

# Multifamily Weatherization Forum

*Building Better Energy Solutions*



**MF HERCC WEATHERIZATION TASK GROUP**

US DEPT. OF HOUSING & URBAN DEVELOPMENT

SAN FRANCISCO

FEBRUARY 10<sup>TH</sup>, 2011

# Welcome



**OPHELIA BASGAL**  
**HUD REGIONAL ADMINISTRATOR**

# Event Overview and Logistics



## FOCUS:

- Weatherization & Energy Efficiency Programs Serving Multifamily Low-Income Rental Properties

## OBJECTIVE:

- Better understanding of opportunities for coordinating & linking available resources to enhance energy performance outcomes

# Agenda

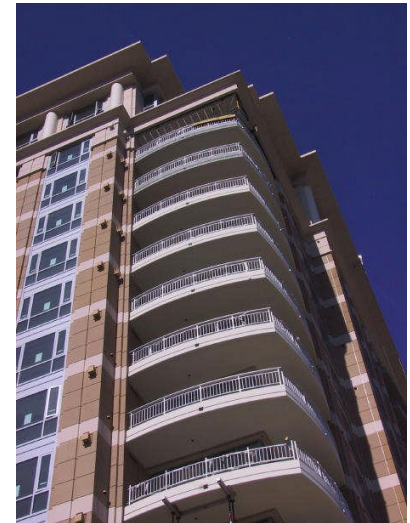


- **Overview of California Energy Efficiency Efforts Supporting Multifamily Low Income Rental Housing Sector**
- **Low-income Housing Practitioner Perspectives**
- **Whole Building Approaches**
- **Challenges & Opportunities for Coordinating Weatherization & Energy Efficiency Resources**
- **Challenges & Opportunities for Building Program Capacity**
- **WRAP UP**

# Introductions



**HEATHER LARSON**  
**STOPWASTE.ORG**



# Multifamily HERCC

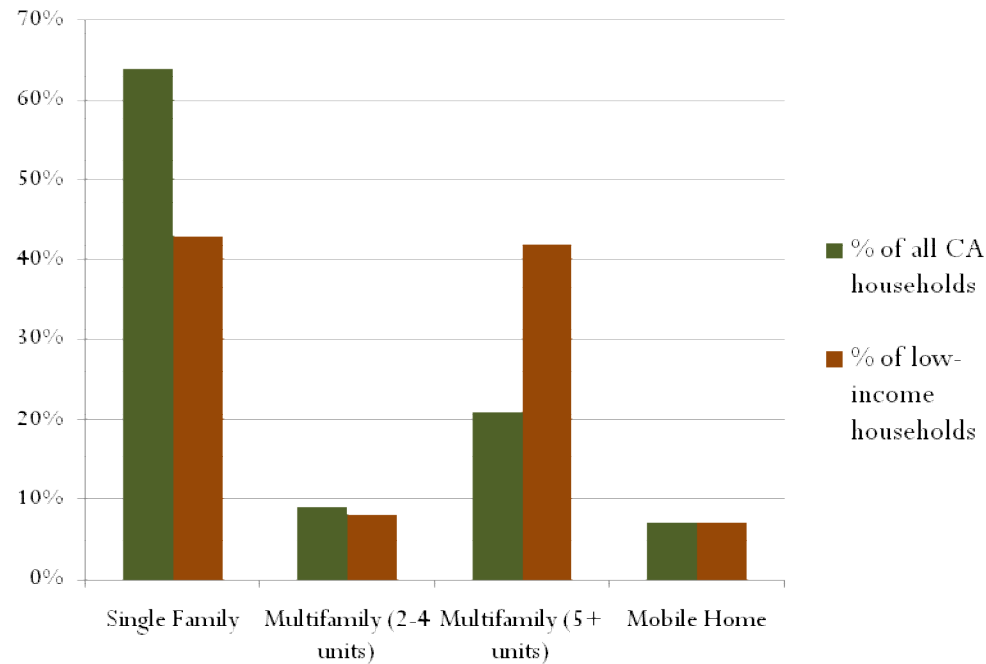


- **EPA Region IX convenes:**
  - CA Home Energy Retrofit Coordinating Committee (CA HERCC)
- **StopWaste.Org chairs:** Multifamily Sub-Committee (MF HERCC)
  - Develop consensus program design recommendations for financing & energy upgrade programs
  - Engage Stakeholders
    - ✦ Local, State, Federal Government
    - ✦ Utilities
    - ✦ Consultants & Industry professionals
  - Task Forces:
    - ✦ Professional Qualls & Training, Audit Protocols, IT Data Collection Protocols, Weatherization & low-income program coordination, HERS II MF tools

