Energy Performance Contracting for Small PHAs

GREEN BUILDING FOR AFFORDABLE HOUSING
Course 5

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COURSE SUMMARY

This course reviews the U.S. Department of Housing and Urban Development (HUD) incentive programs available to support small PHA achievement of substantial energy and water savings through cost-effective improvements e.g., energy and water conservation measures (ECMs)

Small PHAs have traditionally had difficulty attracting energy service companies and financing for moderate retrofits

This course targets small PHAs and covers the basic process for implementation of an Energy Performance Contract (EPC), strategies for managing costs, and for maximizing the efficiency. Green building practices are also discussed.

COURSE OBJECTIVES

- Understand EPCs and the process of implementation, especially in small PHAs (<500 units)
- Understand the EPC process options
- Understand the HUD Energy incentives
- Identify common Energy and Water Conservation Measures (ECM)
- Understand and prepare for an Investment Grade Energy Audit (IGEA)
- Describe the financing options and ongoing management required

AGENDA

- Module 1 State of Play – Energy Performance Contracting
- Module 2 HUD Incentives - Energy Performance Contracting and Non-EPC Incentives
- Module 3 ESCo, Go It Alone or Project Aggregation?
- Module 4 Getting Started
- Module 5 Investment Grade Energy Audit
- *LUNCH*
- Module 6 Energy and Water Measures
- Module 7 Measurement and Verification
- Module 8 Financing and Repayment
- Module 9 HUD's EPC Review Process

Module 1

State of Play – Energy Performance Contracting

Energy Performance Contract (EPC)

What is an Energy Performance Contract?

- Energy Performance Contract (EPC) is a method for financing energy conservation measures (ECMs) that relies on leveraging the long-term savings generated by the ECMs to repay the cost of installing energy and water conservation measures
- For public housing authorities, this process allows PHAs to achieve energy savings over time without bearing the up front capital costs

What is an Energy Performance Contract?

- **Energy Performance Contract (EPC)**
  - For ESCo managed project, contract between PHA and HUD (ACC); contract between PHA and ESCo (ESA)
  - Energy project can also be serviced by qualified A/E firms (self-managed)
    - HUD is not party to either contract (ESCo or consultant)
  - For green measures including energy, water conservation improvements and renewable measures
  - Funded by a 3rd party, i.e., financed by an entity other than HUD
  - PHA repays EPC project costs thru incentives to include: add-on subsidy, frozen rolling base, resident paid utilities
  - EPCs, historically have performed 10-15% over projections

EPC – An Historical Perspective

- **Energy Performance Contracting (EPC) – early '90s**
  - Reaction to appropriations volatility
  - Mirrored FEMP (1973): provide TA, meet energy goals and use third party project financing
- **EPC provided opportunity to:**
  - Leverage savings to replace obsolete equipment
  - Preserves Capital Funds for emergent repairs
  - Reduced operational costs (utilities/maintenance)
- **Prior to 2000, 57 projects <$116M; 2012, 265 projects ~$1.1B investment**

Current EPC Inventory (All Phases)

PHA Type by Unit Count	PHAs	Percent of PHAs	Active or Completed EPCs	PHAs - Active/ Completed EPCs	Percent of PHAs w/EPCs	Percent of total
Very small (Less than 250)	2332	74.6%	27	26	1.1%	11.7%
Small (250-499)	430	13.8%	72	64	14.9%	28.8%
Medium (500-1,249)	229	7.3%	68	65	28.4%	29.3%
Large (1,250-6,599)	120	3.8%	87	61	50.8%	27.5%
Very large (More than 6,599)	14	0.4%	11	6	42.9%	2.7%
Total	3125	100.0%	265	222	7.1%	100.0%

Source: 2011 EPC Inventory and Operating Fund Annual Report, Calendar Year 2009

Characteristics of Medium - Large and Small EPC Projects

Med-Large PHAs

- Average project size is ~ $5.9M (~$3,236/unit)
- Greater technical and financing staff capacity
- More project flexibility due to funds availability; more funding options
- Projects typically are 15-20 years to maximize leveraging opportunities

V Small-Small PHAs

- Average project size is ~ $1.2M (~$4,085/unit)
- Less familiar with EPCs and financing
- More conservative perspective in their project design (proven technology), simpler, less risk
- Preference for shorter versus long term loans

2013 – State of Play

- PHAs will receive operating funds at a prorated level in the low 90 percent range for the first quarter
- Operating reserves may be used for capital expenditures (PIH) Notice 2012-2)
- No Operating Reserve program sweep anticipated

Program	2013 Estimate of Need	Continuing Resolution FY 2012 Level	Potential Sequestration Level
PH Operating Fund	$5.056B	$3.962B	$3.637B*
PH Capital Fund	$5.021B	$1.875B	$1.721B

*OMB Report Pursuant to the Sequestration Transparency Act of 2012 (P. L. 112–155)

EPC – ESCo Implementation

- Projects can be done turn-key (ESCo)
- Generated savings must pay for measures, fastest payback ECMs are primary target
- One stop contracting
- Experienced national and regional firms
- Long established policies and procedures
- Guaranteed savings are available
- Provide for financing
- Solution to capability and capacity issues
- Plan EPCs in conjunction with broader capital projects

EPC – Self Managed Implementation

- Lower overall costs – no overhead and profits
  - Can mean more project
  - More flexibility with capital fund projects
  - More flexibility capturing outside resources, e.g., rebates and weatherization
- Leverages in-house staff capability and capacity
- Possible solution for small agencies
- Plan EPCs in conjunction with capital projects
- No guarantee; cash flows are adjusted for risk

EPC Benefits

- Replace obsolete energy/water systems
  - Reduce costly system repairs and maintenance costs
- Asset preservation ($26B capital Backlog/$4B related to energy)
- Consolidate parts inventories, e.g., uniformity in single procurement purchase for toilets
- Provide savings to PHA, residents and the taxpayers
- Improve resident health and comfort

EPC Benefits

- Leverage energy and water savings; leaving scarce capital funds for more emergent needs
- Generate additional savings to address other capital or operating expenses and effects of proration
- Reduce Greenhouse effect by lowering the consumption of coal, gas and oil
- Create local green jobs

HUD Energy Incentives State of Play

- **HUD Performance Incentives**
  - PHA and HUD share consumption reduction (75/25)
    - Operating fund benefit (OFB)
  - Rate Reduction Incentive (RRI 50/50)
- **HUD EPC Incentives**
  - Frozen Rolling Base
  - Add-on Subsidy
  - Resident Paid Utilities

Asset Management Planning

- Capital needs provide an important backdrop for EPCs (Abt Study)
  - For PHAs <250 units, capital needs are $15,251/unit
  - For PHAs 250 to 1249 units, capital needs are $15,572/unit
  - For PHAs with 1,250 to 6,600 units, capital needs are $17,774/unit
  - For PHAs >6,600 units, capital needs are $28,553/unit

Asset Management Planning

- 16-20% of capital needs are related to energy
  - Moderate energy and water efficiency improvements with less than a 12 year payback estimated to be $3,000/unit
  - 2010 HUD data indicates $8,000/unit
    - as little as $250/unit; as much as $25,000/unit
  - Key cost drivers are windows, kitchens (appliances), and bathrooms (faucets, toilets, showerheads)
    - Windows are >15 percent of need
- EPC can provide $2,000 - $6,000/unit

