889 | 1.5 | \$8,558 | 1.4 | \$24,455 | 1.2 | \$1,691 | 2.1 |
| Air Infiltration Measures | \$12,500 | 1.1 | | | \$11,228 | 1.2 | | | | | | | | | | | | | | | | |
| Replace Domestic Hot Water Boiler | \$11,500 | 0.6 | \$22,560 | 1.3 | \$14,856 | 1.3 | \$14,450 | 1.3 | | | | | \$27,000 | 0.7 | | | | | \$60,000 | 0.6 | | |
| Replace Space Heating Boiler | | | | | | | | | \$15,500 | 0.4 | | | | | | | | | | | \$20,000 | 0.8 |
| Upgrade/Replace H2O/Heating Controls | | | | | | | | | \$75,000 | 1.1 | \$4,500 | 0.7 | | | \$49,701 | 1.1 | \$40,000 | 1.3 | \$30,000 | 1.9 | \$2,500 | 1.1 |
| Replace Windows | | | | | \$44,911 | 0.8 | | | | | | | \$10,000 | 0.4 | | | | | | | | |
| HVAC upgrade | | | | | | | | | \$15,000 | 4.6 | \$6,500 | 1.1 | | | | | | | | | | |
| Total/Avg | \$28,965 | 2.0 | \$26,284 | 1.6 | \$72,917 | 1.0 | \$17,162 | 2.6 | \$119,239 | 1.5 | \$11,012 | 1.7 | \$41,904 | 1.3 | \$69,470 | 1.5 | \$57,907 | 1.5 | \$122,789 | 1.3 | \$24,541 | 1.0 |
| Project Energy Savings | E/G/W | 28% | E/G/W | 20% | E/G/W | 25% | E/G/W | 23% | (E) 15% (G) 22% | | (E) 9% (G) 11% | | (E) 10% (G) 11% | | (E) 24% (G) 36% | | (E) 16% (G) 40% | | (E) 25% (G) 27% | | (E) 16% (G) 40% | |

Recently Released – Energy Policy 11-07

- Whole-Building Approach to weatherization is preferred.
- Maximizing energy savings when addressing interconnected systems – Not able to consider when doing individual units.
 - Ceiling Insulation
 - Wall Insulation
 - Windows
- In certain well-documented situations an individual-unit approach may be considered by service providers.

Recently Released – Energy Policy 11-07 (cont.)

- Emphasis on energy audits (TREAT, REM/Design)
- Building type determines approach:
 - TREAT
 - Large Buildings (25+ Units) with centralized systems
 - 4 Stories or more
 - Common heating, cooling and water heating systems.
 - REM/Design or Prescriptive List
 - Small to Mid-Sized Buildings (5 – 24 Units)
 - Individually heated, cooled and metered.
- If unable to weatherize whole-building a reduced list of prescriptive measures are available to qualified individual units.

III. Barriers and Solutions to Serving LI MF Renters



E. COORDINATING ESAP WITH EE INCENTIVES

MF HERCC

Executive Summary (p. 6, April 2011)



Low-Income and Energy Efficiency Program Access and Coordination

- Coordinate and integrate energy efficiency retrofit and weatherization programs serving the low-income sector by developing consistent program requirements, standards and audit protocols; modifying program structures to provide more flexibility for multifamily building owners; and supplementing prescriptive approaches with whole-building performance approaches.

III. Barriers and Solutions to Serving LI MF Renters



F. CONTROLLING THE QUALITY OF WORK

III. Barriers and Solutions to Serving LI MF Renters



G. PUBLIC COMMENT/QUESTIONS AND WRAP-UP

IV. Current & Proposed Pilots



A. SMUD APPROACH TO SERVING MF RENTERS

IV. Current & Proposed Pilots



B. SF POWER ON LEASED EQUIPMENT PILOT (SEPARATE PRESENTATION)

Third-Party Energy Service Pilot Initiative:

Bridging the split incentives gap in rental housing serving low income individuals

A.11-05-017, 18, 19, and 20 Workshop Number Four

October 21 , 2011

Steven Moss
Richard White



Split Incentives: A Key Barrier to Efficiency Gains in Multi-Family Units Serving the Low-Income Market

So Cal Edison Company:

- ... multi-family properties have been less responsive to energy efficiency efforts than other residential customers.

