



New Foundations for Community-based Energy Efficiency
Presented by US HUD

June 17, 2009

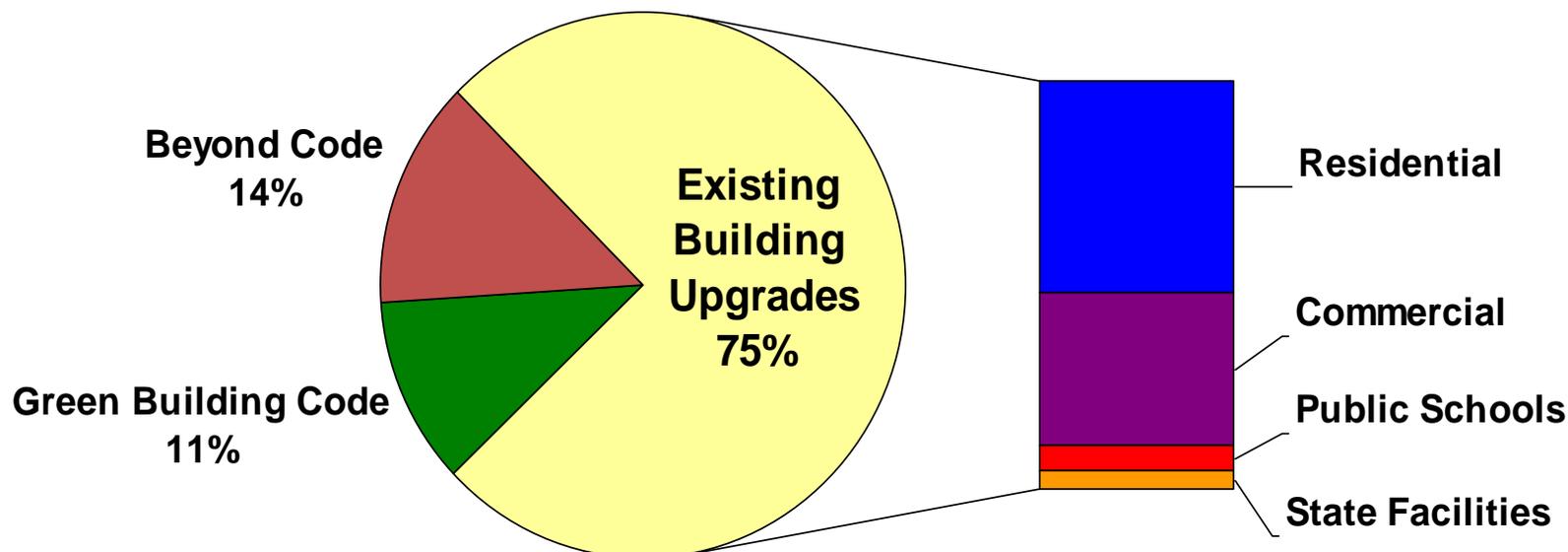
Integrating Green Building, Home Performance, and NSP

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Climate Action Opportunity: Retrofit Existing Homes

- ❖ Existing homes offer #1 GHG reduction potential
- ❖ Over 13 million existing homes in California
- ❖ 70% of housing predates Energy Standards
- ❖ 2/3 of all buildings that will exist in 2050 have already been built





What is a Comprehensive Home Energy Retrofit?



Source: Renewable and Appropriate Energy Lab



What is a Comprehensive Home Energy Retrofit?

- ❖ **Comprehensive Retrofit Fixes the Right Things First**
- ❖ Start with diagnostic testing, envelope improvements, & duct sealing to
 - Lower the necessary size and cost of mechanical equipment
 - Achieve 30-40% energy savings at low cost





Home Energy Retrofits as Economic Stimulus

❖ Good Potential for Jobs Creation & Tax Revenues

- 1.1 jobs and \$30,200 in tax revenues for every \$100,000 spent on residential remodeling

National Association of Home Builders

- 110,000 jobs for every 1 million homes retrofitted per year

Sustainable Spaces Inc.

