Home Energy Retrofit Coordinating Committee

MULTIFAMILY SUB-COMMITTEE
PROGRAM DESIGN & IMPLEMENTATION RECOMMENDATIONS

OCTOBER 8TH, 2010

STOPWASTE.ORG
Reducing the Waste Stream for Alameda County

Agenda Part 1

- **Introductions & Overview**
  - About MF HERCC
  - Understanding CA's Multifamily Retrofit Market
- **Program Design & Implementation Recommendations**
  - Program Delivery
  - Professional Qualification & Training
  - Prescriptive vs. Performance Whole-Building Approach
  - Energy Analysis Software
- **Lunch**
  - Networking

Agenda Part 2

- **Program Design & Implementation Recommendations Continued**
  - Low-income & Energy Efficiency Program Access & Coordination
  - Tracking & Navigation tool development
- **Plans for Emerging programs**
  - Open Discussion

Introductions

- **EPA Region IX**
- **California Home Energy Retrofit Coordinating Committee (CA HERCC)**
  - Develop consensus recommendations for financing & home retrofit programs
  - Various Stakeholders
    - Local, State, Federal Government
    - Utilities
    - Consultants
    - Industry professionals

Introductions

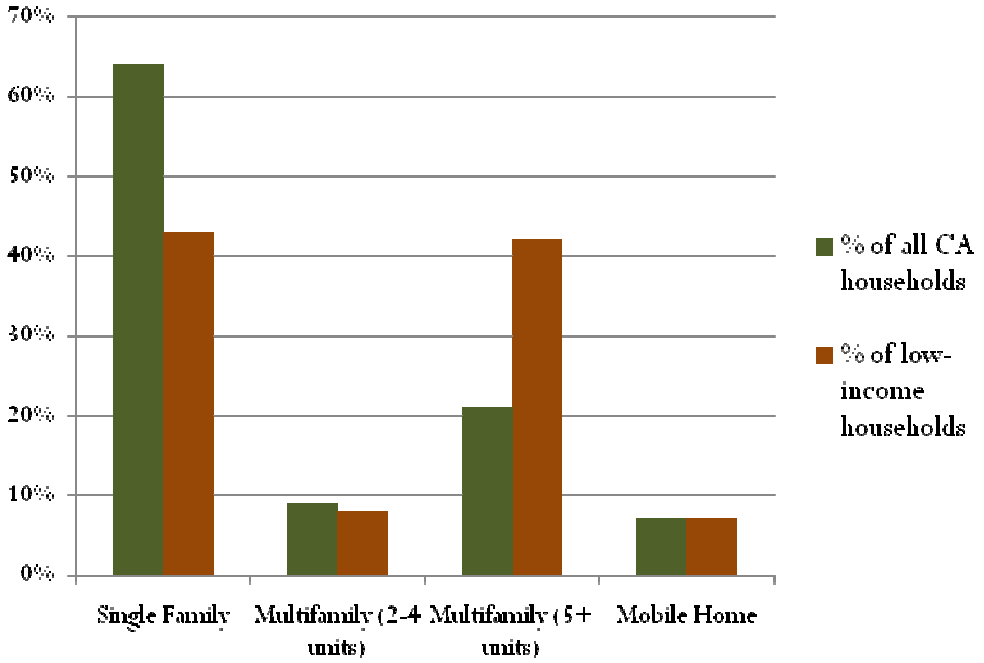
- **CA HERCC Multifamily Sub-Committee**
  - Develop consensus recommendations for financing & home retrofit programs
  - See roster for various programs
- **Task Forces: Audit Protocols, IT, Weatherization**
- **Progress to Date**
  - Developed Priority Action Items
  - 20% & 40% Improvement Packages in HERS II
  - BPI MF Analyst Training in May
  - Audit Protocol Document
  - Professional Qualifications & Training
  - Draft MF HERCC Recommendations - working document

Understanding CA's Multifamily Retrofit Market

HEATHER LARSON
GREEN BUILDING PROGRAM MANAGER
STOPWASTE.ORG

Opportunities

- In California, approximately one-third of households reside in multifamily buildings. [1]



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

Opportunities

- **Nationwide:**
  - > 70 % of MF housing units constructed before established building energy efficiency codes.[2]
- **In California:[3]**
  - >2.4 million existing mulitfamily dwelling units, 15% market penetration would be ~336,000 Dwellings
  - A 25% energy upgrade of 336,000 dwellings =
    - 533,971 megawatt-hours (MWh) of electricity
    - 37 million therms of natural gas
    - Avoided greenhouse gas emissions would be 430,245 MTCO2E annually

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

3. Calculations completed using 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.

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Understanding CA's Multifamily Market

- **MF Retrofit Challenges & Opportunities**
  - Building types
  - Financing
  - Split incentives
  - Trigger events
  - Cost-effective energy savings measures