- A market that warrants attention and effort

- Energy efficiency efforts for this segment must focus on owners/managers and tenants.*

| | <u>Owners</u> | <u>Renters</u> |
|-----------------------|---|--|
| Status quo Appliances | <ul style="list-style-type: none"> •Low capital cost •Exposed to maintenance risk •Higher total occupancy cost | <ul style="list-style-type: none"> •Higher utility bill •Older “smelly” appliances •Higher total occupancy cost |
| Efficient Appliances | <ul style="list-style-type: none"> •Higher capital cost •Lower total occupancy cost •Knowledge of EE required | <ul style="list-style-type: none"> •Lower utility bill •Newer appliances •Lower total occupancy cost •Rebound effect •May require M&V to obtain savings |

Market for Energy Savings in California Multi-Family Housing



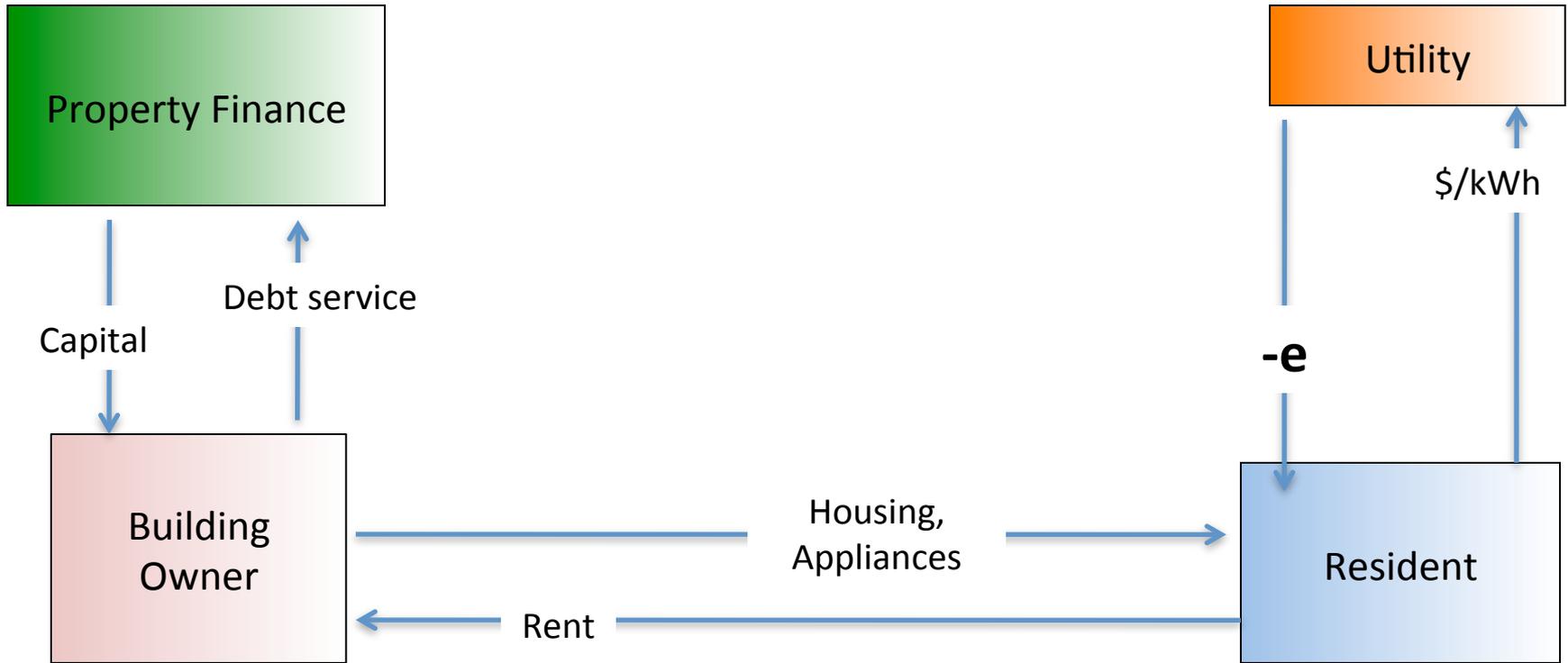
47% of refrigerators 1997 or earlier vintage in low income households

