



An Innovative Energy Efficiency Program that Costs Building Owners Zero, Drives Down CO₂, and Generates Immediate Savings

City

Berlin, Germany

Population

3.4 million

Project Start Date

1997

Annual CO₂ Reductions

60,484 tons

Annual Financial Savings

€10,164,848 in 1,400 buildings

Initial Investment

No initial investment other than internal collation of data for retrofit tender

Project Status

No initial investment other than internal collation of data for retrofit tender

Energy Efficiency

26% average savings per building pool (1 building pool includes an average of 20 buildings)-
749,197 MWh/a Energy consumption baseline

SUMMARY

The City of Berlin in partnership with Berlin Energy Agency (BEA) has pioneered an excellent model for improving energy efficiency in buildings. They project manage the retrofit of public and private buildings, preparing tenders for work that will guarantee reductions in emissions. CO₂ reductions of an average 26% are written into the public retrofit tenders so that winning Energy Systems Companies (ESCOs) must deliver sustainable energy solutions. 1,400 buildings have so far been upgraded, delivering CO₂ reductions of more than 60,400 tonnes per year – these retrofits cost the building owners nothing – and the buildings make immediate savings.

WHAT IS IT?

BEA is a leading energy consultancy – partly owned by the government of Berlin. It organises retrofits for large government and commercial buildings, by setting up special contracts between the building owners and ESCOs. ESCOs that apply for the retrofit tenders must agree to make energy efficiencies of around 26%. They do this by installing hardware such as heating control systems, lights, insulation etc. The annual energy efficiencies of 26% then fund the cost of the retrofit. BEA helps building owners and ESCOs decide how the money will be paid back to the ESCO. Average payback periods are 8 to 12 years. BEA's energy partnerships are highly successful – because they cost the building owner zero, and deliver savings immediately. BEA is successfully extending this program to other countries.

HOW DOES IT WORK?

Energy Savings Partnerships have been working successfully for over ten years. The implementation depends on the efficient interaction of all key players.

- The City of Berlin through the Senate Administration for Urban Development initiates the Energy Saving Partnerships between building owners – typically various Berlin district administrations – and ESCOs.

- Berlin Energy Agency then acts as the independent project manager, moderating and managing the process from baseline to contract negotiation.
- Building owners agree to establish a tender process for retrofitting their building to cut back on energy consumption.
- Typically BEA will bring together a number of buildings – from 4 to as many as 400, these pools then issue retrofit tenders.
- To take part in the Energy Savings Partnerships, buildings need to have a minimum energy bill of around €00,000 annually.
- ESCOs that tender for the work – such as Siemens, Honeywell, etc - use sustainable technologies and systems, such as insulation, CHP, lighting, self-ballasted lamps, heating control systems, energy consumption regulators, insulation, to reduce energy consumption in the building.
- The winning ESCOs must guarantee energy savings using innovation, state-of-the-art technology, ideas and value for money.
- The ESCO pays for the retrofit upfront and building owners pay them back over an agreed period – usually 8 to 12 years in annual instalments from the energy savings. Typically around 97% of the annual savings are paid to the ESCO in the first few years. Once the contract is completed, the building owner realises the full energy saving.
- This means that, remarkably and simply, the building owner pays not a cent towards the retrofit, but in fact makes savings from day one.
- BEA is able to offer its services for free as a result of joint 50/50 funding from the State and District Municipal governments.

So far, ESCOs have invested EUR43,125,882 in light fittings, energy control system, insulation etc in 1,400 buildings. These buildings have made total guaranteed savings of EUR10,164,848 or 26% of their energy bills.

