

# **Integrated Energy Contracting (IEC) (Renewable) Supply and Savings**

Working Group Session 1.2

MS financial instruments designed to support  
public building renovation

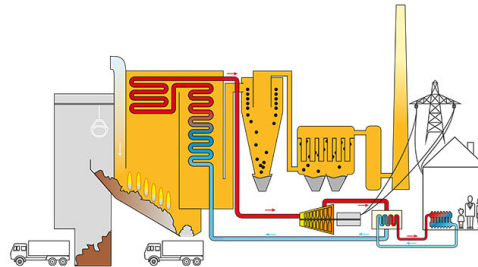
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October 11, 2022

# Public Buildings: Contracting models in the different structures of administration

municipal buildings  
(Town Halls, Fire  
Dept., Elementary  
Schools...) →  
e.g. ESC, EPC



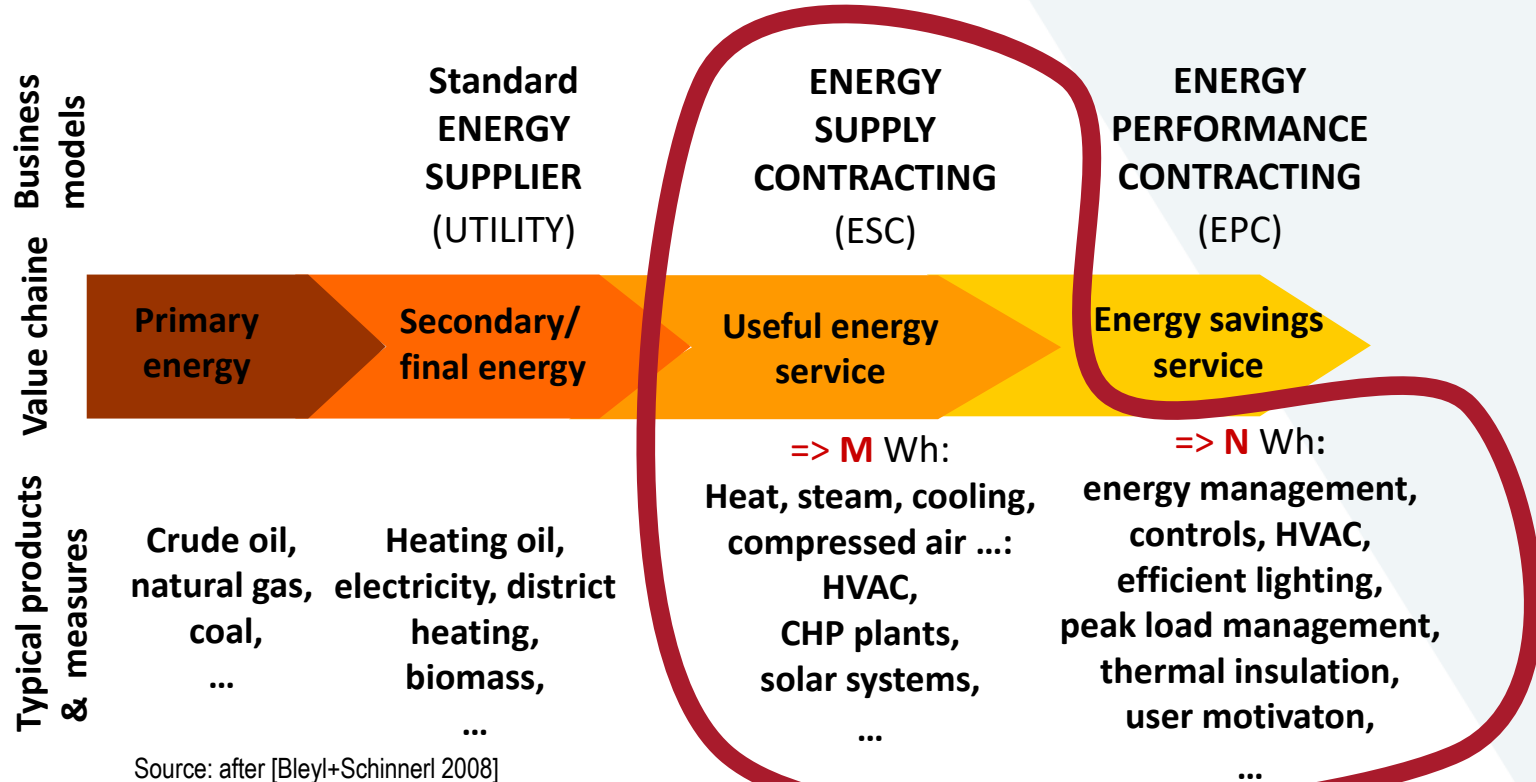
State-Government  
Buildings (Hospitals,  
Professional Schools,  
Nursing Homes...) →  
e.g. ESC, **IEC**