HUD's New Physical Needs Assessment Tool

- For the PHA:
  - Provides PHA's with a project based planning tool;
  - Integrates PNA and Energy Audit to reduce redundancy and provide PHA's with information to help them make decisions regarding energy conservation;
  - Evolves management practices of PHAs toward project based capital planning similar to what asset management accomplished on operating side;
  - Enables PHAs to better assess position of their portfolios to take advantage of potential opportunities, e.g., new competitive and formula grants – federal, state, and private; and,
  - Basis for a strategic plan (reposition, redevelop, rehab).
  - IGEA data can be used to meet PNA/EA requirements

HUD's New Physical Needs Assessment Tool

- For HUD:
  - Brings HUD into compliance with the 2005 Energy Policy Act;
  - Allows HUD to more frequently derive a national needs number, including energy; and,
  - Enables HUD to measure the impact of annual Capital Fund appropriations on the physical needs (and energy) of the public housing inventory

HUD's New Physical Needs Assessment Tool

- IGEA can be used to fulfill new rule requirement
  - If it meets all of the performance standards of the new rule-no exception
  - M&V process is not an energy audit
    - Would not capture new technologies
  - Changes in PHAs need some element of a "fresh look" every 5 years
  - 5-year energy audit under new PNA rule is a continuing requirement

Rental Assistance Demonstration (RAD)

- RAD is HUD's rental housing preservation strategy, which works to:
  - **Preserve** HUD -funded public and assisted housing (losing 10,000 – 15,000 units annually)
  - **Streamline** housing rental programs
  - **Simplify** program administration
  - **Leverage** private financing to meet public housing capital needs
  - **Encourage** broader housing planning efforts
  - **Introduce** greater market discipline
  - **Enhance** tenant choice
  - **Build** strong, stable communities

EPCs and RAD

- Some PHA expressed apprehension to initiate an EPC with the advent of RAD
- **Important for those considering RAD conversion in the future**
  - In calculating current funding for a PHA considering RAD, HUD's plan is to include all formula expenses, with the exception of Asset Repositioning Fee
  - In essence, PHA will still be funded at a level assuming they were continuing either to have those higher utility expenses (frozen) or debt payments (add-on)

Module 2

HUD Incentives - Energy Performance Contracting and Non-EPC Incentives

HUD's Energy Performance Contracting Incentives

- Frozen Rolling Base – Incentive based on performance of energy and water measures to ***reduce consumption***
- Add-on Subsidy – Incentive based on performance of energy and water measures to ***generate sufficient cost savings*** to equal the *add-on* amount of operating subsidy provided by HUD to pay project costs
- Resident Paid Utilities - Incentive based on performance of energy and water measures to ***reduce consumption*** of resident paid utilities

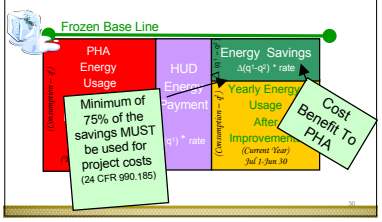
Frozen Rolling Base Incentive

- HUD will freeze three-year rolling base at current consumption level up to 20 years
  - As consumption goes down, authority keeps 100% of the consumption X current (average) rate
- Frozen Rolling Base (FRB) is typically used:
  - When PHA or ESCo believes that Rolling Base Consumption Level (RBCL) represents a solid baseline for future savings e.g., water;
  - When projected savings are >15% of the RBCL; or
  - Where utility rates are expected to increase over time

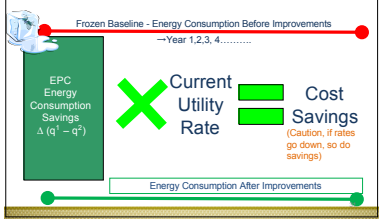
FRB Rules of the Road

- Use non-HUD funding; 3rd party (bank) financing required
- PHA keep all of the savings
  - At least 75% of the savings for project costs
  - Retains remaining 25% of savings for eligible operating expenses
    - Up to half of 25% may go to Central Office Cost Center (COCC) as a fee HUDs -Financial Handbook 7475.1
- Must adjust savings for HUD funded measures
- 20 years maximum contract (State limitations prevail)
- Cash flow includes only consumption savings generated by measures in EPC; does not include maintenance cost savings
- Rolling base reactivates year following the contract

Frozen Rolling Base Incentive



Frozen Rolling Base Incentive



FRB – Use of Savings

- PHA retains all of the savings
  - At least 75% must go to project costs
- PHA may use cost savings as excess cash after project costs are paid for:
  - Any eligible operating expense
  - EPC debt service at other AMPS in EPC w/waiver
  - Additional green energy or water improvements
  - Acceleration of debt service on existing project, if permitted under financing contract
    - Be aware of penalties

FRB Reporting Requirements

- Funding period for operating subsidy, including HUD's incentives is the calendar year starting January 1st
- Reporting period for FRB/resident paid utilities (RPU) is July 1-June 30
- By April 30th of each year
  - Copy of the ESCo prepared M&V report for all ESCo developed contracts
    - Documentation that least 75 percent of the energy savings is being utilized as payment for project costs
    - Documentation that identifies energy conservation measures installed with HUD funds (e.g. Capital Fund Program)

What Are The Risk With FRB?

- If less than 75% goes to project costs, HUD has the right to retain the difference between actual and 75%
- Rate Changes - Reduction in utility rates will reduce savings
- Building Use Changes - Changes that would increase consumption, reduce savings; e.g., commercial kitchens
- Not capturing all the savings; consumption baseline errors
- Proration resulting from Congressional appropriation levels
  - Pro ration hits operating subsidy levels, affecting FRB and add-on
  - FRB allows you to keep excess savings to mitigate impact
- Occupancy Changes - Increases in occupancy reduce savings
  - HUD allows occupancy baseline adjustments to mitigate impact

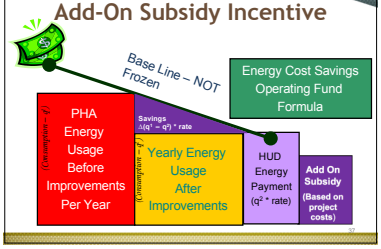
Subsidy Add-On Incentive

- Subsidy Add-On - increases the subsidy equal to the year's project cost
- Add-On Subsidy is typically used:
  - When projected savings from ECMs are <15% of the rolling base
  - When projected savings are expected to appear annually in proportion to the debt service payments
  - When savings from individual ECMs are easily calculated
  - When unrelated variations in use are expected to occur (electricity)

Subsidy Add-On Incentive

- Under the Subsidy Add-On
  - Rolling base does not freeze
  - HUD keeps most savings including any savings in excess of the Add-On request
  - Must use Non-HUD funding (3rd party bank financing)
  - Savings must at least equal the Subsidy Add-On amount or **next year's operating subsidy is docked** by the amount of the shortfall
  - Add-on subsidy is not available where utilities are resident-paid w/o a waiver

