



Boston Housing Authority Energy Performance Contract

A Case Narrative

Presented January 6, 2010



Project Team

- Boston Housing Authority
 - Dan Helmes, Energy Manager
 - Gail Livingston, Director of Operations
 - Dean Papademetriou, BHA Attorney
- Ameresco
 - Janice DeBarros, V.P.
 - Mike Daigneault, Director of Project Development
 - Steve Simon, Account Representative
 - Bob Persons, P.E., Senior Project Management Engineer
- ADI:
 - John Rizzo, P.E., Consultant
- Crews & Associates, Project Finance
 - Edmond Hurst
 - Mark Brown



PROJECT OVERVIEW



Project Chronology (1)

- *December 2003* Proposals received; Citizen's Energy, at that time a subsidiary of Ameresco, designated as ESP.
- *Early 2004* After designation, Citizen's became a division of Ameresco; Ameresco proposed a turn-key project in contrast to Citizen's open-book proposal.
- *September, 2005* Ameresco proposes 12-year, \$31 million project; after negotiations this becomes a \$28.4 million project.
- *2006* New regulations permitting 20-year energy contracts issued as part of the 2006 energy bill.
- *March-June 2006* BHA seeks and obtains waiver to allow 20-year contract for this procurement.
- *March/April 2007* Pricing discussions with Ameresco over fixed price or open book with negotiated mark-up are concluded.



Project Chronology (2)

- *Spring, 2008* Finalize scope of work; complete contract.
- *Summer, 2008* Begin to seek financing; Bank of America submits proposal
- *Fall, 2008* Financial markets meltdown; B of A proposal withdrawn.
- *December 2008* Bank of America provides new proposal requiring 100% subsidy intercept.
- *January-March 2009* Other financing proposals sought/evaluated
- *August, 2009* Get Issuer Credit Rating from Standard and Poors
- (Un)Availability of Bond Insurance
- *September, 2009* Submit contract to HUD for approval



Energy Conservation Measures in Contract

| | |
|--|----------|
| ○ Replace Toilets with 1.28 GPF | 13 sites |
| ○ Replace Showerheads | 6 sites |
| ○ Replace Faucet Aerators | 9 sites |
| ○ Upgrade Common Area Lighting | 12 sites |
| ○ Upgrade Apartment Lighting | 5 sites |
| ○ Install Packaged Cogeneration | 1 site |
| ○ Install Solar Photovoltaic System | 1 site |
| ○ Weatherstrip Doors [HH] | 12 sites |
| ○ Install Limiting Thermostats or TRVs | 10 sites |
| ○ Replace DHW Systems | 1 sites |
| ○ Upgrade Boiler Controls | 7 sites |
| ○ Replace Space Heating Boilers | 1 sites |
| ○ Replace Steam Traps | 2 sites |
| ○ HVAC Plan B | 3 sites |
| ○ HVAC Plan C | 1 site |
| ○ Capital Project - Window Replacement | 1 site |
| ○ Capital Project - Roof Replacement | 1 site |



Three Phase Approach

- Phase One (approximately \$4 million):
 - Toilets/water ECMs
 - Fixed price
 - To commence as soon as possible after financing closes
- Phase Two (approximately \$43.7 million):
 - HVAC work at multiple sites
 - Final cost subject to design process
- Phase Three (approximately \$16.1 million):
 - Capital work
 - Improvements related to, or integral to, accomplishing core ECMs
 - No Annual Utility Cost savings generated
 - Final cost subject to design process



Phase 2 & 3 Design & Pricing

- BHA to review & approve all designs at 50, 90, & 100%
- Price for each scope to be established at 100% design
 - BHA can accept Ameresco revised price, or;
 - BHA can ask Ameresco to solicit proposals and use lowest responsible bidder multiplied by agreed-upon 1.3014 factor.
- Cost savings using this approach may allow for additional, identified contingent measures to be included



DESIGN AND CONSTRUCTION APPROACH



Design & Engineering

- Ameresco in-house capacity:
 - 10 State of Mass. Licensed Engineers
 - Wealth of experience in PHA projects, focused in the Northeast
 - Headquarters just minutes from BHA offices
- Ameresco capacity supplemented with local outside engineering firms, under Ameresco supervision & direction.
- BHA review capacity:
 - Energy Manager on staff
 - Engineering/Commissioning Agent
 - Heating Department Staff involved in project since inception
 - Modernization & Development Staff involved in project since inception