# Opportunities



- In California, approximately one-third of households reside in multifamily buildings. <sup>1</sup>



1. California Public Utilities Commission, "California Long-Term Energy Efficiency Strategic Plan," September 2008.

# Opportunities



- **> 70 % of MF housing units constructed before established building energy efficiency codes.<sup>2</sup>**
- **A 25% energy upgrade of 15% of current multifamily housing stock (~336,000 dwellings) = removing 80,000 passenger vehicles from road<sup>3</sup>**
  - 533,971 (MWh) of electricity
  - 37 million Therms of natural gas
  - 430,245 MTCO<sub>2</sub>E greenhouse gas emissions avoided

1. California Public Utilities Commission, "California Long-Term Energy Efficiency Strategic Plan," September 2008.

2. Energy Foundation, "U.S. Multifamily Energy Efficiency Potential by 2020," October 19, 2009, prepared by The Benningfield Group, Inc.

3. Methodology from the California Air Resources Board (CARB) AB 32 scoping plan as presented in GreenPoint Rated Existing Home Multifamily program report from StopWaste.Org to Energy Foundation, 2008.

# Multifamily Sub-sectors



Physical configuration:  
**High Rise/  
Low Rise**

Building ownership:  
**Affordable/  
Market Rate**

Unit ownership:  
**Rental/  
Condo**

Ownership & physical  
configuration:  
**Residential/Comm  
on Areas  
(Mixed-Use)**

Ownership & physical  
configuration:  
**Central/Individual  
Building Systems**

# Cost-Effective MF EE Measures



- **MF differs from Single Family:**
  - Common areas, garages, landscape lighting, central ventilation
  - Equipment commissioning & professional energy/property management
  - Limited area for installation of solar systems
  - Cool-roof & radiant barriers have less impact in taller buildings
  - Air infiltration to exterior is less of an issue than is heat & air transfer between dwelling units & common areas

# Cost-Effective MF EE Measures



- **(Central) Domestic Hot Water Systems = largest single savings opportunity in MF**
  - Less surface area than SF, less energy used for heating & cooling
    - ✦ Cooking & refrigeration comprise a larger portion of the energy budget
    - ✦ Appliance ownership is less common, often central laundry facilities or non at all
    - ✦ 13-40% of total MF energy use comes from appliances & lighting
- **CDHW**
  - Increase AFUE of the water heater
  - Solar pre-heat systems
  - Distribution system strategies



# Leveraging MF Financing



- **Federal Programs**

- Weatherization Assistance Program (WAP)
- HUD Green Retrofit Program (GRP)
- HUD Neighborhood Stabilization Program (NSP)
- Energy Efficiency Tax Deduction (ownership, HRMF commercial)

- **Affordable Housing Finance**

- State/Federal: TCAC/CDLAC/HCD/CalHFA (LIHTC/Bond Financing)
- Local: Housing & Redevelopment Agencies
- LISC, Enterprise, LIIF, National Housing Trust

- **Utility Programs** (various: see CPUC matrix appendix to MF HERCC doc)

- Energy Efficiency & Solar
- Low Income

# Low Income Energy Upgrade Programs



- **Federal, State, Utility**

- **Leading Sources**

- ✦ CPUC/IOUs – Low Income Energy Efficiency - \$178 million (LIHEAP Clearinghouse)
- ✦ HHS – Low Income Home Energy Assistance Program - \$ 49 million (2009)
- ✦ DOE – Weatherization Assistance Program - \$202 million (2009)
- ✦ DOE – State Energy Program – Residential Energy Programs

- **Supporting Sources**

- ✦ CALIF –Low Income Housing Tax Credit Program; Various housing programs
- ✦ HUD – Green Retrofit – \$27.2 million (*estimate at avg. \$10,000/unit*)
- ✦ HUD – Public Housing Capital Fund – \$36.7 million
- ✦ HUD – Neighborhood Stabilization – ~\$500 million (NSP1); \$318 million (NSP2)
- ✦ HUD – Property reserves, receipts; Capital and operations funding
- ✦ Many other housing sources.....