Multifamily Sub-sectors

Physical configuration:
High Rise/ Low Rise

Building ownership:
Affordable/ Market Rate

Unit ownership:
Rental/ Condo

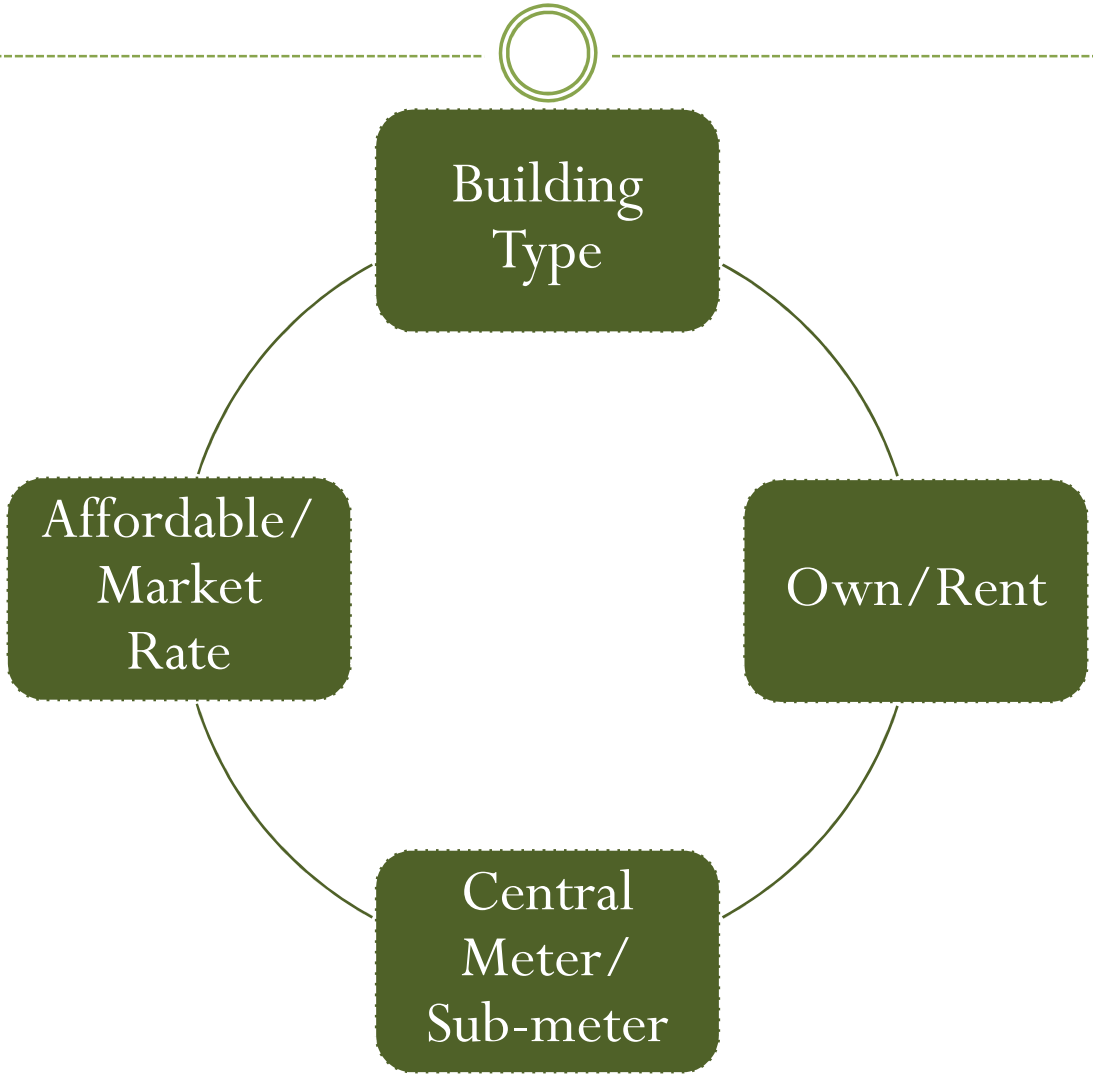
Ownership & physical configuration:
Residential/Common Areas (Mixed-Use)

Ownership & physical configuration:
Central/Individual Building Systems

Multifamily Building Types

Low-rise Multifamily	• Three or more attached dwelling units with less than four habitable stories.
High-rise Multifamily	• Three or more attached dwelling units with four or more habitable stories. Mid-rise multifamily is not defined separately in Title 24 but it is generally accepted in the industry to refer to multifamily buildings of four to six stories.
Mixed-use Multifamily	• Three or more attached dwelling units as well as nonresidential spaces within one building envelope. Residential common areas and corridors as well as commercial spaces are treated as nonresidential spaces.
Small Multifamily	• Three to eight attached dwelling units that are in the configuration of a single-family home, such as a Victorian house converted into apartments, to which single-family protocols can be applied on a case-by case basis.
Multifamily Central Systems	• Three or more attached dwelling units that share a common water heater or space conditioning equipment.