Add-On Subsidy Incentive



Add-On – Use of Savings

- Subsidy Add-On is equal to the project costs
  - PHAs will not retain any of the savings associated with over-performance of ECMs (i.e., savings generated in excess of those needed to match project costs)
    - However, project costs can be increased to add ECMs or project phases to capture these savings
    - HUD approval is required for a project expansion

Subsidy Add-On Reporting Requirements

- Funding period for operating subsidy, including HUD's incentives is the calendar year starting January 1st
  - Add-On reporting period is January to December
- PHA may request a partial year add-on subsidy in initial year of project, if project is all add-on
  - PHA must submit revision prior to expiration of revision period
- Actual annual savings must be sufficient to cover project costs
  - If not sufficient, HUD can dock the difference in subsequent funding year
- Provide HUD a copy of ESCo prepared M&V report

Subsidy Add-On Reporting Requirements (continued)

- HUD may require an independent third-party prepared M&V report in addition to ESCo report
- HUD will require an independent third-party prepared M&V report for self-developed EPCs
  - Independent reviewer cannot be the project ESCo
  - Independent reviewer cannot be the project engineer for a self-managed project unless:
    - HUD's determinates that associated risks are low
    - HUD's determinates that M&V costs are excessive compared to value of energy savings (e.g. greater than 40%)

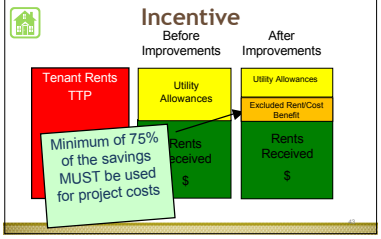
What Are the Risks of the Subsidy Add-On?

- All PHAs are adversely impacted by a reduction in Operating Fund appropriations
- Subsidy Add-On incentives affected by proration of subsidy eligibility, as is entire Operating Fund formula
  - HUD encourages PHAs to allow for a reasonable amount of excess savings to mitigate this risk
- Rate Changes – Reduction in utility rates will reduce savings
- Occupancy Changes – Increases in occupancy reduce savings
  - HUD allows occupancy baseline adjustments to mitigate impact
- Building Use Changes – Changes that would increase consumption, reduce savings
- Not capturing all the savings; consumption baseline errors

Resident Paid Utilities Incentive

- HUD will freeze the baseline allowances for contract term
- PHA will retain 100% of savings; difference between the baseline and new allowance
  - However, PHA must use at least 75% of savings toward project costs
  - Remaining 25% for any eligible operating expenses
  - PHA may also exclude from its rental income, increased rent due to the lower utility allowances

Resident Paid Utilities Incentive



Other Incentives (Non-EPC)

- Rate Reduction Incentives (RRI)
  - Housing authority keeps 50% of savings
    - Special effort required, e.g., lowest bid, would not get HUD approval
  - No time limit on duration of savings kept by PHA
- RRI Opportunities
  - Natural gas industry has deregulated
  - Electric industry is deregulating state by state, providing opportunities to purchase utilities from alternative sources and save money
  - Can be used with or w/o an EPC
- Caution! In an EPC – lower rates may mean lower savings!

Operating Fund Benefit (OFB)

- If a PHA reduces its consumption, 75% of the savings is retained by the PHA; 25% goes to HUD
  - Savings incentive is difference between the current consumption level and rolling base consumption level
- In an add-on subsidy incentive, OFB that is provided under 24 CRF § 990.170(c) cannot be counted in an EPC cash flow
- OFB may, however, be used for eligible Operating Fund expenses including debt service associated with additional ECM measures outside of an EPC

Utility Rebates

- PHAs are encouraged to seek out rebates and other incentives from State, local communities, Utility Companies, non-profit organizations
- If PHA uses a rebate to purchase ECMs, however,
  - There is no debt service associated with rebate portion of cost
    - e.g., if a refrigerator costs $1,000 and State rebate is $200, refrigerator cost $800. Financed amt is $800, not $1,000
    - Full amount of savings, however, can be captured

Module 3

ESCo Project, Go It Alone, or Project Aggregation

I Am Leaning Toward an EPC – What Else Should I Consider?

- My systems costs are rising; EPCs benefits are attractive
- Most PHAs get one "bite at the apple" - consider maximizing the project to get *synergetic savings* benefits
  - Roof replacement is the time to insulate
  - Consider windows, if you are replacing HVAC
  - Refer to Physical Needs Assessment, audits, and five year Energy Audit for identifying additional requirements
- Maximize term loan to permit fast payback measures to pay for longer term payback measures like boiler, windows, deeper Green measures (e.g., green roof, air sealing, moisture management, controlled ventilation, insulation)

I Am Leaning toward an EPC – What Else Should I Consider? (continued)

- To extent possible consider using Capital Funds in collaboration with utility financing in an EPC
  - Use EPC incentives for fastest payback measures
  - Use Capital Funds for infrastructure repairs/ replacement or measures which have high initial costs and longer term payback e.g., windows, green roof
  - Could be better value to use Capital Funds outside of EPC to avoid project overhead costs, e.g., security systems
- Conduct a Self Assessment to determine what EPC model (ESCo, self-managed or aggregate) or what part of capital project works best for your PHA

Self-Assessment Exercise
PHA's Capacity to Implement and Manage an EPC

- What is the PHA's level of overall experience in retrofit projects?
- What is my PHA's experience in energy engineering, utility rate analysis, utility accounting, benchmarking, allowance studies, and energy audits?
- What is my staff's knowledge level of processes typically used to manage, procure, finance, and implement standard performance contracts, and experience with HUD rules and regulations?

Self-Assessment Exercise
PHA's Capacity to Implement and Manage an EPC

- What is my PHA's capabilities to review and translate engineering criteria into proven design requirements, equipment selection, construction management processes, and operations and maintenance procedures?
- How is my maintenance track record? Has my staff demonstrated the capability that they can properly maintain newer utility and renewable systems that may be installed as part of an EPC?
- Does my staff possess capability in construction contract management, construction inspections, etc.?

Self-Assessment Exercise
PHA's Capacity to Implement and Manage an EPC

- What is my in-house capability related to energy cash flow projections, financing options, tools, and blended finance approaches?
- Does my staff possess the capability to measure and verify that savings exist and persist over time and ability to make adjustments for changes in weather, occupancy, and operations?
- My staff has the prerequisite knowledge, however, does my PHA's staff have capacity to manage an energy project in addition the current level of day-to-day administrative, management, procurement and operations and maintenance tasks?

Bringing An ESCo Onboard

ESCo Managed EPC – Turn-Key Process

The benefits of an ESCo Managed EPC process include:

- Turn-Key Process
- Providing expert advice often specialized in public housing authority energy efficiency
- Identifying financing and providing a guarantee
- Providing construction oversight and commissioning
- Ongoing monitoring and verification of project performance
- Providing maintenance services as requested
- Training staff and residents as appropriate

ESCo Contracting and Procurement

- PHAs must comply with all HUD, State and local agency procurement requirements
- RFP resources available through Web Search
  - ***HUD EPC***
  - – However, PHAs have discretion to insert additional energy requirements for an ESCo or consultant to consider in the interest of better energy management e.g., utility benchmarking, conversion to resident paid utilities, etc.

