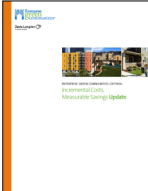
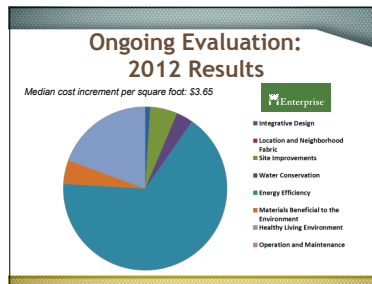


## Incremental Costs, Measurable Savings UPDATE



New Report Findings reinforce 2009 report results:

*Lifetime utility savings exceed upfront investment to integrate the Criteria into affordable housing.*



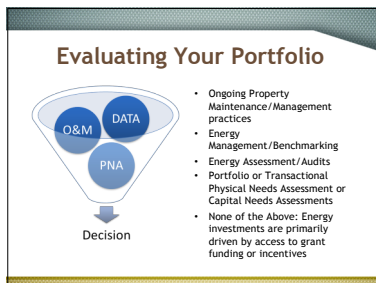
## Ongoing Evaluation: 2012 Results

Financial Impacts of Green Affordable Housing

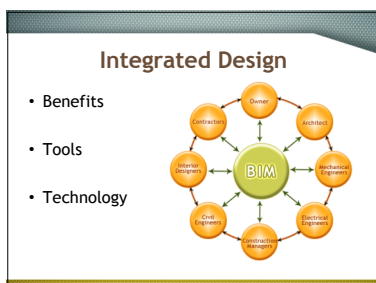
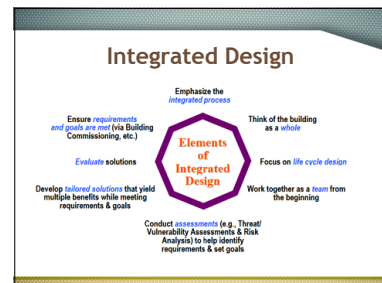
Median Cost of Meeting Green Communities Criteria	
Green premium per ownership/rental unit	\$3,546
Green premium per square foot	\$3.65
Percent added to total development cost	2%


Median Lifetime Savings from Energy and Water Conservation Measures	
Utility savings per home/rental unit	\$3,709
Utility savings per square foot	\$3.87
Internal rate of return	16.8%
Simple payback period (years)	5.89



- ## Evaluating Investment Approaches
- Simple Payback
  - Return on Investment
  - Savings to Investment Ratio
  - Life Cycle Costing
  - Resource: Handbook 135 National Institutes of Standards and Technology



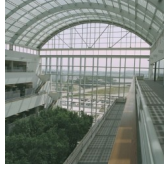
## Local Utility Costs



Wind NRG Partners, Hinesburg, VT  
Photo: Carolyn L. Bates

- Energy Type
- Cost Trends
- Portfolio Energy Sources
- Distribution and Generation Providers

## Energy Efficiency and Conservation Measures



EPA Regional Headquarters, Kansas City, KS

- Whole Building Assessment
- Related Systems
- Long Term Savings

## Assembling Your Team



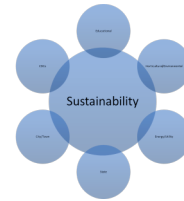
- Team Composition
- Strengths and Challenges
- Transactions as Tools

## Identifying Partners



City of Philadelphia Launches 10-Week Green Power Community Challenge  
Philadelphia citizens and local businesses encouraged to enroll for green power; help make Philadelphia the leader among all EPA Green Power Communities

## Identifying Partners



## Module 1: Exercise



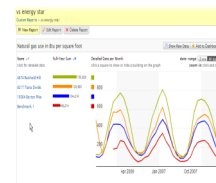
## Module 2

Project Scope:  
Finding and Assessing Opportunities



## Assessing Asset Performance

- Energy Data Collection
- Energy Benchmarking
- Energy Audits
- CO2 Emissions

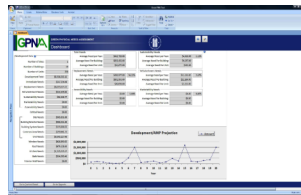


## Capital Scope Checklist



- Comprehensive Measures
- Operations and Maintenance Communication
- Commissioning

## Capital Project Checklist



## Energy Star Portfolio Manager

- Tools
- Energy Audit



## Capital Project Priorities



Chesapeake Bay Foundation  
Philip Merrill Environmental Center  
Photo: Robb Williamson

- Opportunity to accelerate system upgrades
- Improve whole building performance
- Generate long term energy and water cost savings
- Generate operations and maintenance savings