MF Decision Making Factors

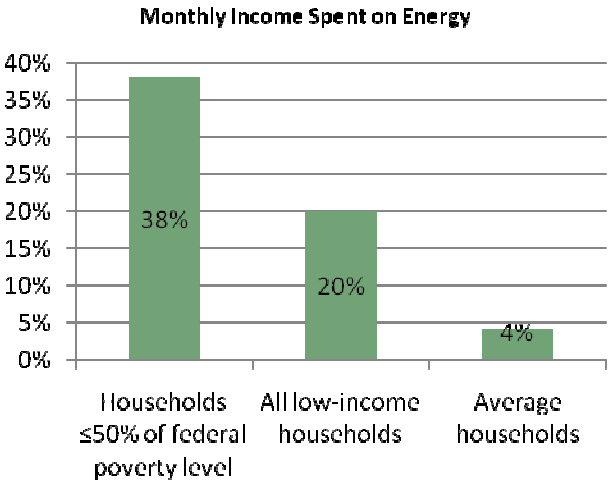


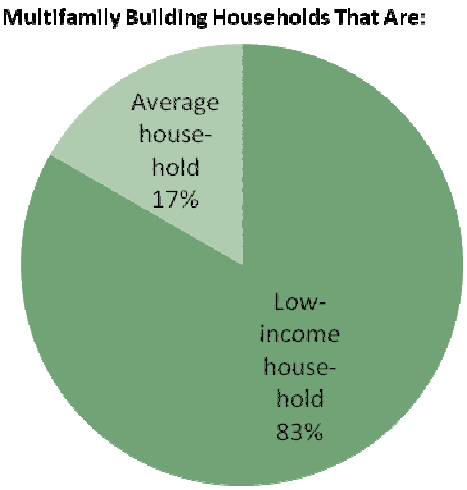
Leveraging MF Financing

- **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, National Housing Trust, StopWaste.Org
- **Utility Programs** **(various: see CPUC matrix)**
  - Energy Efficiency & Solar
  - Low Income

Split Incentives

- **Divergent Economic Interests in Multifamily Rental Housing**
  - Owner/Developers
  - Tenants
- **Divergent Economic Interests in Multifamily Condos**
  - Common Areas
  - Dwelling Units





Trigger Events

Trigger Event	Scope of Upgrade
Tune-up/ Spruce-up	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.
Replacement	Replacement of specific central or individual equipment that is broken or aging, including water heaters, boilers, furnaces, air conditioners, appliances, lighting and irrigation systems.
Unit turnover	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.
Retrofit	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.
Rehab	Building-wide overhaul may include remodeling common areas, upgrading structural elements, installing new electrical, plumbing and mechanical equipment, and more.

Cost-Effective Energy Saving Measures

- **(Central) Domestic Hot Water Systems = largest single savings opportunity in MF <u>across CZ & building types</u>**
  - Less surface area to exterior than SF, less energy used for heating & cooling
- **CDHW**
  - Increase AFUE of the water heater
  - Solar pre-heat systems
  - Distribution system strategies
    - extra pipe insulation
    - recirculation & temperature modulation controls
    - high-efficiency recirculation pumps
  - CDHW Savings weighed against hot water sub-metering limitations

Cost-Effective Energy Saving Measures

- **MF differs from Single Family:**
  - Common area, garage & landscape lighting
  - Equipment commissioning & professional energy/property management
  - Limited area for installation of photovoltaic arrays
  - Measures such as cool-roof & radiant barriers have less impact in taller buildings where the roof is less surface area than the walls
  - Air infiltration to the exterior is less of an issue with multifamily buildings than is heat & air transfer between dwelling units & between dwelling units & common areas.
  - Common exhaust ventilation systems for kitchens, bathrooms & laundry rooms

Cost-Effective Energy Saving Measures

- **MF differs from Single Family:**
  - Less energy in heating & cooling through reduced exterior surface area
    - Cooking & refrigeration comprise a larger portion of the energy budget
  - HERS II analysis of average dwelling unit:
    - In coastal climate zones approximately 40% of overall MF energy from appliances & lighting
    - In inland climate zones approximately 13% of overall MF energy from appliances & lighting
  - Appliance ownership is less common
  - Often have central laundry facilities or no on-premises laundry

MF HERCC Recommendations

- **Recommendations & Analysis in five specific areas:**
  - Program delivery
  - Professional qualification and training
  - Prescriptive vs. performance whole-building approach
  - Improving the applicability of energy analysis software to the multifamily sector
  - Coordination of low-income and energy efficiency programs

MF HERCC Recommendations

CA HERCC CONVENED BY:

LEIF MAGNUSON, EPA REGION IX

MF HERCC SUB-COMMITTEE CHAIRED BY:

KAREN KHO & HEATHER LARSON, STOPWASTE.ORG

MF HERCC MEMBERS- TODAY'S PANELISTS:

JULIEANN SUMMERFORD, HESCHONG MAHONE GROUP
BRUCE MAST, BUILD IT GREEN
DOUG BEAMAN, DOUGLAS BEAMAN & ASSOCIATES
WAYNE WAITE, HUD
MARYANN LESHIN, ENTERPRISE

Program Delivery

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DIRECTOR OF IMPLEMENTATION
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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**