Construction

- Ameresco provides local designated Construction Managers & assistant project managers
 - Recent projects include Lowell, Providence, Worcester, Somerville
 - 20+ years experience in PHA projects, focused in the Northeast
 - Local HQ=extremely responsive project management
- Project schedule clearly delineated in advance, revised with BHA regularly as necessary
- 30 month anticipated construction schedule
- BHA review & inspection capacity:
 - Energy Manager on staff
 - Engineering/Commissioning Agent
 - BHA project-specific Clerk
 - Heating & Modernization Department Staff involved in project since inception

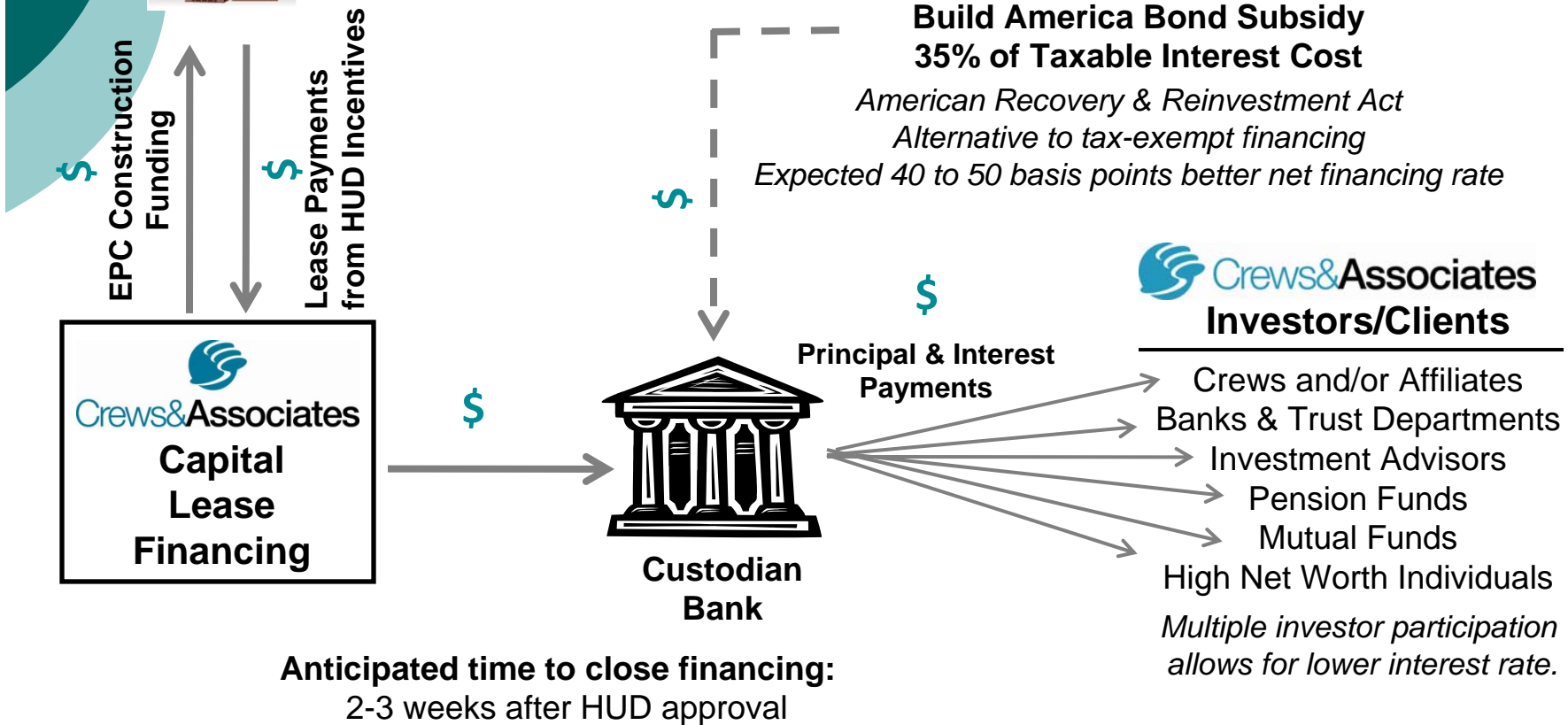


FINANCING APPROACH

Financing Summary

BOSTON HOUSING AUTHORITY

(STANDARD & POOR'S "A+" RATED)