❖ Opportunity to Re-employ Local Workers

- Home energy retrofits are labor-intensive jobs involving a locally trained construction workforce



Green Home Retrofits Address Multiple Goals

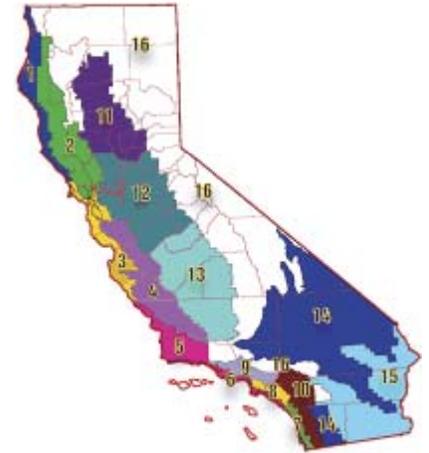


- ❖ Promote home energy retrofits as 1st step toward comprehensive green home improvements



GreenPoint Rated

- ❖ Consumer label backed by third party verification provides credible yet accessible standard for green homes
- ❖ Toolkit for local government program implementation
 - Comprehensive checklist of best practices
 - Community Design
 - Energy Efficiency
 - Indoor Air Quality
 - Resource Conservation
 - Water Conservation
 - 3rd party verification protocols
 - Certified GreenPoint Rater network
 - Tracking system & Climate calculator





GreenPoint Rated Existing Home

- ❖ First comprehensive existing home program in the nation
- ❖ Mirrors GreenPoint Rated New Home
- ❖ Credible criteria based on nationally accepted standards for home performance
- ❖ Compatible with Home Performance with Energy Star (HPwES)
- ❖ Matches California Energy Commission's HERS Phase II protocols for evaluation criteria for existing homes



GreenPoint Rated for NSP Rehab

❖ Basic health & safety + low-cost measures can qualify a rehab project as **GreenPoint Rated Elements**

| Project Name | | Required Renovation Practices (NSP) | Cost Effective Pathway | Points Achieved | Community | Energy | Indoor Health | Resource | Water |
|---|--|-------------------------------------|------------------------|-----------------|-----------|--------|---------------|----------|-------|
| H. HEATING, VENTILATION & AIR CONDITIONING | | | | | | | | | |
| 1. General HVAC Equipment Verification and Correction | | | | | | | | | |
| Yes | a. Visual Survey of Installation of HVAC Equipment (Required for Whole House and Elements) | X | | | | | 2 | | |
| Yes | b. Conduct Diagnostic Testing to Evaluate System | | X | 2 | | | 2 | | |
| No | c. Conduct Flow Hood Test and Assess Delivery of Air | | | | | | 1 | | |
| No | d. Air Conditioning Compressor Operates Properly and Refrigerant Charge is Optimal | | | | | | 1 | | |
| No | 2. Design and Install HVAC System to ACCA Manuals J, D and S | | | | | | 4 | | |
| 3. Sealed Combustion Units | | | | | | | | | |
| Yes | a. Furnaces | | X | 2 | | | 2 | | |
| No | b. Water heaters | | | | | | 2 | | |
| 4. Zoned, Hydronic Radiant Heating | | | | | | | | | |
| Yes | 5. High Efficiency Air Conditioning with Environmentally Responsible Refrigerants | | X | 1 | 1 | | 1 | | |
| 6. Effective Ductwork Installation | | | | | | | | | |
| No | a. New Ductwork and HVAC unit installed Within Conditioned Space | | | | | | 1 | | |
| Yes | b. Duct Mastic Used on All Ducts, Joints and Seams | | X | 1 | | | 1 | | |
| No | c. Ductwork installed under Attic Insulation (Buried Ducts) | | | | | | 1 | | |
| No | d. Ductwork System Is Pressure Relieved | | | | | | 1 | | |
| Yes | 7. High Efficiency HVAC Filter (MERV 6+) | | X | 1 | | | 1 | | |
| No | 8. No Fireplace OR Sealed Gas Fireplaces with Efficiency Rating ≥80% using CSA Standards | | | | | | 1 | | |
| 9. Effective Exhaust Systems Installed in Bathrooms and Kitchens | | | | | | | | | |
| ≥90% | a. ENERGY STAR Bathroom Fans Vented to the Outside | | X | 1 | | | 1 | | |
| ≥90% | b. All Bathroom Fans are on Timer or Humidistat | | X | 1 | | | 1 | | |
| Yes | c. Kitchen Range Hood Vented to the Outside | | X | 1 | | | 1 | | |
| 10. Mechanical Ventilation System for Civilian Installed | | | | | | | | | |