Example MF Incentive Package

Type of Incentive	Function of Incentive
Cash rebates for meeting performance targets	Offset cost of installed upgrade measures
Added cash incentives ("kickers")	Encourage exceptional performance well beyond the program goals/encourage comprehensive third-party verified green building program certification
Rater verification rebate	Offset cost to building owner of hiring rater/verifier
Energy consultant rebate	Offset cost to building owner of hiring energy consultant
Technical assistance	Help owners meet program requirements and align energy compliance documentation with other funding sources
Building operator training	Provide free or discounted building operator training to improve developer/owner's ability to operate buildings efficiently
Marketing assistance	Assist developer/owner with promoting energy efficiency efforts through benefits such as labeling programs, awards, publicity opportunities and collateral material

Program Delivery

- **Example Program Process**
  - Application
    - Hire HERS rater or team
    - Collect billing data
  - Energy audit and analysis
    - Submit audit data and building simulation documents
    - Propose package of measures to improve energy efficiency by 20% over existing conditions
  - Plan check and approval
    - Commitment to install recommended measures achieving 20% improvement
  - Retrofit construction
    - Building owner hires contractor(s) to install recommended measures
  - Verification
    - HERS rater verifies installation of qualifying measures
    - Submit verification documentation
  - Request incentives

BRUCE MAST

DEVELOPMENT DIRECTOR
BUILD IT GREEN

Professional Qualifications & Training

- **Target MF training to 4 types of professionals who work on MF Buildings:**
  - Raters/Verifiers
  - Building Operators
  - Central Water Heating System Contractors
  - Energy Analysts
- **Rater Qualifications & Training:**
  - SEE *MF Professional Qualifications* HAND OUT
  - See *Auditor/Verifier Team Qualifications* HAND OUT

Professional Qualifications & Training

- **Rater Qualifications & Training:**
  - SEE *MF Professional Qualifications* HAND OUT
  - SEE *MF HERCC Audit Protocol Template*
  - Deliver Pilot multifamily supplemental training in November 2009
  - Work through-out SEP & BBP funding cycles to integrate improved multifamily protocols to CEC HERS program
- **Multifamily Supplement to HERS II Training**
  - In Oakland: November 29th - December 3rd
  - Delivered by: Build It Green & CalCERTS
  - Technical Consultants/Trainers: HMG, AEA, Benningfield Group, Practica Consulting, BKI, Beaman & Associates, Sierra Building Science

Rater/Verifier Training

HERS II Multifamily Module:

Current HERS II includes Residential T-24 measures, cost-effective measure & Utility Billing analysis. Add specialty content as follows:

- MF Central Systems Efficiency & Controls
- MF Whole-building Sampling
- Renewable Energy Evaluation

GPR Existing Multifamily:

- Water, IAQ, Resources Measures
- Central Systems Operational Efficiency (BPI)
- High-rise Multifamily Proxy to HERS II
- Whole-Building Retrofits Over Time
  - Energy Pro MF Module: Improvement over baseline
  - Dwelling Unit Turn-over Energy & Green Measures
  - Green PNA/PCA

See Hand-out

Central Water Heating Systems Contractor Training

- **Central Water Heating Systems Contractor Training**
  - CDHW plumber (C-36) contractor license
  - Boiler (C-4) contractor license
  - Commissioning Agents
  - Building Systems & Controls Management Staff
- **BPI Multifamily Building Analyst Curriculum & CA T-24 Curriculum**
  - CDHW Tune-up & Controls measures
  - Central Boiler Heating
  - Combustion Safety

Operator/ Management Training

- **BPI Multifamily Building Operator**
- **Green O&M:**
  - Green Vendor Contracts
  - Building Operation Manuals
    - Green Specifications for building maintenance and product purchasing
    - CDHW & HVAC Systems Commissioning
- **Tennant Education**
  - Teach building management companies to provide info to tenants on Energy & Water Utility incentives available for in-unit features that the building owner might not have access to upgrade such as refrigerators, lighting, low-flow fixtures & toilets, etc.

Energy Analyst Training

- MF Curriculum to supplement core certifications:
  - HERS II Analyst
  - CABEC
    - Certified Energy Plans Examiner (CEPE) & Certified Energy Analyst (CEA)
- Supplemental topics include:
  - California Utility Allowance Calculator
  - Energy Pro's HERS II module
    - GreenPoint Rated & High-rise Multifamily
  - Supplemental operational energy auditing software
    - Treat
    - EA-QUIP
    - Other?

MF Existing Building Rater Training November 29th

- **Multifamily Supplement to HERS II Training**
  - Save the Date: November 29th - December 3rd
  - In Oakland on Lake Merritt
  - Delivered by: Build It Green & CalCERTS
  - Look for training details & registration end of October 2010.