ESCo Contracting and Procurement

- HUD encourages PHAs to release RFP to following national groups:
  - – National Association of National Energy Service Companies (NAESCO)
  - – Association of Housing & Redevelopment Officials (NAHRO) - www.nahro.org
  - – Public Housing Authority Directors Association (PHADA) - www.phada.org
- RFP requires HUD Field Office approval (24 CFR965.308)

Evaluating the Proposals

- Assemble a diverse evaluation team
  - – From your PHA look to:
    - Facilities operating personnel
    - Administrative/financial managers
    - Designated project manager
    - Technical advisor/consultants
    - Modernization Coordinator

- If skill sets don't exist inside a small PHA look to:
  - – Local PHAs that may have performed an EPC
  - – Knowledgeable non-profit, community, university or utility groups willing to participate in the evaluation process

Evaluation Process and Methodology

- CONDUCT A THREE-PHASE REVIEW
  - – Phase I: Written Submissions
  - – Phase II: Client References
  - – Phase III: Oral Interviews
- SELECT HIGHEST RANKED ESCo
  - – Based on cumulative rankings of all three phases
  - – Consensus of evaluation team

Selecting The Right ESCo

- Look for an ESCo that:
  - – Works to bring its expertise to conduct comprehensive building analysis and design to identify requirements, including Green opportunities; ECMs are not preselected – "every problem is not a nail"
  - – Emphasizes high quality project performance and customer service
  - – Demonstrates technical expertise
  - – Exhibits willingness to guarantee and measure project performance
  - – Understands HUD approval requirements
  - – Can provide documented experience with PHA projects

Non-Negotiable Criteria

ESCo Experience
- – Technical qualifications and experience of personnel
- – Experience with implementing EPC projects
- – Historical project track record; documented savings; customer service; equipment reliability

ESCo Project Management
- – Ability to effectively manage past project construction
- – Ability to manage equipment repairs, regular service, and emergencies effectively on past projects
- – Quality of ESCo's communication skills

Non-Negotiable Criteria *(continued)*

Technical
- – Comprehensive technical approach to past projects
- – Ability complete all phases of past projects on schedule
- – Quality of past operations and maintenance services

Financial
- – Financial soundness and stability of the ESCo
- – Demonstrated ability to provide or arrange project financing on past projects

Negotiable Criteria

Project Management
- Extent of maintenance, monitoring, and measurement and verification services – what additional services do you want/need?
- Proposed O&M strategies

Financial
- Reasonableness of financial assumptions
- Details of proposed financing arrangement

Technical
- Quality of investment grade technical energy auditing
- Quality of approach to project commissioning
- Quality of approach to calculating baseline energy consumption
- Quality of approach to savings measurement and verification
- Quality of provisions for training facility staff
- Quality of customer savings reporting

Client Reference Questions

- How well did the ESCo:
  - – Provide post construction services
  - – Communicate progress, IGEA and M&V results
  - – Manage data collection and analyses
  - – Design, develop and install a project that met your needs; met projected savings
  - – Reduce maintenance costs
  - – Train maintenance staff in new O&M procedures
  - – Manage equipment warranty issues; guarantee savings

ESCo - Energy Audit Phase

- After HUD approval, RFP for energy audit is released
- Chosen ESCo performs the energy audit and submits results to PHA for approval, along with budget and work proposal

Energy Services Agreement

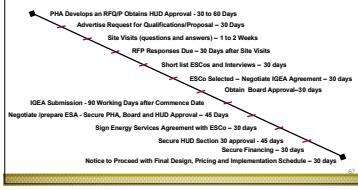
- ESCo develops formal contract, Energy Services Agreement (ESA), outlining work scope, budget, term and liability
- Key provisions to review and negotiate in an ESA include:
  - Baseline calculations
  - M&V plan covering all ECMs (and including adjustments)
  - Guarantee provisions and equipment warranties
  - Commissioning plan
  - Preventative maintenance plan
  - Training plan (for staff and residents)
  - Future changes to utility costs
- ESA requires HUD approval

Guaranteed Debt Service And Fees

- The ESCo guarantees payments on debt service
  - Minimum cost savings needed to cover debt service and fees are guaranteed by the ESCo
  - Failure to achieve minimum savings results in the ESCo covering debt service payments
  - Terms of the guarantee are negotiable
- Guarantees are a consideration in financing projects

EPC Timeline in Public Housing

Time Line – 14 to 18 months from Development of RFP to NTP



ESCos That Have Provided Energy Services*

- AMERESCO
- Honeywell
- CLT-Efficient Technologies Group (Constellation NewEnergy)
- Johnson Controls
- SIEMENS
- PEPCO Energy Services
- NORESCO
- Wind, Water, Energy Conservation
- CTI Energy Services
- 10th Avenue Group, LLC.

Listing of FEMP Qualified Energy Services Companies
http://www1.eere.energy.gov/femp/pdfs/doe_ql.pdf
National Association of Energy Services Companies
http://www.NAESCO.org/
Web Search - *HUD EPC* for a full listing of all ESCos that have done an EPC

*Provided for informational purposes only and not representative of an endorsement or sponsorship by HUD

EPC (ESCo) Vignette Meriden PHA, CT

EPC Self-Managed Process

- Discuss Self-Managed project feasibility with HUD
- Develop RFP; hire consultant; follow PHA's procurement guidance
- Consultant conducts audit to include baseline analysis construction cost estimation; develops initial EPC package
- Submit package to HUD for approval
- PHA issues RFP for A/E services; designs project, develops bid docs
- PHA develops final package for HUD approval with costs, cash flow
- With HUD approval letter, PHA awards construction contract
- PHA solicits for financing of EPC project

Potential Pitfalls--What To Be Aware of Self-managed vs. ESCo-managed

Q: Does the PHA have a sense of the scale and the scope of a potential EPC project?
Q: What relevant in-house expertise does the PHA have?
Q: What outside expertise will the PHA need to procure?
Q: Can the PHA find third party financing on its own?
Q: Has the PHA fully explained the risks and costs to its leadership and board?
Q: Has the PHA reached out to the HUD Field Office?

ESCo And Self-Managed Project Comparison

- ESCo-directed
  - Turn-key one stop contracting
  - Experienced national and regional firms
  - Long established policies and procedures
  - Solution to capability and capacity issues
- PHA-self Managed
  - Lower costs - no overhead & profits
    - PHA manages project
  - Leverages in-house capability and capacity
  - Better integration with capital funds and asset management strategies
  - Solution for small agencies

ESCo And Self-Managed Process Comparison

- ESCo-directed
  - Build team/select engineer
  - Issue RFP, select ESCo
  - Complete Investment Grade Audit (IGA)
  - Negotiate Energy Services Agreement
  - Implement and verify project
- PHA Self-Managed
  - Select licensed engineer
  - Complete preliminary project plan
  - Complete Investment Grade Audit (IGA)
  - Develop final project plan
  - Implement and verify project

Consultants That Can Provide Energy Services *

- Facility Strategies Group, LLC.
- Enlightened Energy Consultants
- 2rw
- Synchronous Energy Solutions
- National Hot Water
- Air Barrier Solutions
- State and National Energy Engineering Associations
  http://www.aeecenter.org/ - Under tab *Jobs*, *Buyer's Guide*
- Contact for references, NAHRO and PHADA members with an EPC in progress or completed

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EPC (Self-Managed) Vignette RAHWAY