Construction Cost & Finance Summary

| | |
|--|----------------------|
| Estimated Project Costs | \$ 62,962,533. |
| Actual installed costs: design, material, labor, Ameresco multiplier. Includes three phases & anticipated capital funded work. | |
| Asbestos abatement allowance & tile/floor repair (contingency) | \$ 1,000.000. |
| Development Fee | \$ 312,928. |
| TOTAL AMERESCO CONSTRUCTION PROJECT COSTS | \$ 64,275,461 |

| | |
|---|----------------------|
| BHA third-party Commissioning/Construction Agent | \$ 639,146. |
| Construction Period Interest (financing company cost) | \$ 8,162,026. |
| Estimated utility Incentives | (\$1,351,677) |
| Estimated BHA capital fund contribution | (\$15,300,000) |
| TOTAL ESTIMATED FINANCED AMOUNT | \$ 56,424,956 |

Financing Proposals Received (1)

| Boston Housing Authority - Comparison of Underwriter Proposals | | | |
|---|-------------------------|-----------------------|-----------------------|
| BIDDERS: | Oppenheimer & Co., Inc. | RBC Dain Rauscher | Crews & Associates |
| Proposal Economics | | | |
| Par Amount of the Bonds Issued | \$52,705,000.00 | \$55,000,000 | 56,210,000.00 |
| Customer Capital Contribution | \$0 | 12,718,344.60 | \$10,885,986.00 |
| Original Issue Premium/(Discount) | \$0.00 | (\$766,012.65) | \$0.00 |
| Net Funds Available | \$52,705,000.00 | \$41,515,642.75 | 45,324,014.00 |
| True Interest Cost | 5.63% | 5.67% | 4.78% |
| Net Interest Cost | 5.61% | 5.34% | 4.85% |
| All-In TIC | 5.68% | 5.71% | 5.05% |
| Costs of Issuance Net of Underwriter's Discount | 245,000.00 | 192,500.00 | 163,500.00 |
| Underwriter's Discount/Placement Agent Fee | \$395,287.50 | \$687,500.00 | \$732,625.00 |
| Capitalized Interest (not a cost) | \$6,591,373.05 | \$5,280,970.73 | \$6,333,753.64 |
| Bond Insurance Premium | \$296,257.62 | \$1,477,555.17 | \$588,981.62 |
| DSRF Premium | \$15,811.50 | \$164,074.00 | \$160,893.83 |
| Rounding | \$152.86 | \$0.00 | \$0.00 |
| Total of All Costs: | \$952,356.62 | \$2,521,629.17 | \$1,646,000.45 |
| Net Available for Project Fund | \$51,752,643.38 | \$38,994,013.58 | \$43,678,013.55 |
| Total Debt Service | \$98,752,540.84 | \$98,503,678.20 | \$98,163,602.50 |

Financing Proposals Received (2)

| Proposal General Terms | | | |
|--|---|---|---|
| Debt Service Reserve | Funded by Insurer | Funded by Insurer | Funded by Insurer |
| Trustee | Deutsche Bank National Trust Company | TBD | TBD |
| Security | Bonds - First lien on equipment; 1.15x debt service coverage; 24 CRF 990 .185 (a)(1) and (a)(2) | First lien on equipment, negative pledge of other assets or revenues; general obligation; additional reserves from Stimulus package | Capital Lease - First lien on equipment; 1.15x debt service coverage; 24 CRF 990 .185 (a)(1) and (a)(2) |
| Call Provisions | TBD | TBD | TBD |
| Insurer | Assured Guaranty | FSA/Assured Guaranty | Assured Guaranty or TBD |
| <p>Notes:</p> <p>Crews financing assumes standard capital lease which is the traditional form of financing vehicle used for private placement; standard documents.</p> <p>All - In True Interest Cost is lowest for Crews proposal. The All-In True Interest Cost reflects the net present value of all payments of principal, interest, and future expenses equal to the par amount of bonds, less original issue discount, less insurance premium, less debt service reserve premium, less underwriter's discount, less costs of issuance less other up front expenses, as applicable.</p> | | | |