CARE program costs growing faster than system energy costs, implying increasing relative energy use rates for low income households

Less than 5% of eligible low income homes served by ESA programs

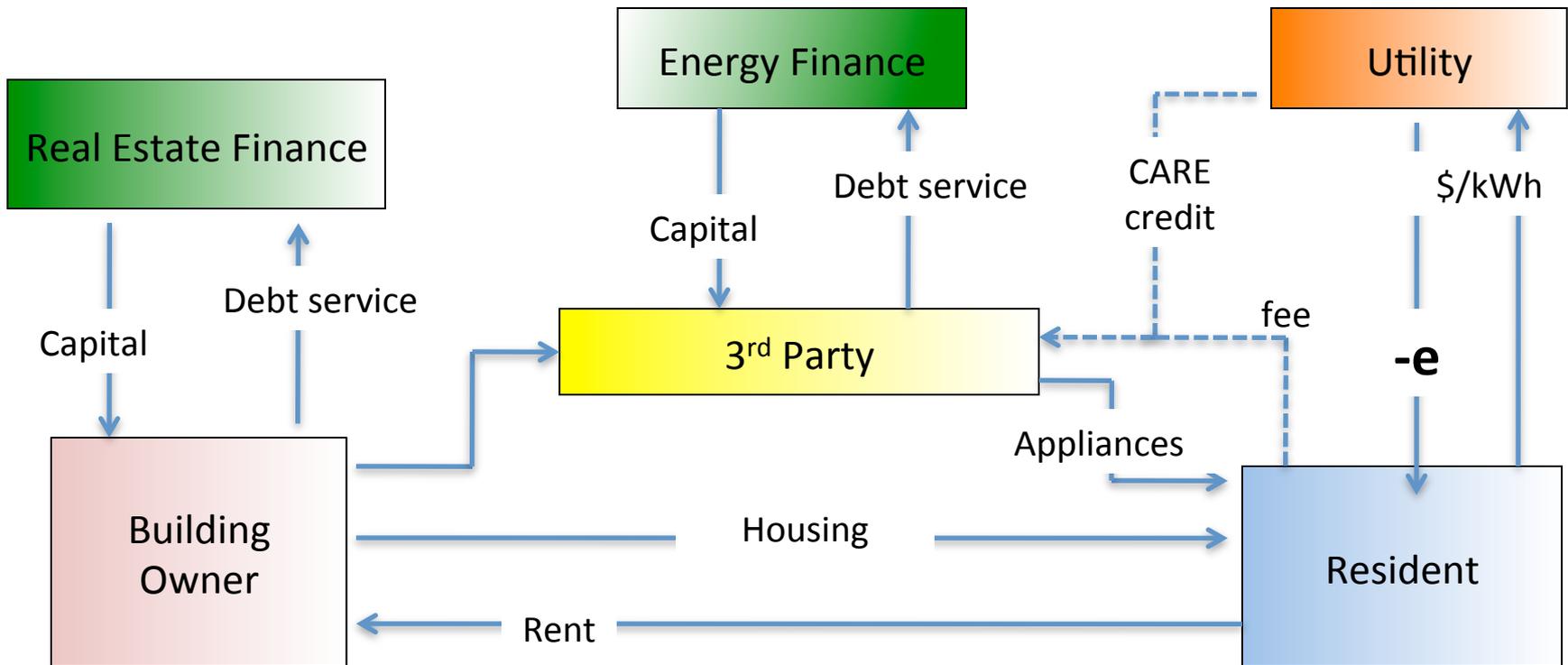
Low Income residential EE market underserved