Small Housing Authority Aggregation

- When to Consider
  - Self assessment of partners reveal potential energy and water savings
  - Too small to provide economically attractive transactions to most providers
  - Too small to obtain optimal financing terms
- Possible Option
  - Aggregate several PHAs for one RFP for an energy performance contract
  - Implement a Housing Authority Self-Managed or ESCo Project

Benefits/Challenges Aggregated Project

- Benefits
  - Voluntary participation generally indicates PHA commitment to energy project
  - Create economy of scale for the project
  - Share risks/rewards
  - Attract more/higher quality providers; financing options

Benefits/Challenges Aggregated Project

- Challenges
  - Boards have to agree on financing, leadership roles
  - Changes to a PHA's individual 5-year plans, fiscal year could impact financial position
  - Greater number of utility providers, greater analytical level of effort for baseline validation, allowances, etc.
  - Geographically dispersed projects; impacts project logistics
  - Projects are time and speed-to-completion sensitive; continuous delays can jeopardize commitment

Moving Forward - Aggregated Project

- Select an energy champion to lead aggregation effort
- Ensure fair distribution of project benefits and costs to motivate partners
  - Separate audit, financing and ESA contracts also an option
- Verify each PHA has conducted energy self-assessment; viable project at each PHA exists
- Sign a single lease agreement with joint and several liability
  - separate lease agreement also an option
- Partners must agree to service providers – ESCo (turn key project); consultant (self-managed projects)
- Consolidate HUD approval process with single aggregated project submission

Module 4

Getting Started

Where Do I Begin?

- Conduct quick analyses of PHA utility bills:
  - What is percentage of utility costs to your total operating expenses? >30 percent?
  - Have utility rates increased significantly in your area over last 3 years?
  - Has your consumption increased significantly?
- Inventory heating/cooling systems, appliances, water measures that are older than 10 years
  - Have less than 30% of their useful life remaining
- Have your maintenance costs gone up significantly in last 3 years?
  - Getting more work orders for energy/water systems?
- Are residents complaining about their utility allowances?

What Are The Next Steps?

- Consult local utility companies for free energy assessment
- Talk to other PHAs about EPCs for "Best Practice" in addressing utility costs – learn from your peers
- Use HUD resources to guide decision making
  - Prioritize energy and water requirements - Refer to HUD's ECM Checklist under Additional Resources http://www.hud.gov/offices/pih/programs/ph/phecc/
- Consult Local HUD Field Office to discuss EPC
- Evaluation activities all free to this point

Selling An EPC to My Executive Director

- You've conducted a survey of your PHA properties.
- Develop a estimated project size for senior staff
  - Identify potential project sites
  - Crunch the numbers
    - Indentify potential sources of funding
    - Determine preliminary upgrade costs/unit
    - Develop preliminary cash flow strategy
- Consider most appropriate project type based on staff assessment e.g., ESCo or self managed
- Campaign to get broader coalition of strategic allies, e.g., CFO, maintenance director, resident leaders, etc.
- Energy consultants can provide assistance with estimates

Selling An EPC to My Board

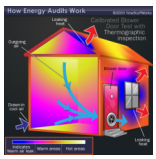
- Executive Director is convinced, now the Board:
  - Align your EPC project with Federal, municipal and community energy planning
    - Take advantage of grants and external funding sources
  - Do your homework
    - Anticipate the Board's concerns - your Board is thinking cost/risk
    - Develop budget options that support your project – it's about value
  - Develop a solid project plan – get your Board invested in the project.
    - Address preliminary Board input.
    - Define the risk/benefits when (not if) they approve your project.

Module 5

Investment Grade Energy Audit

Investment Grade Energy Audit (IGEA)

- To satisfy the requirements of HUD and financial institutions, an energy audit must be obtained
- Validates areas of opportunity and savings projections identified in preliminary audit
- Normally performed by ESCo or engineering firm



Preparing For An IGEA

- In advance of the actual onsite audit, provide the ESCo or consultant the following:
  - Monthly utility bills for previous twelve to thirty-six months; including HUD form 52722s for rolling base years and current year utilities
  - Applicable rate schedules, commodity purchase agreements, and transportation rates for deregulated utilities
  - Building equipment and system details, including estimated total conditioned floor space in square feet
  - Provide occupancy and vacancy data
  - Identify properties planned or scheduled for demolition

Preparing For An IGEA (continued)

- In advance of the actual onsite audit, provide the ESCo or consultant the following:
  - Operation and maintenance records
  - Modernization plans; Physical Needs Assessment; previous energy audits
- Notify residents that you will be conducting an energy audit; educate residents to benefits of reducing utility costs; consider resident involvement and incentives, e.g., internet access, improvements to community centers; children's programs, etc.

Preparing For An IGEA (continued)

- Provide an escort for auditor who is knowledgeable about development's mechanical and electrical systems, maintenance issues
  - Provide access to resident units and non-residential areas including community rooms, offices, maintenance areas

ESCo/Consultant IGEA Requirements

- Evaluates building energy and water systems by AMP in detail to define a variety of potential energy/water-efficiency improvements to include:
  - Building Envelope, Lighting, Heating, Ventilation, and Air Conditioning (HVAC), Domestic Hot Water (DHW), Plug Loads, and Compressed Air and Process Uses
  - Detailed analysis of energy consumption to quantify base loads, seasonal variation, and effective energy costs
  - Evaluation of lighting, air quality, temperature, ventilation, humidity, and other conditions affecting energy performance and comfort
  - Detailed discussions with PHA and residents to explore potential problem areas, and clarify financial and non-financial issues

ESCo/Consultant IGEA Requirements (continued)

- IGEA focuses on a "whole-building computer simulation"
  - Computer program models brick-and-mortar building responses to changes in energy systems, whether those are major HVAC retrofits or architectural modifications to walls, windows, and roof
- IGEA provides variety of Energy Conservations Measures (ECMs) including no and low-cost measures, modifications to system controls and building automation, operational changes, potential capital upgrades and green measures

ESCo/Consultant IGEA Requirements (continued)

- A cost/benefit analysis, using life-cycle costing (LCC)
  - LCC required in HUD guidance (PIH Notice 2011-36)
  - Identification of replacement costs, as required
  - Estimated savings from each measure and development (AMP) and the package as a whole
- Findings include general costs and performance metrics, as well as a means for PHA to evaluate ECMs and decide how to proceed with implementation

Energy Audit Comparisons

5 Year Energy Audit	IGEA
Proposed energy audit rule will continue existing 5-year requirement; add performance standards, lacking in previous audits, including requirement to review a broad spectrum of potential energy conservation measures and optimization opportunities	• Detailed building survey of systems and operations • Longer term data collection and baseline analysis (ASHRAE Level III or equivalent) • Distinct focus on savings cash flow and underwriting investment • Breakdown of energy source and end-use • Calibrate model to utility bills
Includes a site visit by an engineer; report detailing low-cost/no-cost measures and potential capital improvements for study	•Whole-building simulation calibrated with field data • Measures key parameters, e.g., space temperature, hot water storage temperature to improve model accuracy

Energy Audit Comparisons (continued)