| | | | | | | |
|---------------------------------------|-----------|----------|-----------|-----------|----------|-----------|
| Total Available Points | 224+ | 26 | 93 | 47 | 79 | 44 |
| Minimum Points Required (Whole House) | 50 | | 20 | 5 | 6 | 8 |
| Minimum Points Required (Elements) | 25 | | 8 | 2 | 2 | 4 |
| Total Points Achieved | 49 | 1 | 18 | 11 | 9 | 14 |



GreenPoint Rated Aligns NSP with Climate Action Goals

- ❖ Savings from building green:
 - Therms
 - kWh
 - GHGs of refrigerant
 - Waste (tons)
 - Gallons of water indoors & outdoors
 - Vehicle miles traveled
- ❖ CO₂ equivalents of all above
- ❖ Forecasted and actual savings
- ❖ Footprint
- ❖ Scope 1, 2 & 3 emissions
- ❖ Results on GPR Consumer label

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GreenPointRATED

EXISTING HOME

Whole House

ADDRESS: Freeda Court
732 Hayes Avenue
Livermore CA, 94550

YEAR BUILT: 1950, upgraded to 2005 codes

BASED ON: Single Family, ver. 1.0

PERFORMANCE ABOVE A CONVENTIONAL
HOME BUILT IN THE SAME YEAR.



Estimated resources saved versus a conventional home

5368 gallons of water saved per year

7443 kilowatt hours saved per year

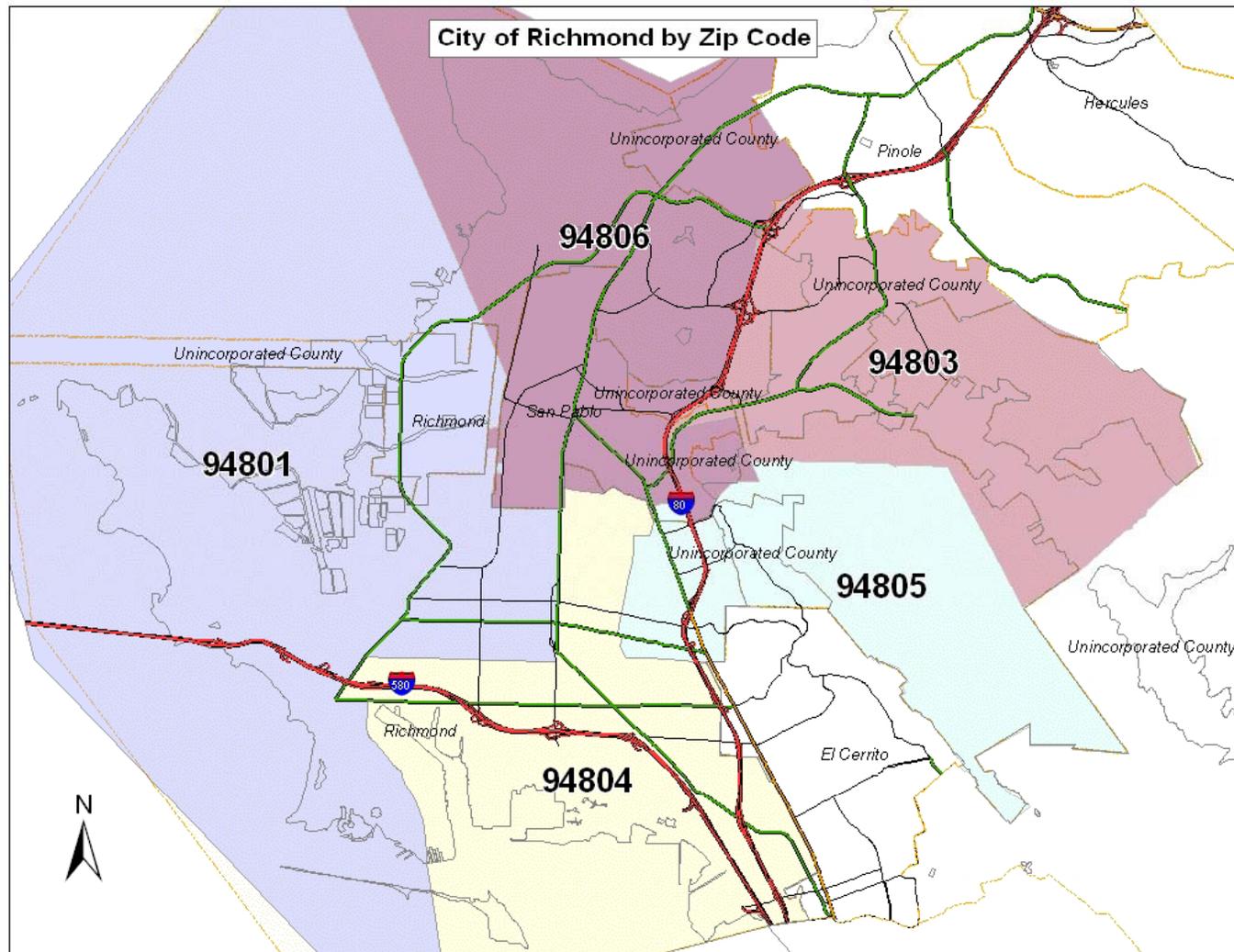
5 tons of CO₂ emissions avoided per year