Status Quo Rental Energy Relationships:



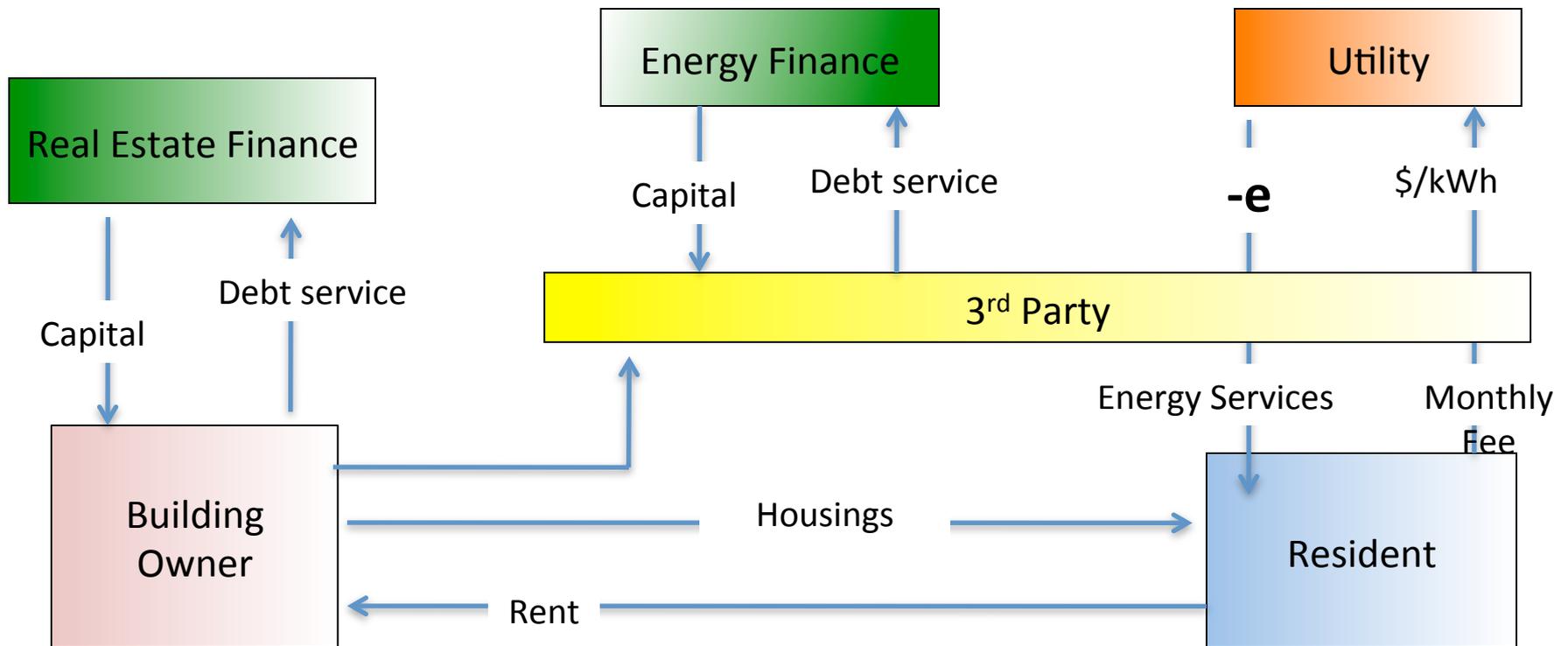
- Property owner provides both housing and appliances.
- Renter pays utility bill

Third Party Ownership: Option A



- Landlord provides housing and contracts with 3rd party to provide appliances
- Renter pays utility bill and service fee to 3rd party possibly through on bill finance charge
- 3rd party provides appliances and verifies savings

Third Party Ownership: Option B



- Landlord provides housing and contracts with 3rd party to for energy services.
- Renter pays 3rd party for appliance service. 3rd party essentially becomes the renters utility
- 3rd party provides appliance service and manages total energy use of renters

Third Party Pilot Objectives

Assess the cost effectiveness of third parties to deliver efficiency

Program Benefits

- Capture fallow energy savings in low-income households.
- Reduce low-income families' utility bills.
- Increase household comfort.
- Reduce polluting air and greenhouse gas emissions.
- Train local workforce in energy management.
- Identify ways to jump-start broader market.