# Overview of CA Energy Efficiency Efforts



**MODERATOR:**  
DRA AT CPUC

**KEY PARTICIPANTS:**  
CPUC  
IOU  
CSD

# California Energy Efficiency Efforts



- **Core Question** – *How does the current program structure serve multifamily low income rental housing sector?*

# California Energy Efficiency Efforts



- **Focus:**

- **Scale of MF efforts:** *Funding, Units Improved, Investments per unit, Investment parameters*
- **Use of audits and assessment tools,** *Measures covered. Measures excluded*
- How is or should programs be targeted properties for (i) high energy usage, (ii) high energy burden (iii) high energy insecurity
- What Energy Education is provided to tenants
- How program is delivered. Can geographic or other categorical approach be considered (*e.g. city-by-city? neighborhood? housing authority? property owner?*)
- How does the NGAT combustion appliance safety test or other external requirements impact MF weatherization
- Planned program modifications/enhancements

# Low-income Rental Housing Practitioner Perspectives



**MODERATOR:**  
HUD

**KEY PARTICIPANTS:**  
EDEN HOUSING  
EBALDC  
BRIDGE HOUSING  
CHPC

# Housing Practitioner Perspectives



- **Core Questions** – *What is the affordable multifamily provider experience with weatherization/energy efficiency programs? What are key interests and objectives in accessing program?*
- **Focus:**
  - How are low income weatherization/energy efficiency programs used by MF providers
  - What measures or approaches are sought
  - What works? What are challenges
  - Are there regulatory barriers to participation
  - What is needed to increase MF property participations

# Whole Building Approaches



**MODERATOR:**

**STOPWASTE.ORG**

**KEY PARTICIPANTS:**

**CPUC**

**AEA**

**HMG**

# Whole Building Multifamily Approaches



- **Core Questions** – *How does CA plans to launch whole building MF programs under Energy Upgrade CA intersect with multifamily low income rental housing & adoption of whole building models? What are best practices/models for delivering a whole building program?*
- **Focus:**
  - Benefits of Whole Building Programs
  - Relationship between new whole building approaches & current low-income programs
  - Potential transition issues & challenges

# Energy Upgrade California → MF



- See MF HERCC Recommendations for CPUC summary of IOU MF programs
- D0909047 authorized Prescriptive and performance options for both SF & MF; expanding to MF in 2011
- “The types of program enhancements that the IOUs will consider to make the program more attractive to MF properties include:
  - ✦ Modifying the prescriptive measure list
  - ✦ Modifying the incentive levels; &
  - ✦ Including referral plans within a MF offering to coordinate with applicable non-IOU financing”<sup>4</sup>
- The MF HERCC and CEC-sponsored MF programs offer important models for expansion of IOU Energy Upgrade CA to MF

4. California Public Utilities Commission, “California Long-Term Energy Efficiency Strategic Plan,” September 2008.

# MF Single Measure & Performance Programs



Energy Upgrade CA

## Whole House/Whole Building Approach Prescriptive Package

Measures combination designed for min 10%- 20% whole building savings

## Whole House/Whole Building Approach Performance Approach

Performance Based building specific energy analysis & measures for min 10-20% whole building savings

Current State Wide MF IOU

## Statewide Multifamily Energy Efficiency Rebate (MFEER) Program

Individual measures without minimum % savings target or obligation to a prescribed package of measures

# Trigger Events



Trigger Event	Scope of Upgrade
<b>Tune-up/ Spruce-up</b>	Ongoing maintenance of mechanical equipment or lower cost, easier-to-implement measures that spruce up a property at time of sale or purchase such as servicing mechanical equipment, repainting common areas, or landscape & irrigation improvements.
<b>Replacement</b>	Replacement of specific central or individual equipment that is broken or aging, including water heaters, boilers, furnaces, air conditioners, appliances, lighting and irrigation systems.
<b>Unit turnover</b>	Unit-specific improvements made when occupants vacate. Common as standard building maintenance upon vacancy to undertake painting, carpet replacement, address moisture intrusion and other minor repairs, appliance replacement, and accessibility improvements.
<b>Retrofit</b>	Usually more limited in scope than a whole-building rehab, retrofits typically consist of a package of coordinated improvements designed to achieve a specific goal, such as seismic safety or energy efficiency.
<b>Rehab</b>	Building-wide overhaul may include remodeling common areas, upgrading structural elements, installing new electrical, plumbing and mechanical equipment, and more.

# Feasible % Improvement Targets



Building Vintage	Minimum % improvement	Baseline
Pre-1980 (pre-Title 24)	20%	CEC default (statewide average data)
1980–2000	15%	CEC default (statewide average data)
2001–2008	10%	Code compliance (detailed energy performance data by climate zone)

# Program Delivery



## Energy Consultant

- Prepares Title 24 code compliance and program compliance documentation: building simulation.
- Hired by **building owner** often as a subcontract through the architect or MEP engineer as part of the retrofit team.