34% energy efficiency improvement overall

www.GreenPointRated.org

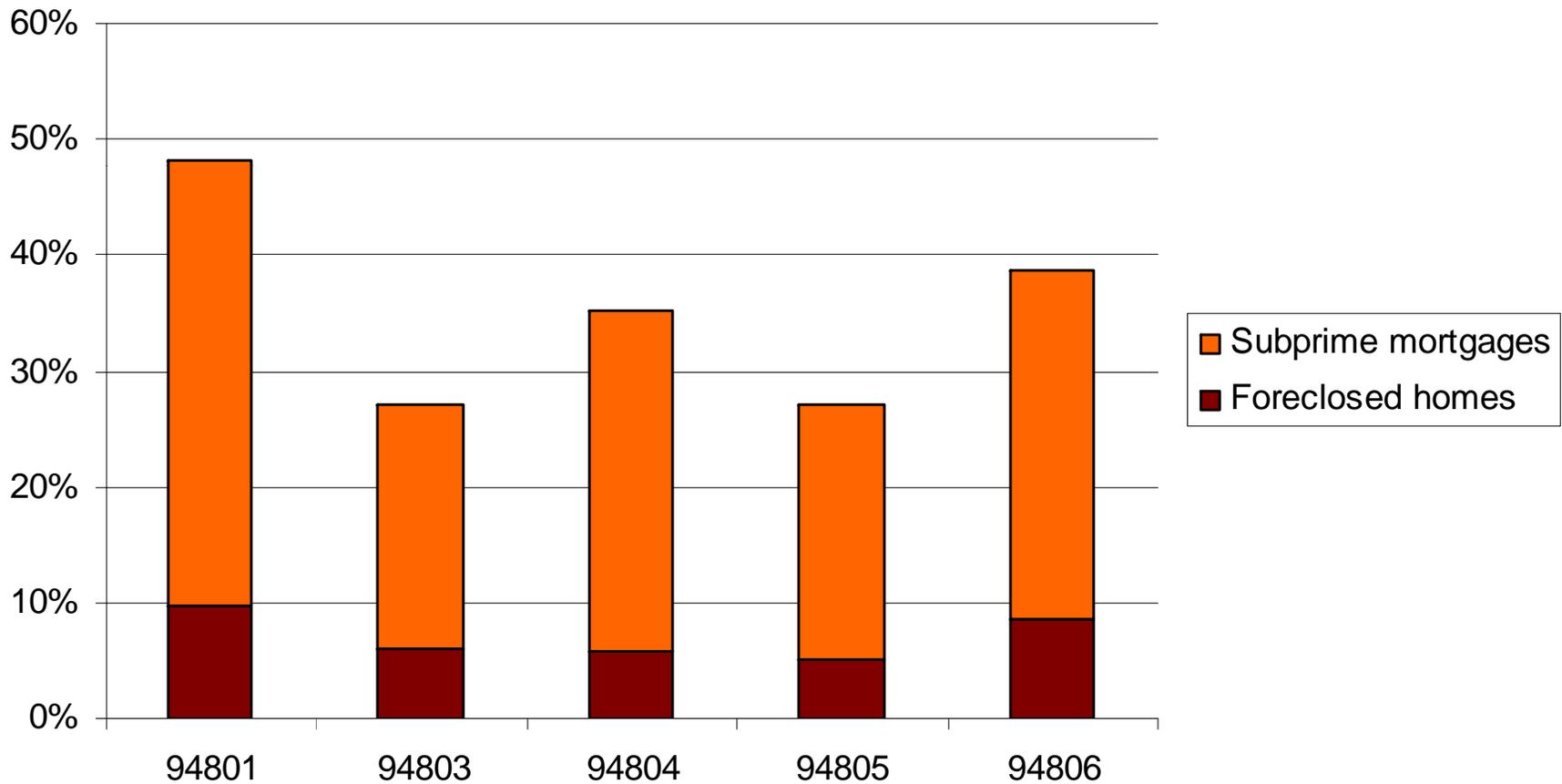


Demonstrating Feasibility: the City of Richmond Proposal





Foreclosure & Subprime Mortgage Rates





NSP Targets

- ❖ Program \$3.3 million to impact 76 parcels
- ❖ 3 high priority zip codes

| Zip Code | Residential Parcels | % Foreclosures | Total Foreclosures |
|--------------|------------------------|----------------|-----------------------|
| 94801 | 6,945 | 9.8% | 681 |
| 94803 | 3,703 | 6.0% | 222 |
| 94804 | 11,558 | 5.7% | 657 |
| 94805 | 4,472 | 5.2% | 232 |
| 94806 | 3,794 | 8.6% | 326 |
| TOTAL | 30,472 | 7.0% | 2,118 |



Prior City Actions on AB32

- ❖ Greenhouse Gas Emissions Inventory
- ❖ Energy and Climate Change Element in the General Plan
- ❖ Municipal Green Building Ordinance
- ❖ GreenPoint Rated requirements for new homes



Proposed Approach

❖ Planning

- Set criteria for selecting neighborhoods & homes
- Integrate green workforce development & building performance contracting
- Develop rehab standards / model specs
- Establish Quality Assurance mechanism
- Provide cost estimation, financial advisory services, analysis

❖ Demonstration

- Acquire & rehab 3-5 homes, applying Best Practices from planning phase



Home selection: repair or demolish?

❖ 2 bdr 1 bath; 812 sq ft;
built 1950; \$47,900





Prioritized Rehab Standards

1. Health and Safety

- Conduct repairs and improvements to ensure long-term safety and health of occupants
- Reduce likelihood of major repairs in the future
- Improve indoor air quality

2. Building Performance

- Improve energy performance of the home
- Reduce utility bills
- Promote water conservation practices

3. Cosmetic Improvements

- Improve the aesthetic appearance of the home
- Increase likelihood and speed of home sale
- Contribute to property value increases and community enhancement in surrounding area



Quality Assurance: Contractor Credentialing Required

| Skill Set | Credential |
|------------------------------|--|
| Home Performance Contracting | Building Performance Contractor, BPI Certified Building Analyst  |
| Home Energy Rating | California Whole House Home Energy Rater |
| Green Building | GreenPoint Rater  |



In Summary...

- ❖ Build It Green seeks to...
 - Preserve and expand affordable housing stock
 - Demonstrate feasibility of comprehensive green rehabs within financial parameters of NSP
 - Support City of Richmond's response to climate change
 - Deliver comfort, health, and economic benefits to residents
 - Support self-sufficient, local home performance industry



Contact Us

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