- Estimate third party service rates
- Minimize transaction costs (e.g., payments)
- Estimate adoption and default rates.
- Identify program weaknesses (e.g., tenure; measure selection)
- Define pilot target market (bldg type; owner and tenant type)
- Develop strategy for transaction cost minimization given segment-specific adoption rates

Program Risks

Discussion

Steven Moss

steven@moss.net

415.626.8723

Richard White

rgwhite1@gmail.com

415.601-7093



IV. Current & Proposed Pilots



C. PUBLIC COMMENT/QUESTIONS AND WRAP-UP



NATIONAL
HOUSING
TRUST

Implementing Energy Upgrades in Multifamily Affordable Housing

October 13, 2011 | Chicago, IL

New Jersey PSE&G Residential Multifamily Housing Program



- Residential subprogram targeting multifamily housing
- \$39 million investment total; \$19 M in 2009-2010; An additional \$20 M investment was approved for 2011-2012
- PSE&G partnered with the New Jersey Housing and Mortgage Finance Agency to develop the program
- Expected energy savings in 2011-2012 period:
 - 8, 400 MWh and 1,300,000 therms
- Total Resource Cost test= 2.9

PSE&G Program Overview



- Building owners receive an on-site investment grade energy audit –at no cost
- All measures having a simple payback of 15 years or less will be eligible
- Buy-down incentives provided to reduce cost by 7 years – but to no less than 2 years
- 0% On-bill financing provided for remainder

Iowa Multifamily GREEN



- Partnership of the Iowa Finance Authority, the Iowa Utility Association, Alliant Energy, MidAmerican Energy Company, Black Hills Energy, and the Energy Group.
- Purpose: To encourage the adoption of energy efficient technologies in low-income multifamily housing.
- Utilities pay **up to 40%** of the cost of cost-effective energy efficiency measures through enhanced rebates.

Iowa Multifamily GREEN Process



1. IFA reviews proposed project to determine if building qualifies as low-income multi-family housing
2. Energy conservation audit completed by a qualified, independent contractor
3. Energy efficiency measures presented to the owner
4. Energy savings recommendations are categorized as short term, mid term or long term based on the expected energy savings payback
5. Utility provides enhanced rebate, paying up to 40 percent of the costs of the measures
6. Property manager and owner determine what changes they will implement

MA's Utility-Funded Low-Income Multifamily Energy Retrofit Program



- Prior to the program, most owners of affordable multifamily housing gave up trying to access the utility programs.
- “One Stop Shop” simplifies utility-funded retrofits for multifamily affordable housing.
- Administered by utilities in collaboration with the MA Dept. of Housing and Community Development, public housing authorities, community development corporations, non-profit owners, tenant organizations, and community action program agencies.
- The electric utility-funded budget for 2011 is \$14 million, and the gas budget is \$8.5 million.

MA's Utility-Funded Low-Income Multifamily Energy Retrofit Program



- **Eligible Housing:** Existing low-income multifamily buildings (5 or more units) owned by public housing authorities or non-profits. Priority given to high energy use buildings and buildings undergoing rehabilitation.
- **Financing/Funding Sources:** Grants from utilities pay 100% of project costs. Spending caps exist. Leveraging of other funding sources is encouraged.
- **Eligible Measures:** Whole building energy assessment determines cost-effective measures. Program administrators develop comprehensive upgrade recommendations based on the energy audit.

Highlights of Promising Multifamily Utility Retrofit Programs



- Dedicated funding for multifamily housing
- Partnerships with housing agencies and intermediaries to help develop programs, screen applicants and deliver services
- Whole building approach
- Energy audits to determine cost effective measures
- One-stop shop for financing and technical assistance

VI (or V). Next Steps for ESAP