duration model / participation

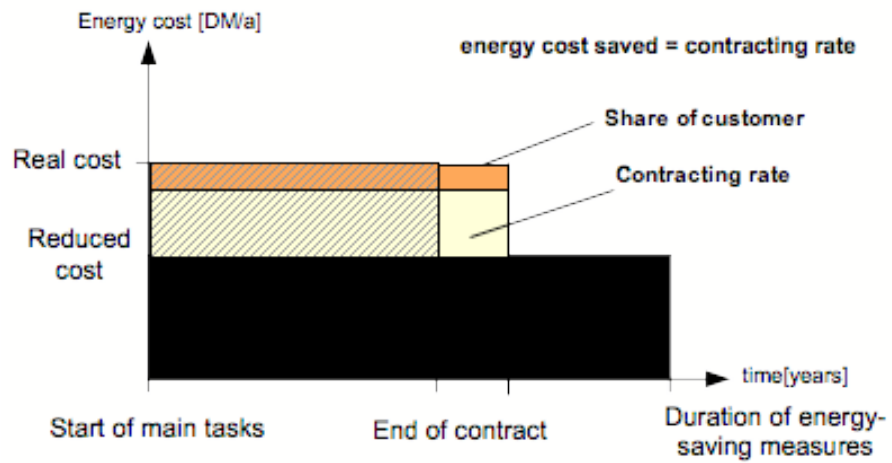


Fig. 1 Energy Performance Contracting – General Idea

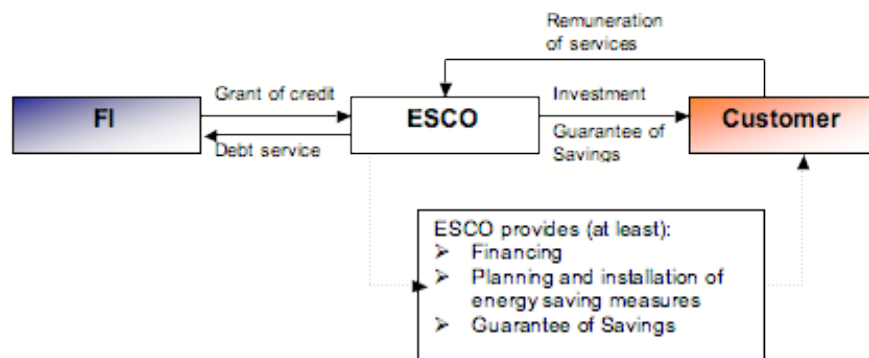


Fig. 2 Energy Performance Contractual relationships and financial flows, general scheme based on credit financing through ESCO.

CASE STUDIES OF BUILDINGS & BUILDING POOLS

CASE STUDY 1	Germany's largest correctional centre, JVA Tegel & Siemens This Energy Saving Partnership was the first of its kind between Siemens Building Technologies and a correctional centre. The contract guarantees annual energy savings of more than 600,000 Euro.
CO2 reductions	4.68 tons CO2 per year
Financial Savings	EUR600,000 per year 33% cost reduction per year for investment of \$2.5 million
CASE STUDY 2	Pool 4 of the Energy Saving Partnerships with Johnson Controls The Berlin District Pankow (Pool No.4) entered an Energy Saving Partnership with Johnson Controls in 1998 (EU wide tender). The pool consists of 56 real estates within the district and a contract volume of 2,075,000 Euro per year for a Baseline Consumption of 49,513 MW h per year. The contract started in April 1999 and entered the main performance phase with energy savings becoming active in March 2000. The contract will end in 2013 after a duration of 14 years.
CO2 reductions:	2,500 tons per year
Financial Savings	24.2% savings, or EUR502,000, for EUR1,771,000 investment

APPLICATION

Energy Saving Partnerships work because they:

- Guarantee savings by contract
- Reduce energy consumption in large building complexes or a building pool through investments by the contractor
- Refinance the investment through energy savings
- Allow the building owner to participate in the saved costs
- Recommend that countries implementing the partnerships have a strong legal framework for tenders and that local private firms carry out work.

The success of the Berlin Energy Saving Partnerships can be attributed to:

- Communication and smooth interaction
- Political will
- Transparent procedures
- Enforceable standards
- Independent experts.

These collectively achieve good competition and best results.

Berlin's Energy Savings Partnerships are being successfully implemented beyond Berlin. BEA technicians are able to provide technical consulting services around the world. The concept has been effectively transferred to other sectors.

- It has been applied in 15 hospitals throughout Germany
- Know-how transfer to date has helped initiate more than 20 projects in Central, Eastern and Western Europe.
- The program has already transferred well to Bulgaria, Slovenia, Romania and Chile.

CONTACTS

Alexandra Waldmann

Berliner Energieagentur GmbH
Berlin Energy Agency International Know-How Transfer
Französische Str. 23 10117 Berlin

+49 (30) 29 33 30 53

+49 (30) 29 33 30 95 fax

email: waldmann@berliner-e-agentur.de

<http://www.berliner-e-agentur.de>