Prescriptive vs. Performance

DOUGLAS BEAMAN

PRINCIPAL
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MF Prescriptive & Performance Programs

Energy Upgrade CA

Whole House/Whole Building Approach

Basic Package

Prescriptive Package of measures combination designed for min 10%- 20% whole building savings

Whole House/Whole Building Approach

Advanced Package

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

Prescriptive Based measures offered for individual upgraded equipment or appliances without minimum % savings target or obligation to a prescribed package of measures

Performance Approach & Cost Analysis

- **Whole-building programs:**
  - Is it a good idea to provide statewide whole-building prescriptive packages to equal whole-building performance approach?
  - What would be a feasible performance improvement target for various MF building types & vintages?
  - What is the estimated cost to achieve 10%, 15%, 20% savings?
  - What incentive amount would be enough to spur retrofit activity?
- **Discussion for end of today:**
  - What will be the relationship between current prescriptive based programs & emerging whole-building programs?

Prototype MF Bldgs

- **Real MF buildings into CEC defaults**
  - 4 unit low-rise, 40 unit low-rise, 80 unit high-rise
- **Performance Improvement Measures = 20% & 40%**
  - All 16 Climate Zones (CZ)
  - T-24 approach: Heating, Cooling & DHW only
    - Central & individual water heating
    - Gas & electric heating
    - Minor lighting load
  - HERS II approach: Add significant Lighting & Appliances
  - Three Vintages
    - Pre code
    - 1980-2000
    - 2001 code

Feasible Improvement Targets

- 10 % energy improvement feasible for all building types, system types, vintages & climate zones
- 20 % improvement required upgrades to both windows and wall insulation in many climate zones.
- 40 % improvement is often not possible to achieve in coastal climate zones without the use of solar pre-heat for domestic water heating.

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)

Summary of Costs

- See Hand-out
- For a 40-unit low-rise building built before 1980
  - achieving a 20 percent performance improvement might include
    - improving the attic & wall insulation
    - replacing windows
    - sealing ducts
  - The estimated cost would be $2,861 per dwelling unit, with a straight line payback ranging from 5.2 years to 14.3 years, depending on the climate zone.

Summary of Costs

- **For the same prototype building built between 1980 & 2000**
  - achieving a 15 % performance improvement might include
    - improving attic insulation
    - sealing and insulating ducts
    - verifying refrigerant charge
    - replacing air conditioners & water heaters.
  - The cost per dwelling unit is estimated at $3,117, with a payback ranging from 6.6 years to 9.9 years, depending on climate zone.

Summary of Costs

- **For the same prototype building built between 2001 & 2008**
  - Achieving a 10 % performance improvement might include
    - improving attic insulation
    - verifying refrigerant charge
    - sealing and insulating ducts
    - replacing water heaters
  - Estimated cost of $1,970 per dwelling unit and a payback ranging from 9.5 to 19.1 years

Energy Analysis Software

DOUGLAS BEAMAN

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DOUGLAS BEAMAN & ASSOCIATES

Software Recommendations

- Use code compliance software as standard baseline reference for energy savings reporting in ARRA, local government or utility funded programs
- Use supplemental software programs where necessary to optimize analysis of energy savings opportunities
- Apply CEC HERS II residential multifamily low-rise protocols to high-rise multifamily in ACM software
- Align funding programs' software analysis requirements to reduce administrative barriers to leveraging resources from multiple programs

HERS II Software

- Compare multiple runs (several proposed improvement package options) against existing conditions (baseline)
- Receive a building performance score relative to 2008 code & Net Zero Energy.
- Create a summary report of resulting energy savings in therm, kWh and kW for baseline versus options (proposed) using California TDV methodology.

HERS II Software Improvements

- **Better allocate savings from residential appliances & lighting**
- **Treat high-rise multifamily similarly to low-rise**
- **Compare building improvements not only to existing conditions but also to Title 24 (benchmark)/CEC vintage defaults.**
  - Account for improvements made over the life of the structure.
- **Longer term require a T-24 code change:**
  - CDHW recirculation controls (time-clock, temperature modulation controls & demand controls)
  - Ventilation in high-rise multifamily buildings

Lunch!

Co-ordination Low-income & Energy Efficiency

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MANAGER, FIELD ENERGY & CLIMATE OPERATIONS
OFFICE OF SUSTAINABLE HOUSING & COMMUNITIES
DEPARTMENT OF HOUSING & URBAN DEVELOPMENT

MARYANN LESHIN

DIRECTOR, NORTHERN CALIFORNIA PROGRAMS
ENTERPRISE COMMUNITY PARTNERS, INC.

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 – $170 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 capital and operations funding
    - Many other housing sources…..

Aligning Program Design

Procedural Barriers Affecting Access –

- Application and Income Qualifications
- Role and Responsibility of Property Owner

Policy Barriers Affecting Program Scope & Results –

- Investment Focus: Household vs. *"Whole Building " or Property*
- Investment Criteria: Prescriptive Scopes vs. *Performance-Based*
- Measurement of Success: Production output vs. *Outcome metrics*

Technical Barriers Affecting Program Delivery –

- Multiple Diagnostic and Assessment Tools
- Capacity Limitations
- Data Gaps
- Multiple Points of Delivery

Recommendation

- **Develop common platform to integrate and coordinate energy efficiency programs serving low-income households**

ACTIONS:

- Coordinate and integrate resources to bring retrofits to scale
- Standardize program eligibility & application requirements
- Adopt consistent assessment and investment protocols
- Track and evaluate performance
- Development “one stop” service delivery concept
- Reconcile conflicting statutory requirements and policies

Platform Design: PARITY

- **Enhance Program Access by Multifamily Properties**

ACTIONS:

- Provide targeted “Fair Share” allocation of program resources to enable development of viable energy efficiency retrofit models

Platform Design: ACCESS

- **Enhance Program Access by Multifamily Properties**

ACTIONS:

- Enable property owners and managers to apply for assistance on behalf of low income tenants
- Allow use of certified annual incomes to determine household eligibility
- Allow “whole property” approaches if low income tenant occupancy reaches thresholds

Platform Design: PERFORMANCE-BASED

- **Establish "*performance-based whole property*" energy retrofit scoping and funding for low income multifamily properties**

ACTIONS:

- Establish a process for analyzing the energy efficiency needs of MF properties that addresses the performance of the whole building, not just the individual residential units
- Establish programs that fund the cost to install a package of optimal energy efficiency measures based on a whole building analysis

Platform Design: AUDITS

- **Establish energy auditing conventions for use across low-income energy efficiency programs**

ACTIONS:

- Develop standardized energy assessment and auditing protocols for low income energy efficiency programs based on CEC adopted protocols
- Increase programmatic flexibility in cross use and acceptance of recognized energy auditing protocols to achieve greater program integration and coordination
- Ensure that there is sufficient supply of trained and qualified energy auditors to meet multifamily energy auditing demands

Platform Design: DATA

- **Establish cross program approach to track and monitor post-retrofit energy performance**

  ACTIONS:

  - Develop consistent standards and methodology for collecting and reporting energy performance data
  - Establish mechanisms and protocols to enable utility information sharing that meet privacy obligations and enables evaluation of energy consumption
  - Develop data base and evaluate “real” energy performance to assist capital markets understand financial benefits of energy efficiency upgrades

Platform Design: DELIVERY

- **Establish service delivery mechanisms that allows for energy efficiency programs to be effectively implemented at multifamily properties**

ACTIONS:

- Permit use of common administrators, contractors or energy efficiency service networks to deliver energy efficiency upgrades
- Allow property owners to manager approved energy efficiency retrofits using qualified contractors subject to approval by funding agencies

MF Navigational Tool

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DIRECTOR OF IMPLEMENTATION
HESCHONG MAHONE GROUP, INC

Background: Common Questions

- Can you help me navigate green programs?
- Which program is right for my property?
- Which of my properties are ripe for whole-building analysis and investment?
- How can I get money for green upgrades?
- Which program is right for my property?
- I have money. How should I best invest it in energy efficiency?
  - Which properties?
  - Which upgrade measures?

Purpose: Customized Guidance

- **Guide property owners/asset managers to:**

  FIRST

  - Identify potential upgrade opportunities for each property
    - No one size fits all approaches
    - Varying scales from equipment tune-up to whole-building rehab

  THEN

  - Prioritize properties by need and readiness for retrofit/rehab
  - Match property needs and opportunities to available programs and funding

Tool Elements

- Rehab Navigator – guides user to appropriate retrofit approach and measure opportunities
- Program Matching – matches measure opportunities and location to available programs
- Tools and Resources Library – links to green resources and tools
- Property Tracking – tracks upgrade measures implemented over time