Cash Flow Summary

Project described in audit document

Project cost of \$62,962,533

| Year | Total Savings | Debt Payment | Ameresco Annual M&V Fees | Ameresco - Resident Education | Ameresco - Maintenance | BHA - Oversight | BHA - 3rd Party Review | Savings Minus Debt and Fees | Debt % Savings Less Annual Costs |
|-------|----------------|---------------|--------------------------|-------------------------------|------------------------|-----------------|------------------------|-----------------------------|----------------------------------|
| 1 | \$ 5,293,644 | \$ 4,120,577 | \$ 204,886 | \$ 57,912 | \$ 11,222 | \$ 70,000 | \$ 35,000 | \$ 794,047 | 85% |
| 2 | \$ 5,401,052 | \$ 4,200,504 | \$ 211,033 | \$ 59,649 | \$ 11,559 | \$ 72,100 | \$ 36,050 | \$ 810,158 | 85% |
| 3 | \$ 5,510,639 | \$ 4,281,941 | \$ 217,364 | \$ 61,439 | \$ 11,905 | \$ 74,263 | \$ 37,132 | \$ 826,596 | 85% |
| 4 | \$ 5,622,450 | \$ 4,364,917 | \$ 223,884 | \$ 63,282 | \$ 12,263 | \$ 76,491 | \$ 38,245 | \$ 843,368 | 85% |
| 5 | \$ 5,736,530 | \$ 4,449,460 | \$ 230,601 | \$ 65,180 | \$ 12,630 | \$ 78,786 | \$ 39,393 | \$ 860,479 | 85% |
| 6 | \$ 5,852,924 | \$ 4,535,597 | \$ 237,519 | \$ 67,136 | \$ 13,009 | \$ 81,149 | \$ 40,575 | \$ 877,939 | 85% |
| 7 | \$ 5,971,680 | \$ 4,623,358 | \$ 244,645 | \$ 69,150 | \$ 13,400 | \$ 83,584 | \$ 41,792 | \$ 895,752 | 85% |
| 8 | \$ 6,092,845 | \$ 4,712,772 | \$ 251,984 | \$ 71,224 | \$ 13,802 | \$ 86,091 | \$ 43,046 | \$ 913,927 | 85% |
| 9 | \$ 6,216,469 | \$ 4,803,867 | \$ 259,543 | \$ 73,361 | \$ 14,216 | \$ 88,674 | \$ 44,337 | \$ 932,470 | 85% |
| 10 | \$ 6,342,601 | \$ 4,896,676 | \$ 267,330 | \$ 75,562 | \$ 14,642 | \$ 91,334 | \$ 45,667 | \$ 951,390 | 85% |
| 11 | \$ 6,471,292 | \$ 4,991,227 | \$ 275,350 | \$ 77,829 | \$ 15,081 | \$ 94,074 | \$ 47,037 | \$ 970,694 | 85% |
| 12 | \$ 6,602,595 | \$ 5,087,553 | \$ 283,610 | \$ 80,164 | \$ 15,534 | \$ 96,896 | \$ 48,448 | \$ 990,389 | 85% |
| 13 | \$ 6,736,562 | \$ 5,185,685 | \$ 292,118 | \$ 82,569 | \$ 16,000 | \$ 99,803 | \$ 49,902 | \$ 1,010,484 | 85% |
| 14 | \$ 6,873,246 | \$ 5,285,656 | \$ 300,882 | \$ 85,046 | \$ 16,480 | \$ 102,797 | \$ 51,399 | \$ 1,030,987 | 85% |
| 15 | \$ 7,012,705 | \$ 5,387,497 | \$ 309,908 | \$ 87,597 | \$ 16,974 | \$ 105,881 | \$ 52,941 | \$ 1,051,906 | 85% |
| 16 | \$ 7,154,992 | \$ 5,491,243 | \$ 319,206 | \$ 90,225 | \$ 17,484 | \$ 109,058 | \$ 54,529 | \$ 1,073,249 | 85% |
| 17 | \$ 7,300,167 | \$ 5,596,926 | \$ 328,782 | \$ 92,932 | \$ 18,008 | \$ 112,329 | \$ 56,165 | \$ 1,095,025 | 85% |
| 18 | \$ 7,448,288 | \$ 5,704,582 | \$ 338,645 | \$ 95,720 | \$ 18,548 | \$ 115,699 | \$ 57,850 | \$ 1,117,243 | 85% |
| 19 | \$ 7,599,413 | \$ 5,814,245 | \$ 348,805 | \$ 98,591 | \$ 19,105 | \$ 119,170 | \$ 59,585 | \$ 1,139,912 | 85% |
| 20 | \$ 7,753,605 | \$ 5,925,951 | \$ 359,269 | \$ 101,549 | \$ 19,678 | \$ 122,745 | \$ 61,373 | \$ 1,163,041 | 85% |
| Total | \$ 128,993,699 | \$ 99,460,235 | \$ 5,505,364 | \$ 1,556,117 | \$ 301,539 | \$ 1,880,926 | \$ 940,463 | \$ 19,349,055 | 85% |

