

Dipl.-Ing. Detlef Loy

Economics and Financing of municipal RUE-measures

Rio de Janeiro 22.1.98

Loy Energy Consulting
Georg-Wilhelm-Str. 18
D-10711 Berlin
Germany
E-Mail: dloy@vossnet.de



RUE-Technologies for municipal Buildings

- ◆ **Advanced Lighting Components**
- ◆ **Building Control Systems**
- ◆ **Motors (for elevators, Ventilation etc.)**
- ◆ **Heating and Air Conditioning**
- ◆ **Passive and Active Use of Renewable Energies**
- ◆ **On-site Cogeneration**
- ◆ **Conservation Techniques as insulation, air sealing etc.**



Benefits of RUE-measures in Municipalities

- ◆ **Energy savings and saving of public money**
- ◆ **Reduction of operational and maintenance costs**
- ◆ **Improvement of work environment**
- ◆ **Job creation**
- ◆ **Production of local economic benefits**



Obstacles for the Implementation of RUE-Measures

- ◆ **Deficits in information and motivation**
- ◆ **Deficits in energy monitoring and controlling**
- ◆ **Lack of responsibility**
- ◆ **Deficits in public budgets**
- ◆ **Deficits in legal requirements and obligations**
- ◆ **Lack of financing know-how**



Instruments of Municipalities to enforce RUE-measures

- ◆ **Laws, codes, ordinances**
- ◆ **Informal energy codes**
- ◆ **Partnership with utilities, financial institutions, private energy service companies (ESCOs), other local governments**



Financing Sources

- ◆ **Own Revenues**
(max. payback time e.g. 6 a)
- ◆ **Direct Borrowing**
(bonds, debentures)
- ◆ **Alternative Financing Techniques**
(e.g. performance contracting)



Features of an Energy Service Contract

- ◆ **Contractor takes sole source Responsibility**
- ◆ **Fast track Implementation**
- ◆ **Guaranteed Performance**
- ◆ **Comprehensive Solutions**
- ◆ **Financing**
- ◆ **Financial and technical Risk Management**



Contracting Modells

◆ **Operation Modell**

Facility remains in the ownership of the Municipality

◆ **Ownership Modell**

Facility remains in the ownership of the Contractor

- *Energy supply Contract*
- *Leasing Contract*

◆ **Co-operation Modell**

- *Operating Company*
- *Division into Ownership and Operating Company*



Payment options for Performance Contracting

- ◆ **Shared Savings agreement**

in which the contractor takes a fixed percentage of the energy savings for a predetermined length of time (e.g. 50 % for 10 years)

- ◆ **Fast Payout agreement**

in which the contractor receives all the energy savings until either the end of a specified time period, or the cost of the project is paid off

- ◆ **Chauffage agreement**

in which the Municipality is guaranteed a fixed energy cost saving over the period of the contract

- ◆ **Energy Savings agreement**

in which the Municipality pays a flat fee each month for the energy needs covered in the contract.



Contracting - Step by Step (1)

- ◆ **Selection of appropriate objects**
- ◆ **Status-quo analysis**
- ◆ **Comparison of alternative measures (incl. environmental impact)**
- ◆ **Economic analysis**
- ◆ **Calculation of self-investment and operation costs**



Contracting - Step by Step (2)

- ◆ **Essentials of the contract**
- ◆ **Call for tender**
- ◆ **Evaluation of tenders**
- ◆ **Contract**
- ◆ **Project realisation**
- ◆ **Monitoring and Verification**



Energy Saving Partnership

General Idea

- ◆ **Activating the Market by**
 - concerted and
 - standardized bidding procedures
- ◆ **Share of risks by**
 - formation of **pools** (horizontal distribution)
 - **Bundling** of measures (vertical distribution)
- ◆ **Special attractiveness** of the project due to
 - economic **volume** (turn-over)
 - **Innovation** (Attraktivität aufgrund Marktvorteilen)
- ◆ **Reduction of Transaction costs**



Energy Saving Partnership

Project phases



Energy Saving Partnership Required Data

- ◆ **Responsible Administration / Person**
- ◆ **Floor area**
- ◆ **Energy supply contracts**
- ◆ **Maintenance contracts**
- ◆ **Use of Building**
- ◆ **Type of heat and hot water supply**
- ◆ **Status-quo of building structure**
- ◆ **Heat and electricity consumption and costs**



Energy Saving Partnership Results

- ◆ **9-11% Cost Saving Guarantee**
- ◆ **Large-scale Investments**
- ◆ **Considerable contributions to Maintenance**
- ◆ **Installation of Energy Controlling System**



Energy Saving Partnership Share of Cost Savings

Guaranteed Energy
Cost Savings for the
City of Berlin
9 %

Financial Benefit
for ESP
11 %

Remaining
Energy Costs
80 %