## Measurement and Verification



Los Angeles County, CA  
Casa Dominguez

- Commissioning
- Retrocommissioning
- Quality Assurance

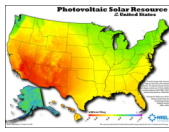
## Measurement and Verification



Los Angeles County, CA  
Casa Dominguez

- Benchmarking
- Energy Audit

## On-site Renewable Energy



Viking Terrace Kick-Off,  
Worthington, MN

- Solar Hot Water
- Geothermal
- Hydrogen Fuel Cell
- Wind
- Biomass
- Hydroelectric

## On-site Renewable Energy



- Assessing Economic Feasibility
- Funding Resources
- Partnership Opportunities

## Staff and Resident: Training and Education

- Professional Certifications/ Accreditations
- LEED AP O&M
- Certified Sustainable Property Management
- Affordable Green Academy
- Building Performance Institute
- Neighborworks

## Charrettes

- Integrated Design Tool
- Opportunity to Save by Averting Project Obstacles
- Stakeholder Buy-In

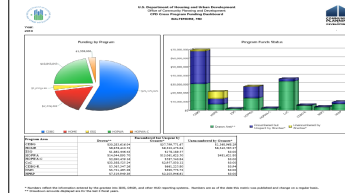


## Charrettes



## Module 3: Exercise





		U.S. Department of Housing and Urban Development The U.S. Department of Housing and Urban Development Office of Community Planning and Development CPE Core Program Funding Policy NEW ORLEANS, LA						
Program Area	Grant Type	Funding Year	Amount Available	Expected to be Expended by End of Fiscal Year	By Number	Receipts/RAH	Eligible Activities	Additional/Other Information for Obligations & Disbursements
<b>Priority Programs</b>								
Community Development	Periodic	2011	\$14,010,000				Public Housing Homeownership Housing Rehabilitation Public Services Disaster Economic Rehabilitation Preservation Other	<b>Eligibility:</b> CDBG needs funds associated with an activity that is a priority for the community. Eligible activities include: as mentioned and have no cap on the amount of funding that can be used in the end of the fiscal year. The amount of funding that can be used in the end of the fiscal year is determined by the amount of funding that is available for the CDBG year. Other funds are permitted to be used for the CDBG year.
Public Housing	Periodic	2011	\$17,417,000			\$0		
Other	Periodic	2011	\$17,417,000					
Other	Periodic	2011	\$17,417,000	\$2,527,500	\$13,889,500			

HOME Investment Partnerships Program (HOME)	Formula	2011	\$6,388,045	2018 Formula to Comply by 10/1/2019 \$1,873,620	2018 Formula to Comply by 10/1/2019 \$1,873,620	<ul style="list-style-type: none"> <li>* Acquisition</li> <li>* New Construction</li> <li>* Rehabilitation</li> <li>* Rental Assistance (Capex at 10%)</li> </ul>	Under 20 CFR 81.600(a)(2) Commitments: within 2 years,  ODC investments within 2 years,  Commitments: within 5 years
		2010	\$7,234,250				
		2009	\$7,242,820				
		Total:	\$20,861,994	\$6,382,425	\$1,843,885		

							* Purchase of leased property	Under H&A Obligations 24 months % (2011)
Neighborhood Dedication Program I (NCP-I)	Formula	2008	\$2,362,238	\$97,492	\$746,966	Not Calculated	* Rehabilitation and building improvement of properties * Redevelopment of vacant or demolished properties	



Gary Manor, Gary, Indiana

- Framework
- Eligible Costs
- Compatible Funding

- Benefits
- Challenges

- Framework
- Eligible Costs
- Compatible Funding

	State	OTIF/OTIF Proceeds	Additional Funds Leveraged	Leverage Ratio	Type of Tax Credits
Seattle I	WA	\$1,227,000	\$2,107,575	1.00	4
Seattle II	WA	\$4,366,702	\$1,066,066	1.00	4
Seattle III	WA	\$2,120,756	\$2,102,149	1.73	4
Seattle Total		\$4,070,458	\$604,890	1.40	
Albany	NY	\$9,730	\$7,139,561	0.86	4
Indianapolis	IN	\$4,702,249	\$9,396,031	1.78	4
Denver	CO	\$14,098,202	\$7,087,759	2.19	4
King County	WA	\$16,488,000	\$16,817,979	6.95	4
St. Louis	MO	\$5,448,688	\$7,959,354	1.39	4
Shreveport	LA	\$907,093	\$4,666,030	7.25	9
Highland Park	IL	\$1,000,000	\$2,500,000	6.66	9
Citron	MO	\$675,000	\$2,263,244	3.50	9
Puerto Rico	PR	\$378,768,000	\$378,000,000	0.62	