## Rater/Verifier

- Verifies on-site condition of property at initial inspection/ diagnostics and at project installation verification.
- Conducts diagnostics, communicates with building owner and construction team, collects documentation from appropriate professionals necessary to verify installed measures.
- Can be same as Energy Consultant but not part of the construction team.

## Developer/Owner

- Enrolls to participate in energy efficiency program.
- Hires retrofit and construction teams with appropriate professional licensure and insurance; hires Rater/Energy Consultant.
- Directs/authorizes retrofit and construction team to comply with program requirements by installing recommended measures.

## Program Implementer

- Provides program compliance technical assistance.
- Facilitates building owner to hire Rater and align documentation with other funding applications.
- Facilitates team to submit code/program compliant documentation.
- Conducts quality assurance of plan submittals and HERS verifications on behalf of funder.
- Processes rebates.

# Program Delivery



- **Multifamily owners select their owner contractors**
  - Consultant vs. contractor program model
  - Resist being limited to program-approved contractors
- **Multifamily owners need to integrate incentives with multiple funding sources**
- **HERS has an established network of professional raters**
- **Existing multifamily programs already use successful rater/energy consultant model**

The slide features a green background with a pattern of hexagons. A dark grey rectangular area is positioned at the top. The main content is on a white rectangular background. The title 'HERCC Weatherization Forum' is written in green. Below it, the subtitle 'Whole Building Performance-Based Approach' is in bold black. The speaker's name 'Julieann Summerford' and organization 'Heschong Mahone Group' are listed in black. A green horizontal line is at the bottom of the white area.

# HERCC Weatherization Forum

***Whole Building  
Performance-Based  
Approach***

Julieann Summerford  
Heschong Mahone Group



# Leveraging IOU LIEE Single-Measure Program Example

- Offer flexible incentive structure
  - Build upon existing retrofit, single-measure programs
  - Without exceeding total retrofit costs or double-counting energy savings
- For performance-based
  - Offer incremental incentives only for measures not installed or incented by LIEE or WAP, moderate income, or prescriptive rebate programs

# Leveraging IOU LIEE Single-Measure Program Example

## Incremental incentive structure

- Building Owner: \$35/unit/% improvement for EUC measures only
- HERS II Rater: \$5/unit/% improvement for all measures

Measure Description	Program under which measure was installed	Cumulative Improvement Margin
Wall insulation	LIEE	5%
Hardwired fluorescent lighting fixtures	LIEE	9%
Dual pane windows	LIEE	13%
Central boiler replacement	Energy Upgrade CA	19%
ENERGY STAR® Refrigerators	Energy Upgrade CA	22%

EUC would pay incentives on the incremental improvement from 13% to 22% = 8%

*Building owner incentive =  $\$35 \times 8 = \$280$  per dwelling unit*

*HERS II Rater incentive =  $\$5 \times 22$  (total % improvement) = \$110 per dwelling unit*

For a 100 unit property, the owner would qualify for \$28,000 and the HERS II Rater \$11,000.



# SMUD Home Performance Multi-Family Program

- Goal: 2,000 multi-family units
  - Affordable housing is a SMUD area of focus
- \$3.2 million dollars available for incentives
  - First come, first served
- Program ends March 31, 2012. By this date:
  - All funding must be expended
  - All retrofit construction must be completed