5 Year Energy Audit	IGEA
Rapid assessment of building energy systems. Preliminary energy use analysis (e.g., benchmarking)	• Identification of ECMs for each energy system • Range of savings/costs for ECMs • Accurate modeling of ECMs and power/energy response • Spotlight on Operational Discrepancies • Bid-level construction cost estimating • Investment-grade decision-making support
Outline applicable incentive programs	• Outlining priorities for limited resources, next steps, and identification of ECMs, • Green measures requiring more thorough data collection and analysis •Outline applicable incentive programs

Module 6

Energy and Water Measures

Module 6: Energy and Water Conservation Measures (ECM)

ECMs may include, but are not limited to, the following (PIH Notice 2011-36):

1. Energy and water-efficiency improvements;
2. Mechanical, electrical, and plumbing upgrades (boilers, furnaces, HVAC systems, etc.);
3. Thermostatic controls, including programmable thermostats;
4. Improvements to building envelope design and condition (air sealing, insulation, roof replacement, windows, storm doors, vent dampers, etc.);
5. Lighting and lighting controls;

Module 6: Energy and Water Conservation Measures (ECM)

6. Fuel conversions;
7. On-site utility/energy distribution systems;
8. Moisture-sensing irrigation systems and controls; and,
9. On-site renewable energy and high-efficiency technologies
   a. Solar - domestic hot water, photovoltaic power generation
   b. Wind turbines
   c. Geothermal systems
   d. Cogeneration, etc.

Measures (continued)

- Metering after the ECM installation often encourages reduced consumption through behavioral adjustments
  - Meters, however, not considered primary ECM
  - Use of meters, however, in concert with ECMs (low flow shower heads and toilets, etc.) is encouraged
- Replacing energy and utility conduits not considered eligible as a primary energy conservation measure
  - Unless conduits are connected to a system that is being replaced or modified as an ECM, such as repair or replacement of water supply pipes
  - Such measures will need to be supported with documentation, and are subject to HUD approval

Measures (continued)

- Air conditioning – depends
  - A/C equipment is an eligible capital expense; utility service generally is not eligible under 24 CFR 965.505
    - Unless A/C system does not provide for resident option, or
  - Relief from surcharges is granted for elderly, ill, disabled or special factors in accordance with 24 CFR 965.508
    - For PHA-paid utilities - requests for relief from surcharges for excess consumption may be granted by the PHA
    - For resident paid utilities - requests for relief from payment of utility providers in excess of the allowances may be granted by the PHA

On-Site Renewable Energy - Solar

- Method of generating electrical power by converting solar radiation into direct current electricity using semiconductors that exhibit the photovoltaic effect
  - Most established renewable technology
  - Easier to install, especially on smaller scale, e.g. scattered site
- Roof top solar system has no moving parts, so it has a long expected lifetime exceeding 25 years
  - However inverters (which convert the panel DC current into AC) have an expected lifetime of 10 to 15 years

Renewable Energy Sources - Hot Water

- Solar hot water collectors need to receive direct sunshine
- Unshaded location between 9 a.m. and 3 p.m.
- Solar hot water not as sensitive as solar electric (PV) systems to partial shading
- Solar hot water system can save – 60 to 70% on your annual water heating bills ($100 and $400 per year)

Advancing, Affordable Technologies

Niagara's o.8 GPF StealthTM

Toilet technology continues to improve:

- 3.5 GPF; 1.28 GPF; 1 GPF gives way to .8 GPF over 12 year development period
- Ultra high-efficiency toilet
- Patented process uses energy created by water filling and falling in the tank during a flush cycle in addition to the actual flush volume to help evacuate waste

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Advancing, Affordable Technologies

- Pueblo Housing Authority
  - Uses tankless hot water heater with hydronic furnace
  - Elderly enjoyed quick hot water
  - Hydronic heating retains moisture over typical gas furnace
  - 70% drop in gas costs
  - Fits in tight closet spaces

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Emerging, Affordable Technology

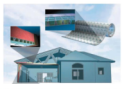
Thermal Barrier Versus Conventional Insulation

- Traditional insulation works as a simple barrier, slowing transfer of heat
- Thermal barriers absorb heat slowly
- Phase change material technology absorbs heat but also releases excess heat as needed
- Result is a building that stays at a prescribed temperature throughout the day, consuming less energy and keeping room temperatures more constant
- 25% to 30% energy savings can be achieved through the use of this technology

Emerging, Affordable Technology

Thermal Barrier Versus Conventional Insulation

- Easy to install
- Used in new; retrofitting existing buildings
- Green, fire retardant material



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Prioritizing ECMs

- Energy Improvements Checklist – Web Search ***PHECC*** - Public Housing Environmental and Conservation Clearinghouse
  - Designed to meet needs of small PHAs and MF owners
  - Developed in partnership with EPA; prioritizes ECMs with recommended specs
- Tier 1 ECMS – "low hanging fruit"
  - Lighting, Fixtures and Controls; Appliances Programmable Thermostat; Water Efficiency; Ductwork Improvements; Envelope Improvements; HVAC Maintenance; Ventilation Upgrades; Install Energy Management Controls (e.g., benchmarking)

Prioritizing ECMS - Tier 2

- TIER 2 ECMs – valued ECM, slower payback
  - Replace Cooling Equipment; Replace Heating Equipment; Replace Water Heating; Replace Windows, Doors and Skylights; Replace Motor/Pumps; Install Building Management System

PHA Staff Training and Resident Education

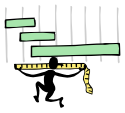
- Outcome of energy and water efficiencies ultimately resides with residents and proper stewardship by O&M staff
- Most ESAs will include some form of training and education for PHA staff and residents
  - Resident knowledge and buy-in can be essential to overall success, especially when feature and appliance upgrades are part of ECM
  - Train Resident trainers to get buy in
- Under an EPC, an ESCo may be given responsibility for operation and maintenance of ECM measures

Module 7

Measurement and Verification

What is Measurement and Verification (M&V)?

M&V is a measurement procedure involving on-site data collection on the performance of building energy consuming equipment according to an approved measurement plan



M&V Principles

- **Accurate** – reasonably accurate within existing budget
- **Complete** – consider all effects in the projects
- **Conservative** – in uncertain situations, underestimate savings
- **Consistent** – energy effectiveness results should be consistent regardless of professionals, projects, etc.
- **Relevant** – savings determination should focus on key parameters
- **Transparent** – M&V activities should be clearly and fully disclosed

HUD's and Your PHA's Interest in M&V

- Heart of a performance contract guarantee is specified level of performance (consumption) saving
- Primary purposes of M&V is to reduce risk of non performance to an acceptable level
- Within an EPC, project risk and responsibilities are allocated between the ESCo, PHA and HUD
  - *Risk* refers to uncertainty that expected consumption savings will be realized, including the potential monetary consequences
- Allocation of responsibilities between ESCo, PHA and HUD drives measurement and verification strategy
  - Defines specifics of how fulfillment of savings guarantee will be determined
  - Addresses usage and performance risk factors

Benefits of M&V

- Gives end user greater confidence in their investment
  - Determines if guarantee was met
- Gives lessor, e.g. bank, confidence in lease payment
- Gives ESCos a feedback mechanism on their quality of engineering
- Maximizes persistence of utility consumption and cost savings (e.g., water leaks)