Cash Flow Summary

- Impact of unit reductions at Old Colony & removing Heath St (Plant Court)
- Project cost of \$62,094,848

| Year | Total Savings | Debt Payment | Ameresco Annual M&V Fees | Ameresco - Resident Education | Ameresco - Maintenance | BHA - Oversight | BHA - 3rd Party Review | Savings Minus Debt and Fees | Debt % Savings Less Annual Costs |
|-------|----------------|---------------|--------------------------|-------------------------------|------------------------|-----------------|------------------------|-----------------------------|----------------------------------|
| 1 | \$ 5,153,738 | \$ 4,001,657 | \$ 204,886 | \$ 57,912 | \$ 11,222 | \$ 70,000 | \$ 35,000 | \$ 773,061 | 85% |
| 2 | \$ 5,258,307 | \$ 4,079,171 | \$ 211,033 | \$ 59,649 | \$ 11,559 | \$ 72,100 | \$ 36,050 | \$ 788,746 | 85% |
| 3 | \$ 5,364,998 | \$ 4,158,146 | \$ 217,364 | \$ 61,439 | \$ 11,905 | \$ 74,263 | \$ 37,132 | \$ 804,750 | 85% |
| 4 | \$ 5,473,854 | \$ 4,238,611 | \$ 223,884 | \$ 63,282 | \$ 12,263 | \$ 76,491 | \$ 38,245 | \$ 821,078 | 85% |
| 5 | \$ 5,584,919 | \$ 4,320,590 | \$ 230,601 | \$ 65,180 | \$ 12,630 | \$ 78,786 | \$ 39,393 | \$ 837,738 | 85% |
| 6 | \$ 5,698,237 | \$ 4,404,113 | \$ 237,519 | \$ 67,136 | \$ 13,009 | \$ 81,149 | \$ 40,575 | \$ 854,735 | 85% |
| 7 | \$ 5,813,854 | \$ 4,489,206 | \$ 244,645 | \$ 69,150 | \$ 13,400 | \$ 83,584 | \$ 41,792 | \$ 872,078 | 85% |
| 8 | \$ 5,931,817 | \$ 4,575,898 | \$ 251,984 | \$ 71,224 | \$ 13,802 | \$ 86,091 | \$ 43,046 | \$ 889,773 | 85% |
| 9 | \$ 6,052,173 | \$ 4,664,216 | \$ 259,543 | \$ 73,361 | \$ 14,216 | \$ 88,674 | \$ 44,337 | \$ 907,826 | 85% |
| 10 | \$ 6,174,972 | \$ 4,754,191 | \$ 267,330 | \$ 75,562 | \$ 14,642 | \$ 91,334 | \$ 45,667 | \$ 926,246 | 85% |
| 11 | \$ 6,300,262 | \$ 4,845,852 | \$ 275,350 | \$ 77,829 | \$ 15,081 | \$ 94,074 | \$ 47,037 | \$ 945,039 | 85% |
| 12 | \$ 6,428,095 | \$ 4,939,228 | \$ 283,610 | \$ 80,164 | \$ 15,534 | \$ 96,896 | \$ 48,448 | \$ 964,214 | 85% |
| 13 | \$ 6,558,521 | \$ 5,034,351 | \$ 292,118 | \$ 82,569 | \$ 16,000 | \$ 99,803 | \$ 49,902 | \$ 983,778 | 85% |
| 14 | \$ 6,691,593 | \$ 5,131,250 | \$ 300,882 | \$ 85,046 | \$ 16,480 | \$ 102,797 | \$ 51,399 | \$ 1,003,739 | 85% |
| 15 | \$ 6,827,365 | \$ 5,229,959 | \$ 309,908 | \$ 87,597 | \$ 16,974 | \$ 105,881 | \$ 52,941 | \$ 1,024,105 | 85% |
| 16 | \$ 6,965,893 | \$ 5,330,508 | \$ 319,206 | \$ 90,225 | \$ 17,484 | \$ 109,058 | \$ 54,529 | \$ 1,044,884 | 85% |
| 17 | \$ 7,107,231 | \$ 5,432,930 | \$ 328,782 | \$ 92,932 | \$ 18,008 | \$ 112,329 | \$ 56,165 | \$ 1,066,085 | 85% |
| 18 | \$ 7,251,436 | \$ 5,537,259 | \$ 338,645 | \$ 95,720 | \$ 18,548 | \$ 115,699 | \$ 57,850 | \$ 1,087,715 | 85% |
| 19 | \$ 7,398,568 | \$ 5,643,527 | \$ 348,805 | \$ 98,591 | \$ 19,105 | \$ 119,170 | \$ 59,585 | \$ 1,109,785 | 85% |
| 20 | \$ 7,548,685 | \$ 5,751,768 | \$ 359,269 | \$ 101,549 | \$ 19,678 | \$ 122,745 | \$ 61,373 | \$ 1,132,303 | 85% |
| Total | \$ 125,584,517 | \$ 96,562,430 | \$ 5,505,364 | \$ 1,556,117 | \$ 301,539 | \$ 1,880,926 | \$ 940,463 | \$ 18,837,677 | 85% |