Program Design

Retrofits Completed

Rater assessments conducted

Owner program applications submitted period

Q4 2010

Q1 2011

Q2 2011

Q3 2011

Q4 2011

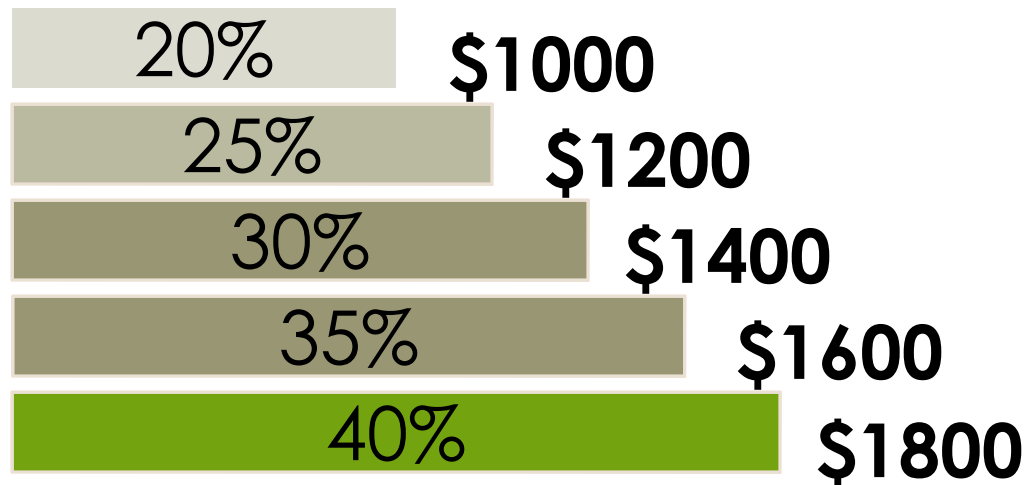
Q1 2012

30



## SMUD HPP - MF Incentives

- Per unit incentive based on minimum 20% improvement
  - Incremental \$40/unit per additional 1%



- Deep energy retrofit incentive \$2,500
- Incentives designed to help offset the retrofit costs:
- Paid upon completion of the retrofit

# HERS II Model

## Consultant-Based Model

- *Rater* is the foundation of the program, as the:
  - Auditor or 'assessor'
  - Energy modeler - HERS II or EnergyPro
  - Third-party verification agent
  - Provider of building energy score
- *Contractor* installs the measures, is hired by the owner
  - Contractor choice is up to the owner
- Rater and contractor cannot be the same company
  - Provides quality assurance – rater provides impartial assessment of property, verifies installation; contractor installs the measures

# Integrating Weatherization & EE Resources



**MODERATOR:**  
HUD

**KEY PARTICIPANTS:**  
CSD  
IOU  
CPUC  
CHPC/ENTERPRISE

# Coordination and Leveraging



- **Core Question** – *How can the energy efficiency programs serving multifamily low income rental housing be better designed, coordinated & leveraged to support “whole building” approaches? What challenges & opportunities exist to achieving a more integrated delivery of energy efficiency products & services?*

# Coordination & Leveraging



## **APPLICATION:**

- *What are challenges to developing a common application process?*
- *Can annual income certification records be used to establish eligibility?*

## **LEVERAGING:**

- *What opportunities exist to leverage and integrate energy efficiency and housing programs to accomplish energy retrofits?*
- *What “fair share” principles should be considered in undertaking “whole building” retrofits?*

## **COST EFFECTIVENESS:**

- *How is cost-effectiveness measured? What level of effectiveness must be achieved to justify energy investments?*
- *Do different cost-effectiveness protocols limit leveraging opportunities?*
- *Can leveraged resources write-down project costs to increase scope?*

# Coordination and Leveraging



## **SCOPE of WORK:**

- *Can agencies accept a building audit using an accepted protocol as a basis to defining a “Whole Building” scope of work without prejudicing the investment parameters and policies of the respective programs?*
- *What are the challenges in dividing a scope of work?*

## **SERVICE DELIVERY**

- *What are challenges to developing a single point of access approach for program delivery to affordable housing?*
- *Can agencies share contractors to deliver work?*

# Building Program Capacity



**MODERATOR:**  
**STOPWASTE.ORG**

**KEY PARTICIPANTS:**

**CSD**  
**RHA**  
**AEA**  
**BUILD IT GREEN**



# Building Program Capacity



- **Core Questions** – *Is there training or technical assistance that is needed in order to build competencies and capacity to serve multifamily low income rental housing?*
- *What supplemental training and technical enhancements are necessary to build competencies and capacity to serve multifamily building types?*
- *How can a performance based auditor /verifier model be integrated to the current contractor delivery model?*

# Building Program Capacity



- **FOCUS:**

- *Program delivery models- contractor vs. auditor verifier as they pertain to single measure vs. whole building performance*
- *Intersection of HERS model and weatherization programs*
- *Standards and Protocols for Whole Building Assessments*
- *Workforce Readiness: Training and Certification*
- *Performance Tracking*

# MF Workforce Development



- **Mf HERCC reference docs:**
  - Audit Template
  - MF HERS II training outline
  - MF Professional Qualifications
- **Target MF training to 4 types of professionals who work on MF Buildings:**
  - Raters/Verifiers
  - Building Operators
  - Central Water Heating System Contractors
  - Energy Analysts

# Wrap-Up



# WRAP UP



- **Core Question** – *How to we continue dialog and pursue next steps?*
- **Focus:** *How can the participants in today’s discussion support the CPUC, CSD, and IOU objectives to:*
  - Achieve deeper and more cost-effective energy savings than current programs are capturing
  - Modify programs to benefit the currently underserved low-income tenants in multifamily rental housing
  - Supporting design and implementation of “whole building” approaches for low income multifamily housing

# A NEW FEDERAL APPROACH