Benefits of M&V *(continued)*

- Improves equipment reliability and optimizes system performance (e.g., load management)
- Provides valuable management information for building cost accounting, budget forecasting, subsidy submission
- Provides timely project performance feedback and accountability
- Provides data for savings or baseline adjustments

Preparing for M&V

- M&V Procedures Need To Be Established Upfront
  - Identified as part of IGEA and finalized in project submission for HUD approval
  - Documents how the baseline of energy use or costs will be established
  - How energy savings after project installation will be determined
  - How the baseline will be adjusted if large changes in the operation of the building occur after project installation

M&V Options

- International Performance and Measurement and Verification Protocol (IPMVP)
  - Best practices of current techniques for verifying results of energy efficiency, water and renewable energy projects
- IPMVP methods
  - Option A, Partially Measured Retrofit Isolation, Requires Approval
  - Option B, Retrofit Isolation, Requires Approval
  - Option C, Whole Facility, Recommended Approach
  - Option D, Calibration Simulation – Requires Approval
- Any verification methodology other than "actual" (IPMVP, Option C) MUST be approved by HUD based upon risk/cost effectiveness

Factors Affecting Cost and Appropriate Level of M&V Effort

- Value of projected ECM savings
- Complexity of ECM
- Total number of ECMs
- Number of interactive ECMs
- Uncertainty of savings
- Risk allocation for achieving savings
- HUD requirements

M&V Options: Cost vs. Accuracy

Customer and ESCo/consulting firm balance cost and accuracy

M&V Approach	Accuracy (%)	Approx. Cost (% of const. cost)
A	+/- 20%	1% - 5%
B	+/- 10% - 20%	3% - 10%
C	+/- 5% - 10% (w/ daily, hourly data), +/- 20% (w/ monthly data)	3% - 10% (w/ hourly monitored data), 1% - 3% (w/ monthly data)
D	+/- 5%-10%	3% - 10%

HUD Guidance re: M&V

- Provides HUD Guidance on what is acceptable for M&V
  - Web Search - ***HUD EPC***
- International Performance Measurement & Verification Protocol (IPMVP) 2010
  - http://www.evo-world.org/
- American Society for Heating, Refrigerating, Air Conditioning Engineers (ASHRAE) - guideline14-2002

Benchmarking Information That Puts the PHA in Control

- Every day PHAs make decisions that impact energy and water consumption and spending
- Benchmark enables a PHA to measure utility performance against similar buildings, in their portfolio or nationwide
  - Benchmarking is like the dashboard on a car
- Purpose
  - Track building energy performance
  - Assess energy management goals over time
  - Identify strategic opportunities for savings opportunities
  - Real time tracking of EPC performance - validates the M&V results
    - M&V conducted annually
- Costs generally around $500/project/year

Benchmarking
Information That Puts the PHA in Control

- Utility bills contain wealth of useful information, however,
  - Difficult to interpret and a hassle to collect and analyze
- Benchmarking tools provide user-friendly online energy management platform to:
  - Analyze utility bills, discerning the effects of weather, behavior, personal appliances, EPC improvements, etc.
  - Make it easy to track utilities in your portfolio
  - Find waste, cut costs
  - Put you in control of energy projects
  - Validate ESCo M&V reports

Benchmarking Your PHA - EnergyScoreCard

A=best 25% D=worst 25%

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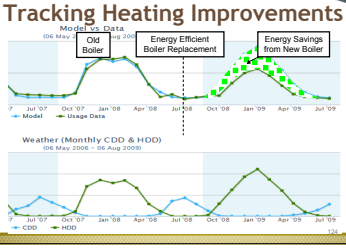
Tracking Lighting Improvement

Tracking Heating Improvements



Module 8

Financing and Repayment

Financing

- EPCs are typically funded with long-term debt or leases by third-party institutions
- Established and well capitalized market for EPCs
- Advantageous to capital-limited PHAs
- Lease purchasing agreements are alternatives to debt-based financing

Overview – Energy and Water Funding Sources

Funding Sources	Application
1. Lease-purchase agreements	➢ Energy Performance Contracting
2. Energy financed funds (Bonds)	➢ Energy Performance Contracting
3. Power Purchase Agreements (PPA); tax credits	➢ Used for individual measure with large capital investment needs
4. Capital Funds	➢ HUD funds for ECMs; however, savings excluded from EPC cash flow
5. Capital Fund Financing (CFFP)	➢ HUD funds for modernization projects including ECMs; however, savings excluded from EPC cash flow
6. Operating Fund Financing (OFFP)	➢ Portion of operating reserves above the HUD recommended minimum operating reserve levels may be used for capital improvements

Barriers to Financing Small PHAs

- Some banks unwilling to commit capital w/o collateral
  - Energy data credibility quantity/quality is suspect outside of the energy industry; lack of transparency
  - Collateral such as revenue, income, real property
- EE is not generally valued in real estate evaluation and appraisal
- Process is too complicated – 12 to 18 month to get installation
- Lack of education on the part of lenders
- Energy conservation is not core mission of PHA
  - 100% occupancy and rent collection, compliance
- Investors perceive a lack of investment opportunities at scale with attractive returns, strong risk management and sufficient volume

Financing Institution Perspective

- Banks want to understand better what they are "buying into"; PHA investment held to commercial business standards
  - What can go wrong; pro-ration, usage, performance risks
- Assess your PHA's ability to pay back a loan, if problems arise
  - What is available for security/collateral?
- Validate PHA Management team
  - How long have key members been in place?
  - Property management knowledge and experience
- Review Performance indicators – PHAS – last 5 years
  - What do "trends" reveal about PHA?
- Review financial audits; Pro Forma
- Review HUD approval letter for the EPC project
- Review Inspector General audit history on PHA, its programs

Small PHA Financing Opportunities

- Shorter loan terms may be desirable if:
  - Project is complex and phases enhance project success
  - Longer term loans are too expensive; may not be available due to economic constraints
  - You need to develop a track record
    - Long term financing poses greater risk, faster payback measures can provide cash flow for a second phase

Getting Your Project Financed

- ESCo can assist with RFP and secure financing or PHA can independently secure financing
- For self-managed project, PHA generally secures financing
- Consider selecting financing partner early in the process
  - Provide ability to maximize ECMs savings based on financeable structures; optimize retrofit opportunity – *One Bite at the Apple*
  - Benefits include committed financing for long-term programs
- Consider putting "skin in the game" to pay down financing, using capital or operating reserves for slower payback measures; enhances opportunities for financing

Institutions That Have Financed EPC Projects*

Available Financing Sources

Bank of America	Citibank
PNC	Deutsche Bank
Capital One	TD Bank
United Financial of Illinois	Local community banks

Investment Brokers	Investment Bonds
Grant Capital Management	Crews and Associates
All-American Investment Group	ABN-AMRO Group
Hannon Armstrong	

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Selecting a Financial Institution

- Have they financed EPC's before?
- What is the average size of the EPC loans they finance?
- What are their professional backgrounds, especially in terms of whether they are commercial, municipal or not-for profit lenders?
- How familiar are they with Federal and State incentives?
- Do they have the level of lending authority you need?
- Find out how they handle loan requests – verbal presentation first, and/or submitting a written loan request prior to face to face meeting
- Network with other local PHAs that have had EPC loan experience