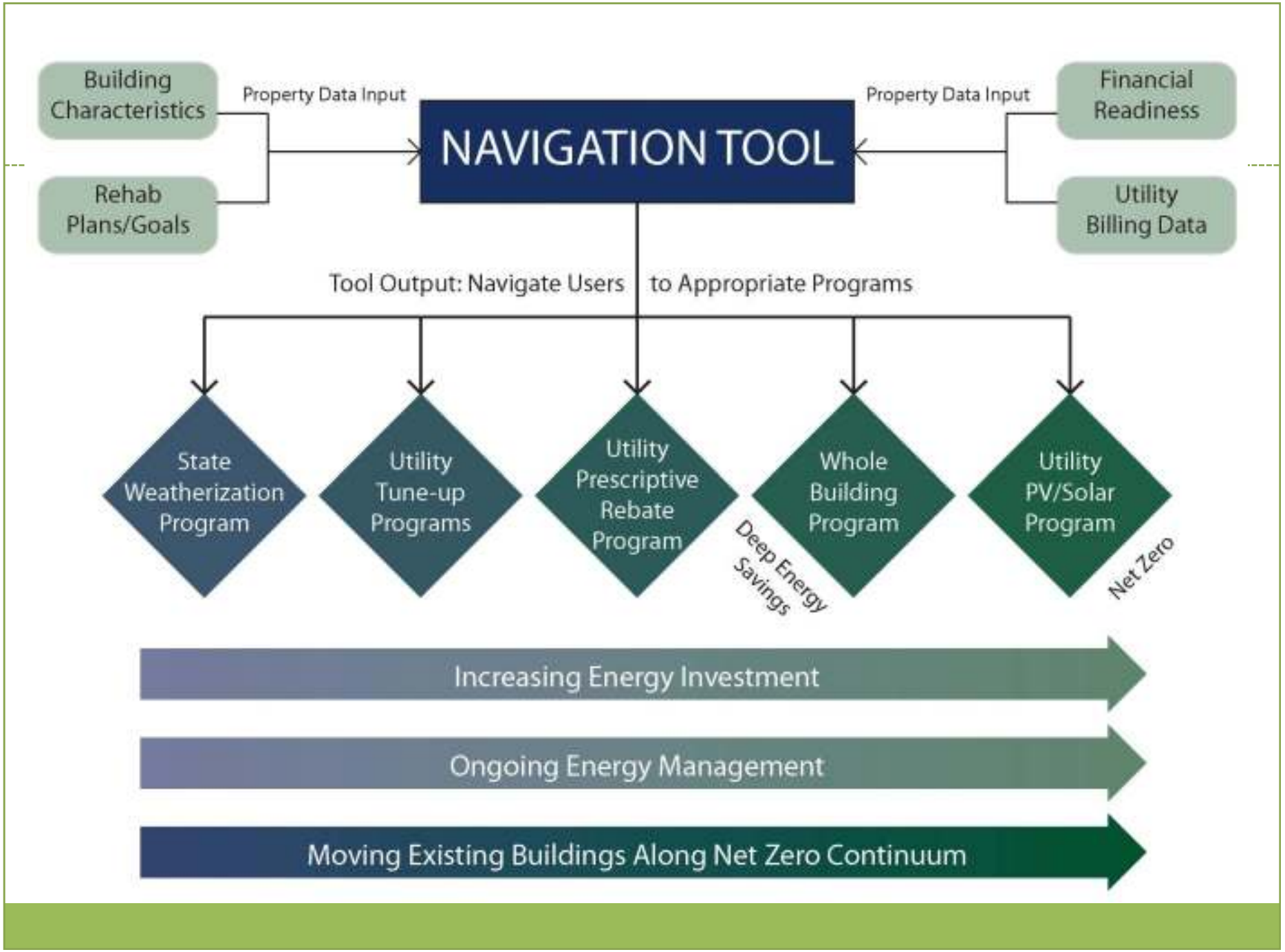
Navigational Tool

INPUT

- **Location**
- **Utility billing**
  - Metering and payment structure
  - Providers
- **Building vintage**
- **Building components/systems**
  - Type
  - Vintage
- **Financing structure and available funds**

OUTPUT

- **Retrofit approach**
  - Tune-up
  - Prescriptive replacement
  - Whole-building rehab
- **Measure opportunities**
- **Matching programs by:**
  - Approach
  - Measures
  - Location
- **Property ranking for upgrade within the portfolio**


Building Characteristics
Rehab Plans/Goals
Property Data Input
NAVIGATION TOOL
Property Data Input
Financial Readiness
Utility Billing Data
Tool Output: Navigate Users to Appropriate Programs
State Weatherization Program
Utility Tune-up Programs
Utility Prescriptive Rebate Program
Whole Building Program
Deep Energy Savings
Utility PV/Solar Program
Net Zero
Increasing Energy Investment
Ongoing Energy Management
Moving Existing Buildings Along Net Zero Continuum

User Interface

- **Log-in for return visits**
- **Dashboard**
  - Prioritized list of portfolio properties
  - Links to resources and tools
- **Property view**
  - Property data
  - Matched retrofit approaches/measure opportunities
  - Matched programs
  - Property history/tracking

Program Tool

- Prequalifies buildings for whole-building programs
- Avoids ‘all or nothing’ option by guiding properties not ripe for whole-building investments to other programs - encourages ‘some’ action
- Marketing tool for other programs
- Can be used as a continued energy management tool
  - Identify and plan upgrades over time
- Encourages building owners to become more familiar with the energy systems in their buildings


Improve:
-Efficiency
-Comfort
-Air Quality
Determine Approach & Indentify Programs
Analyze Properties
Determine Investment Level
Secure Best value Contractor
Energy Efficiency Upgrades
Track Progress
O&M Best Practices
Promote Tenant Con-servation
Influence Ongoing Energy Management
Develop Infrastructure
Provide Incentives

Current & Emerging MF Programs

CATHLEEN FOGEL, PH.D.

SENIOR ANALYST
CALIFORNIA PUBLIC UTILITIES COMMISSION

BECKIE MENTEN

VISTING RESEARCH FELLOW AT
CALIFORNIA PUBLIC UTILITIES COMMISSION

Energy Upgrade California→ MF

- D0909047 authorized Prescriptive and performance options for both SF and 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; and
  - Including referral plans within a MF offering to coordinate with applicable non-IOU financing"
- The CA HERC and CEC-sponsored MF programs offer important models for expansion of IOU Energy Upgrade CA to MF

Multifamily IOU Programs

- **Structure of IOU Programs**
  - Three Year Cycle
  - Core EE Programs, Low Income Programs
  - Statewide, Third Party, Partnership Programs
- **Programs for Multifamily**
  - Low Income
  - Multifamily Specific
  - Residential Programs
  - Commercial Programs
  - Third Party / Partnership Programs

Commercial vs. Residential?