Old Colony Phase Out

- Although BHA would like to perform significant renovations/rehab on the remaining Old Colony units, there is currently no known funding for this work
- Old Colony has significant inefficiencies and can recognize savings while BHA is deciding how/when to handle changes
- Understand any removal of units would have to be amended out of contract
- Financing allows repayment if BHA decides to remove portions of financing



Old Colony Phase Out

- Based on an estimated removal plan for remaining units, required principal buydown has been estimated and accommodated in the financing agreement:

| Repayment Year | Potential Buydown |
|----------------|-------------------|
| 2 | \$1,235,000 |
| 5 | \$1,165,000 |
| 8 | \$1,060,000 |
| 11 | \$925,000 |
| 14 | \$705,000 |



CFP/ARRA Contributions

Total BHA Contribution: \$15.3 million

- Charlestown \$9,952,894.00 CFFP
HVAC distribution
- Bromley-Heath \$1,205,422.00 CFP08
HVAC distribution
- Whittier \$3,990,028.00 CPF08
HVAC distribution
- Lenox Street \$1,400,000.00 CFRG
Roof replacement to support PV
installation
- Authority wide: \$1,000,000 (allowance for asbestos)



HUD Incentives Guarantee/M & V

- Blend of Frozen Rolling Base and Add-on
- Frozen Rolling Base represents 96% of projected savings (gas and water): Measured and Verified at the meter
- Electricity add-on savings minimal relative impact
- Incentives scheduled to begin January 2012 (conclusion of 30 month construction period)
- Savings during construction from earlier water and lighting installations flow to BHA



Excess Savings

- Measured by individual utilities annually
- Savings must reach 85% of consumption unit savings specified in the Audit for each utility before excess cost savings considered
- Excess cost savings once this threshold met:
 - 80% to BHA
 - 20% to Ameresco



Ingredients for a Successful Project:

- Years of collaboration and due diligence by BHA & Ameresco
- Thorough knowledge and analysis of all sites by Ameresco team
- Comprehensive evaluation of product selection and specifications during development stage: BHA & Ameresco
- Robust training and education curriculum including sessions led by factory trained representatives
- Experienced commissioning agent
- Rigorous exploration of financial options including anticipated utility rebates & subsidies
- Extensive experience working with the Boston HUD field office



Lessons Learned

- Be a full partner at the table; do not give up ownership of the project.
- Push for the scope of work you need.
- Scrutinize all pricing; be skeptical
- Participate in seeking financing
- Have your own expert
- Be prepared to monitor construction activities.