Energy Efficiency Rebate and Incentive Programs

- At the federal and state level, grants, loans and tax credits are the most common tools
- Don't overlook opportunities to use Utility Company incentives – must ask on PHA by PHA basis
- Research local community groups, national non-profits
- ESCo should bring expertise on these programs and help the PHA to apply

Section 30 Requirement

- U.S. Department of Housing and Urban Development (HUD) approval is required for pledging and other types of security interests in public housing property.
- Purpose
  - Protect the interest of residents, Federal government and taxpayer to ensure the property and assets are used in way that is consistent agreement(s) prescribed by HUD for execution by the HA
  - Also to ensure that the PHA does convey or encumber the property or assets in a way that would prevent the PHA from providing meeting provision of decent, safe, and sanitary housing to eligible families in accordance with this ACC, statutes, executive orders, and regulations

Required Section 30 Documentation

- Cover letter sent to HUD Field Office
- Recorded Modernization Declaration of Trust (52190-B)
- EPC ACC Amendment
- DOT Counsel Opinion
- EPC Program legal Counsel Opinion
- Narrative description of the property
- Description of security interest
- Evidence of a PHA Board resolution
- EPC Program Legal Counsel opinion
- EPC Approval Letter

Module 9

HUD EPC Review Process

HUD Review and Approval Requirements

- For ESCo Developed Project – HUD Approval Required
  - Prior to releasing the RFP for an ESCo
  - Prior to executing the final Energy Services Agreement (ESA) between the ESCo and PHA
- For PHA Self-Managed Project - HUD Approval Required
  - Preliminary EPC project proposal submission
    - Post IGEA, including initial cash flow, cost summary, M&V plan, baseline
  - Final project proposal submission, including finalized design and development plans and costs

EPC- Annual Review Requirements

- The PHA submits an annual M&V report to local HUD Field Office, including the following:
  - Monthly consumption, demand, and cost data
  - Monthly heating and cooling degree day data any other information required in the M&V plan
  - Evaluation of actual performance against guarantee and documentation of any adjustments employed
  - PHA certification of annual savings

EPC Records Retention

The PHA should retain the following documents and any updates:

- Final RFP for the ESCo and proof of competition
- HUD approval letter to proceed with RFP
- Investment grade energy audit
- Energy Services Agreement
- HUD approval to proceed with ESA
- Financing agreement and any revisions
- Annual review package, e.g., M&V report, including any HUD field office review letter

PHA –EPC Responsibilities

- PHA's role in an EPC is that of a business owner to:
  - Negotiate contract in the interest of the project
  - Ensure project viability, long-term savings and minimize risks
- EPCs are contracts between PHA and ESCos or alternatively energy engineering firms
  - HUD is not party to these contracts
- PHAs fully assume the risk for the following:
  - Generating sufficient savings to cover payments
  - Savings shortfalls over time attributable to:
    - Consumption savings that are not guaranteed
    - Projected rate increases that don't materialize;
    - Consumption increases that adversely affect the project economics.

EPC Review Process

- Completeness Review
- Technical Review
- Panel Review
- HUD EPC submission requirements and EPC procedures can found by Web Search - ***HUD EPC***

HUD Submission Package

- Required docs are submitted in correct format:
  - Volume 1- IGEA
  - Volume 2
    - HUD Cost Summary
    - HUD Baseline Data
    - Cost Reasonableness Certification
    - Cash Flows
    - Rate Escalation
    - Resident Paid Utility Allowances
    - PHA Legal Review
    - Copy Energy Service Agreement

HUD Summary Sheet - Pro Forma

- Pro Forma - Financial statements prepared in advance of a planned transaction, e.g., such as a new capital investment, or a change in capital structure such as incurrence of an EPC debt
- The EPC *pro forma* anticipates results of the EPC transaction, with particular emphasis on projected cash flow, summary of savings revenue and contract term
  - Demonstrates expected effect of proposed EPC transaction on PHA's financial viability
- Lenders and investors will require such statements to structure or confirm compliance with debt covenants such as debt service reserve, guarantees etc.

Refer to HUD Summary Statement Handout

Defining The Baseline

- Obtain form HUD-52722, latest and baseline years
- Validate utility data that will be included in baseline and current consumption year
  - Obtain billing information
- Make necessary adjustments to baseline
  - Weather
  - Occupancy
  - Unit count
  - Building usage
  - Data correction
- Establish baseline for each AMP

Refer to Baseline Handout

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Cash Flow

- Cash flow statement reflects a PHA's liquidity with respect to the EPC project
  - Projection of a PHA's financial resources and obligations over the term of the financing , summarizing the PHA's financial transactions related to the EPC
  - Purpose is to match energy and water savings revenues with project expenses associated with generating those revenues
  - Cash flow statement includes only inflows and outflows of projected energy and water savings and other cash inflow e.g., rebates, incentives, etc.

Refer to Cash Flow Handout

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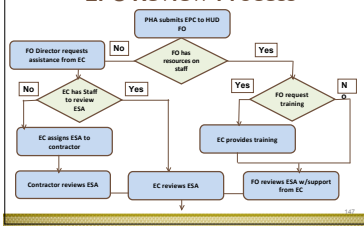
EPC Review Process



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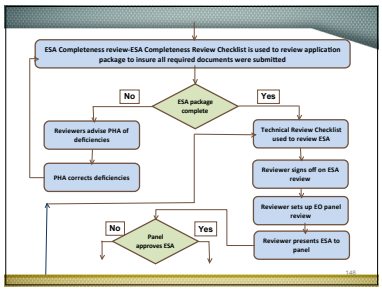

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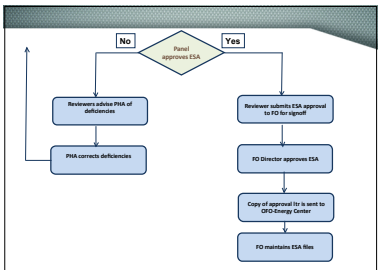

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EPC Program Requirements

- **Statutes, Regulations, Guidance**
  - Statute
    - U.S Housing Act of 1937 as modified by Quality Housing and Work Responsibility Act of 1998
  - Regulation (HUD EPC Incentives)
    - 24 CFR 990, Subpart C
    - Frozen Rolling Base; 24 CFR 990.185 (a)(1)
    - Resident-Paid Utility Allowance Adjustment; 24 CFR 990.185(a)(2)
    - Add-On Subsidy; 24 CFR 990.185(a)(3) and 990.190(b)
  - Notices
    - PIH 2011-36 (EPC);
    - PIH 2011-14 (Unsecured Financing)
    - PIH 2012-2 (Guidance on PH Operating Funds)
  - HUD EPC Guidance
    - Web Search: ***HUD EPC***

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Contact Information

Public Housing Energy Policy Team

Send your EPC questions to:
PIH_EPC_Policy@hud.gov

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OTHER HUD GREEN BUILDING FOR AFFORDABLE HOUSING TRAINING COURSES

- Course 1 Introduction to Green Building for Affordable Housing
- Course 2 Executive Decision-Making in Green Building
- Course 3 Best Practices for Building Operations and Maintenance
- Course 4 Financing Green Building
- Course 5 Energy Performance Contracting for Small PHAs

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