- **Three distinguishing characteristics:**
  - Residential dwelling or common area?
  - Residential billing rate or commercial rate?
  - Does owner live on premises?

Low Income Programs

- **Low Income Energy Efficiency Program**
  - Income Qualified: 200% Federal Poverty
  - Five or More Dwelling Units
  - Application / Income Verification for Each Tenant
  - No Cost Energy Efficiency / Appliance Repair and Replacement Measures

Residential and Multifamily Specific Programs

- **Home Energy Efficiency Survey**
  - Online or Checklist DIY Home Energy Assessments
- **Moderate Income Direct Install**
  - No Cost Measures for Income Qualified Participants (200-400% of Federal Poverty Level)
  - Can Serve Common Areas of LIEE Projects
  - Intended to Offer Similar Measures as the Prescriptive Whole House Program
- **Multifamily Energy Efficiency Rebate Program**
  - Prescribed Rebates for the a Variety of Measures
    - Building Envelope, Lighting, Appliance Upgrades, HVAC
  - Multifamily property owners or managers of buildings with 2 or more units

CF11

Slide 73

CF11 Not sure where you got this info, I am not familiar with it. The MIDI pilot I know of is PG&E only, and does not target MF units, that I know of, let alone serve the common areas. Delete if you are not sure of this info; I sent summary info on PG&E's MIDI pilot, but again, it does not target MF that I know of.
Cathleen A. Fogel, 9/14/2010

Residential and Multifamily Programs, con.

- **California Advanced Homes Program**
  - Provides Tiered Performance Based Incentives with Kickers for PV, Compact, and Green Certified Homes
  - Design and Technical Assistance Available
  - Incentive Levels Start at $0.18 / kWh, $0.73 / therm, and $27.63 / kW for 15% Above Title 24; Base Incentive of $100 / unit.
- **California Multifamily New Homes**
  - Multifamily Specific Version of CAHP Offered in PG&E Territory
  - Similar Incentive Levels
  - Additional Incentives for Utilizing an Energy Consultant on Project Team ($50 / unit) and Third Party Verification ($60 / unit)

  - Both new homes programs may be used for “to the studs” MF renovations

Commercial Programs

- **Non-residential Energy Audits**
  - Basic, Integrated, and Retrocommissioning Audits Offered Based on Size of Facility
  - Commercial Utility Rate
- **Commercial Calculated Incentives**
  - Calculated Incentives and Technical Assistance
  - $0.05 / kWh (lighting), $0.15 / kWh AC&R I, $1.00 / therm natural gas, $0.09 / kWh AC&R II, $0.09 / kWh all other measures. All measures receive a $100 / Peak KW incentive.
- **On-Bill Financing**
  - Commercial Rate MF Complexes Where Owner Does not Live on Site
  - Common Areas Only, NOT Residential

Other Core EE Programs

- **Appliance Recycling Program (NOT SCG)**
  - Free Appliance Recycling and Cash Incentive
- **QI/QM Duct Testing and Sealing, Refrigerant Charge and Airflow**
  - Contractors Receive an Incentive to Perform QI / QM Services on Existing HVAC Systems
- **San Francisco Energy Watch Multifamily Plus Program**
  - Free Energy Audit and Incentives for Lighting, HVAC, and Building Envelope Measures
  - Both Common Areas and Residential Dwelling Units

CF12

Slide 76

CF12 CAn you check with Anne Premo on this (awp@cpuc.ca.gov). I believe Sempra offers this too (SDG&E and SCG).
Cathleen A. Fogel, 9/14/2010

Third Party Programs

- **Multifamily Solar Heating Program (SCG)**
  - Encourages Building Owners and Property Managers to Install Solar Heating for Large Pools
- **Multifamily Tune-Up / Direct Therm Savings Program (SCG)**
  - Direct Installation of DHW Efficiency Measures (Low Flow Showerheads, Pipe Insulation, etc)
- **On Demand Efficiency (SCG)**
  - Sale and Installation of Recirculation Pumps to Qualified Customers; Applies to MF Residences with Central Boilers and no Existing Control
- **Hot Water Control (SDG&E)**
  - Serves Central DHW Control Systems in Non-Residential Facilities

CF13

Slide 77

CF13 For these 3P programs, indicate geography they serve if you know it.
Cathleen A. Fogel, 9/14/2010

Emerging Programs

- **Energy Upgrade California**
  - Program Launches in October with Incentives for Single Family
  - CPUC Decision and CPUC-approved IOU Program Plan Supports Development of a Multifamily Component to this Program
- **Blended Program Concepts?**
  - Investigating Barriers and Feasibility to Combining Program Offerings
    - eg. A Building Owner has LIEE Performed, but the Central DHW System Does not Qualify. Solution? Leverage Existing Third Party Programs with Incentives for DHW Efficiency Measures
    - eg. Explore utilizing direct install LIEE measures in conjunction with Energy Upgrade CA MF performance program
    - eg. PG&E pilot?

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Open Discussion

Thank you!

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