### PIH: Operating Fund Finance Program

- Framework
- Benefits
- Challenges

### Rental Assistance Demonstration: RAD

- Framework
- Benefits
- Challenges

### PIH: Energy Performance Contracting



- Framework
- Eligible Costs
- Compatible Funding
- Benefits
- Challenges

### Fannie Mae - Green Refinance Plus



- Framework
- Eligible Costs
- Compatible Funding
- Benefits
- Challenges

### FHA - Multifamily Products

Enhancing Energy Efficiency and Green Building Design in Section 202 and Section 811 Program



- 811 and 202
- Eligible Costs
- Compatible Funding

### FHA - Single Family EEM

- Framework
- Eligible Costs
- Compatible Funding
- Benefits
- HERS Report



### FHA - Single Family 203K

- Framework
- Eligible Costs
- Compatible Funding
- Benefits
- Challenges



### FHA - Single Family Powersaver

- Framework
- Eligible Costs
- Compatible Funding
- Benefits
- Challenges



### Case Study: City Gardens Fannie Mae Green Refi Plus



### Module 3: Exercise



### Module 4

Financing Programs and Strategies



### Renewable Energy Tax Credits: Single Family



- Framework
- Compatible Funding
- Benefits
- Challenges

### Renewable Energy Tax Credits: ITC

- Eligible Costs
- Benefits
- Challenges



### Layering RETC and Other Tax Credits



- Low Income Housing Tax Credits (LIHTC)
- New Markets Tax Credits (NMTC)
- Historic Tax Credits (HTC)
- Example: Solara, Poway CA

### Bonds

- Qualified Energy Conservation Bonds
- Clean Renewable Energy Bonds
- Tax Exempt Bonds
- Support Team



### DOE Weatherization Assistance Program

- Framework
- Eligible Costs
- Compatible Funding
- Benefits
- Challenges



### State Loan Programs for Energy Efficiency



### Rebates

- Up front capital cost
- Energy Audit
- Approved installers



## State Energy Credits

- Energy Distribution and Generation Suppliers required to produce renewable energy
- Solar Alternative Energy Credits/  
• Solar Renewable Energy Certificates
- Certified eligible generators of renewable energy

## ESCO Savings Guarantee and Shared Savings

- Energy Services Company
- Contract term
- Shared savings
- Benefits
- Challenges

## Power Purchase Agreements



## Energy Efficiency Based Utility Allowance

- An alternative utility allowance, determined by local PHA
- Projects must achieve a specified level of efficiency (e.g., 15% above code)
- Typically mirror existing state/local utility program requirements

## Utility Programs and Incentives



## Pool Project Financing

- Framework
- Benefits
- Challenges



## Emerging Tool: Green Banks



## CASE STUDY Kenmore Apartments

Owner:  
Chicago Housing Authority

Location:  
Chicago, IL

Completed:  
December 2010



Photo credit: CHA

## Case Study: Kenmore Apartments Chicago, IL

- Multi-unit residential
- Rehab
- 100 one bedroom units
- 90,000 ft<sup>2</sup>
- Urban setting
- USGBC LEED NC v2.2 --Level: Platinum
- Priorities: water conservation, indoor air quality

## Case Study: Kenmore Apartments Chicago, IL

- Financing Mechanisms
  - Equity: LIHTC
  - Grant: Private (foundation), public agency (ARRA)
  - Loans: Public institution
- Total hard cost (land excluded): \$18,522,547

## Case Study: Kenmore Apartments Chicago, IL



## Case Study: Kenmore Apartments Chicago, IL

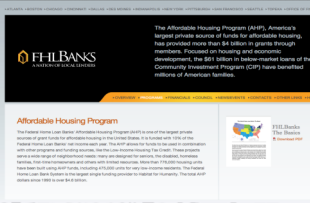


## Module 5

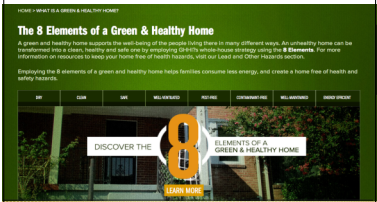
### Funding Soft Costs



## Federal Home Loan Bank



## Green and Healthy Homes Initiative



## Foundations and Other Sources



DCHA Resident Leaders

- MacArthur
- With Every Heartbeat is Life
- Enterprise Community Partners
- LISC

## Local Partner Organizations



## Module 6

### Which Funding Options Are Right For You?



