Federal Energy Management Program

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

IEA ECB Annex 61 Subtask C

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Tallinn, Estonia

FEMP Federal Energy Management Program

Review of definition of deep retrofit

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- Greater than 50% reduction in energy/water use
- Integrated design
  - Consideration of the building+occupants+energy consuming equipment as a system
  - Multiple interrelated ECMs
  - Diverse building types and communities (repurposing buildings) to create cascading energy and waste heat streams
  - Combine energy reduction with O&M improvement, reliability and/or mission support (e.g., health, comfort)
- Innovative funding approach
  - Public and private financing
  - Building upgrade and renovation with ESPC
  - 10+ years financing
  - Risk management

Subtask C Approach

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- Each participating country implements one or more deep retrofit projects
  - Conforms to country-specific legal/policy framework
  - Driven by local conditions such as climate, energy prices
- Document the project in a detailed case study that describes:
  - Barriers/solutions
  - Design approach
  - ECMs installed
  - Business model
  - Energy and cost savings
  - etc.
- Compile these case studies into a final report

Template for Demonstration Projects

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Stage	# Description
1	1. Name of the project, Location
2	2. Picture
1,2	3. Project summary: Project objectives, energy goals, short description
1	4. Site: Location, climate zone, Cooling Degree Days Heating Degree Days
1,2	5. Building or community / Typology: Age, Type of buildings, Use(s), Number of buildings, area, etc.
2,3,4	6. Architectural and other relevant drawings
2,3,4	7. Relevant national energy use benchmarks, regulation, target
2,4	8. Site energy cost information
1,2,3,4	9. Pre-renovation building/community details: Envelope details: walls, roof, windows, insulation levels; Heating, ventilation, cooling and lighting systems
1,2,3,4	10. Description of the problem: reason for renovation
2,3,4	11. Renovation SOW (non-energy and energy related reasons)
1,2,4	12. Energy saving/process improvement concept and technologies: Include ECMs, renewable energy, water, combined heat & power, etc.
1,2,4	13. Pre-renovation energy use (total and per m2/year)
2,3,4	14. Predicted energy savings (site, source, GHG), total and per m2/year
4,5	15. Measured energy savings (thermal, electrical), total and per m2/year
5	16. Conclusion from the assessment of the difference between 14 &15
2,4,5	17. Energy cost reduction
2,4,5	18. Non-energy related benefits realized by the project (e.g., improved productivity, increased rent/lease, increased useful space, etc.)
2,3,4	19. Renovation Costs: total and per m2: Energy-related, Non-energy related, bundled ECMs
3,4	20. Business models and Funding sources
3,4,5	21. Cost effectiveness of energy part of the project (NPV, SIR).
4,5	22. User evaluation: Description of user training programmes within the refurbishment; Integration of users demands in the planning process
4,5	23. Experiences/Lessons learned: Energy use; Impact on indoor air quality; Practical experiences of interest to a broader audience; Resulting design guidance; Space utilization changes; Follow up (how the users actually operate the system.)
1 – 5	24. POC information:
1 – 5	25. Date of the report:
2 – 5	26. Acknowledgement: (e.g., project sponsor)
1 – 5	27. Reference

Very little response from participating countries

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- Suggest we go around the room to discuss progress of projects
- United States (next slides)

Army – Fort Carson

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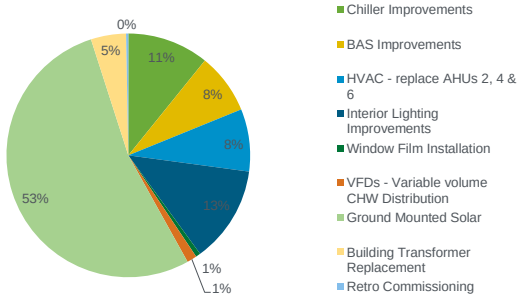
- Building 1117 project now appears to be going forward with appropriated funding
- Army Corps of Engineers perceives too much risk in combined funding approach
- Deputy Assistant Secretary of Army Richard Kidd still expects a combined funding deep retrofit project
- Army's Installation Management Command (IMCOM) actively seeking a new site
- Building 1117 may still provide some technical lessons learned

GSA National Deep Energy Retrofit Program – St. Croix, US Virgin Islands

- Project Facts:
  - **Square Footage**: 76,227
  - **Investment Value: $6,372,000**
  - **Annual Energy Cost Reduction**: $509,777
  - **Payback Period** – 19Years plus 13 month construction
  - **M/BTUs/year**: 3,286
  - **Energy Reduction Percentage**: 100%
  - **Appropriated Funds included**: $118,750
  - **ESCO:** Schneider Electric
  - **ECMS based upon Investment Value:**

Buildings Included:

Almeric Christian Federal Building



GSA NDER – Silver Spring/New Carrollton Project

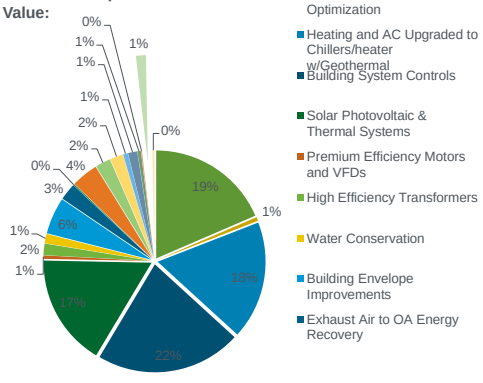
Project Facts:

- **Square Footage**: 2112664
- **Investment Value**: $44,633,045
- **Annual Energy Cost Reduction**:
- **Payback Period** – 22 years with 2 year construction period
- **M/BTUs/year**: 94588
- **Energy Reduction Percentage**: 60%
- **Water Reduction Percentage : 56%**
- **Appropriated Funds included**: $586,172
- **ESCO:** Ameresco
- **ECMS based upon Investment Value:**

Buildings Included:

Silver Spring Metro Center 1 (MD0205ZZ)

New Carrollton FB (MD0278ZZ) (pictured)



What about other countries?

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- Discuss progress on national projects