Federal Buildings  
(Military bases,  
Jails, Police  
Stations...)  
→ e.g. EPC



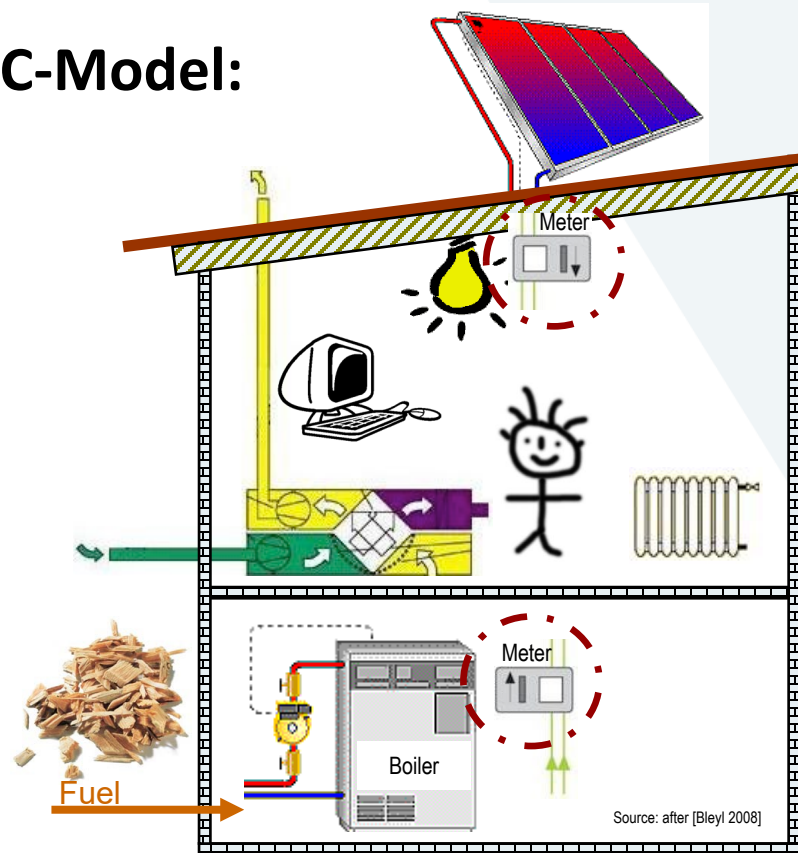
## IEC: Business models + scope of measures



Source: after [Bleyl+Schinnerl 2008]

## Introduction of the IEC-Model:

1. Building on ESC model
2. Expand scope to savings in entire facility  
(HVAC, user motivation, building shell ...)
3. Simplified M&V:  
Savings calculations  
+ quality assurance



Integrated Energy Contracting (IEC) =  
(ESC + EPC) => MWh + N Wh

# Introduction of the IEC-Model:

## Combination of 2 objectives:

- Reduction of energy demand through the implementation of energy efficiency measures in the fields of:
  - 1. Building technology (HVAC, lighting ...)
  - 2. Building shell (Insulation)
  - 3. Motivation of building occupants
- Efficient supply of remaining useful energy demand, preferably from renewable energy sources (district head, biomass, solar thermal energy, pv...)

## IEC in Practice: Nursing Home

### Facility:

- Nursing home Bad Radkersburg/Styria
- Owner: Landesimmobiliengesellschaft (LIG) Steiermark
- Heated floor area: 5.800 m<sup>2</sup>

### Initial situation:

- Inefficient light-fuel-oil boiler, high energy costs
- No insulation of building envelope
- Inefficient hot-water-conditioning
- No energy monitoring



Elderly home post IEC - Bad Radkersburg, Styria, Austria  
Source: Landesimmobiliengesellschaft Steiermark GmbH

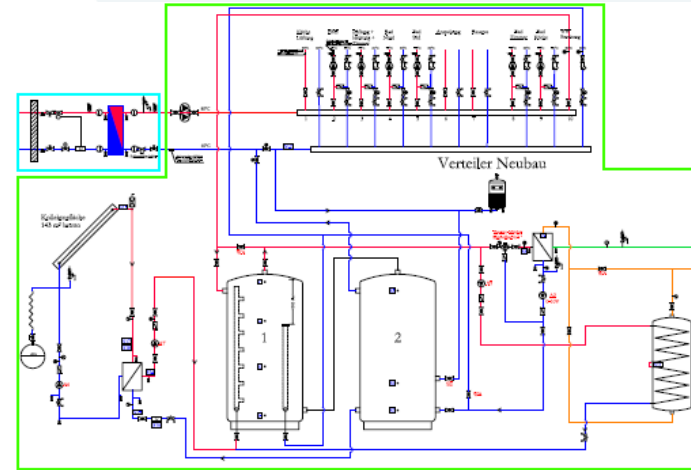
## IEC in Practice: Nursing Home

### Goals of building owner:

- Renewal + outsourcing of heat energy supply and financing
- Reduction of energy demand, -cost and CO<sub>2</sub> emissions through demand side energy efficiency measures

### Measures (selection):

- Connection to district heating network (heat-sources geothermal + biomass)
- Solar thermal collectors, 150 m<sup>2</sup>, Hot water treatment with chemicals
- Upper floor ceiling insulation



LAPH Bad Radkersburg: Hydraulic Schema  
Source: Siemens, LEA, Connes 2010.09.22

## IEC in Practice: Evaluation

- 9 (of > 30) Buildings were evaluated by FH Burgenland in master thesis on behalf of the state government (Land Steiermark/Fachabteilung 16/Referat Landeshochbau)

### Total energy results:

- Heat energy savings: 3,514 MWh **(19%)**
- Electrical energy savings: 775 MWh **(16%)**





## IEC in Practice: Evaluation - Savings

### Cost savings:

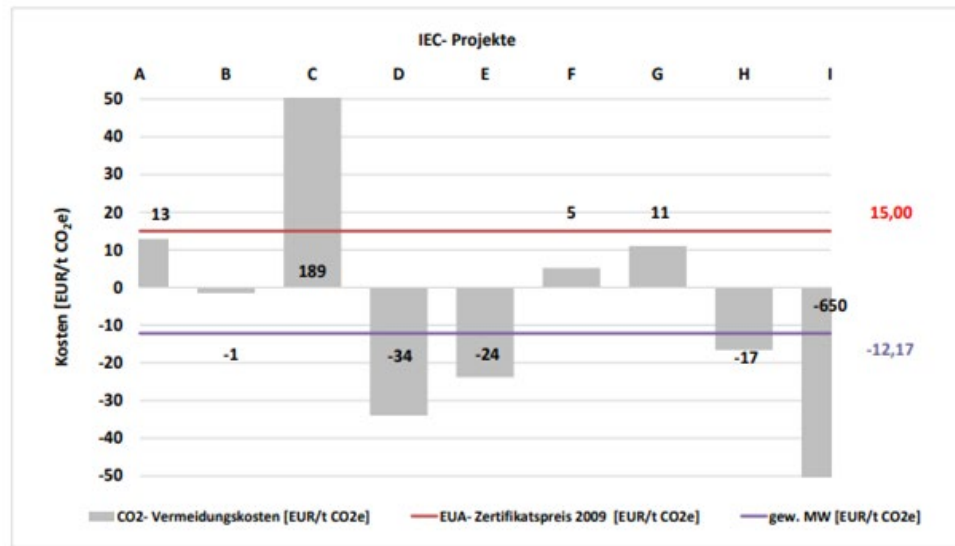
- Heat cost savings: 315,600 EUR; Electrical energy cost savings: 92,700 EUR
- investment costs EUR 1,186,000 in addition to the annual expenses for management, services, maintenance and funding being cost-neutral

### Environmental impacts:

- conversion to renewable Energy: 4,400 MWh **(75%)**
- Reduction of CO2 emissions: 3,400 tons **(79%)**

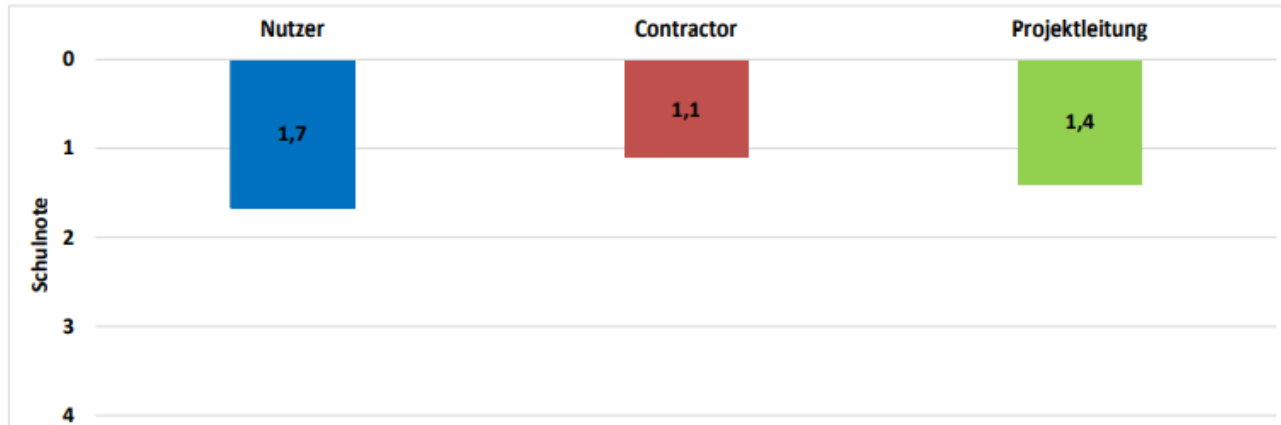


## IEC in Practice: Evaluation - CO<sub>2</sub> avoidance costs



In the weighted average, the CO<sub>2</sub>e avoidance costs are below the EUA certificate price (2009)

## IEC in Practice: Evaluation - Interviews



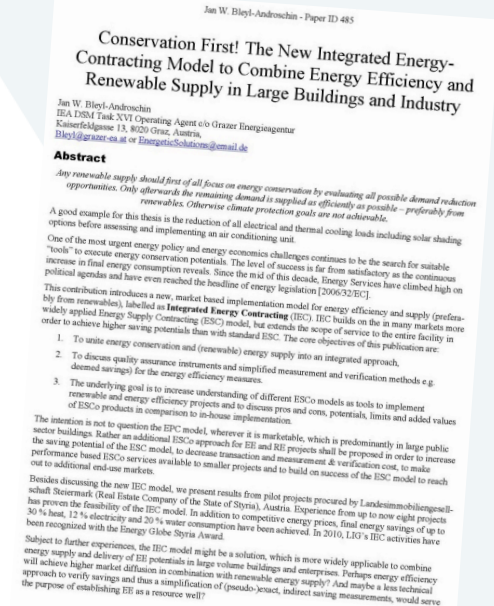
The evaluation of the interviews confirms that the project partners are overall satisfied with the projects

## IEC in Practice: Evaluation - Multiple Benefits

- Outsourcing of planning and risk in project implementation
- Energy monitoring and positive climate balance
- Elevation of external, often innovative implementation ideas, since a "different perspective" is involved
- The creation of regional jobs (e.g. installation companies, planning offices, employees of local heating companies)
- User motivation and sensitization of the user with regard to the "energy saving idea", partly also energy coaching

# For further Reading and References: Task 16 paper on Integrated Energy-Contracting Model

- Bleyl, Jan W.  
*Conservation First! The New Integrated Energy-Contracting Model to Combine Energy Efficiency and Renewable Supply in Large Buildings and Industry*  
in ECEEE Summer Studies, paper ID 1-485, Belambra Presqu'île de Giens, France June 2011
- IEA-REDT Business Models for Renewable Energy in the Built Environment International Energy Agency Renewable Energy Technology Deployment (ISBN 9780415638685) 2013, download available at: <http://iea-redt.org/wp-content/uploads/2012/04/RE-BIZZ-final-report.pdf>



# Thank you for your Attention!

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