



Urban Transitions Mission's Knowledge-Exchange Program Renewable Energy for Cities

PadovaFIT!

A Financing Investment Tool for the retrofitting of housing and
service facility buildings in the PADOVA area, ITALY

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INITIAL FACTS

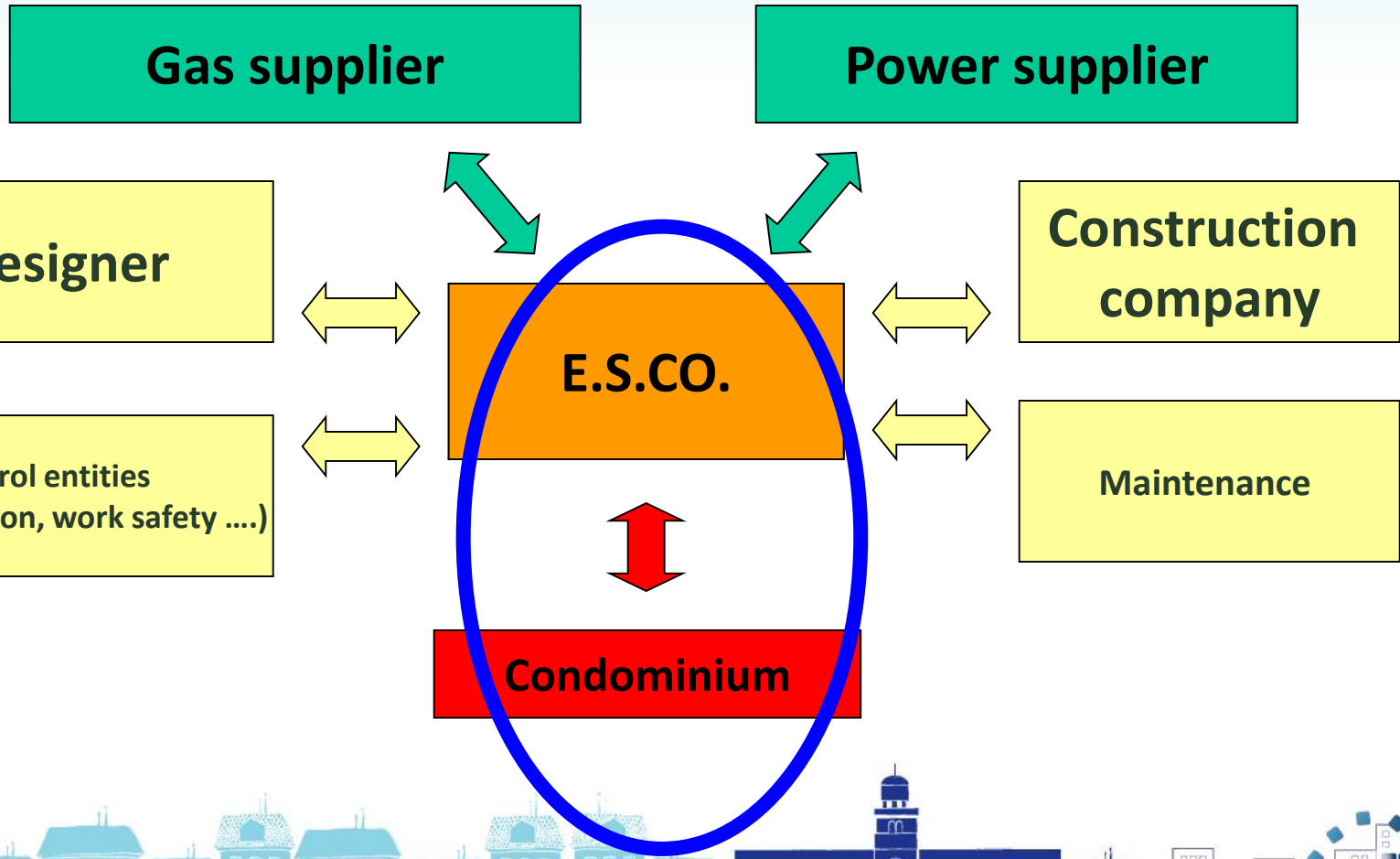
- 220.000 inhabitants
- Lots of Class G condominiums
- Average 180 kWh/m²/year
- Housing needs during economic boom of 1960s-1970s

- Energy poverty
- Ageing population
- Lack of competencies in energy and Energy Performance Contracts
- General hostility to debts



The DELIVERY PARTNER (the OFFER side)

Energy Service Company + Engineering Company



The CONDOMINIUMs (the DEMAND side)

Stakeholders Involvement & Engagement

- **Different target groups** to address:

- Single Building Managers and citizens
- Building managers associations
- Small owners associations
- House Owners/Tenants Unions
- Constructors' associations



- Target groups **potential resistance** (change in status quo, lack of knowledge, ...)

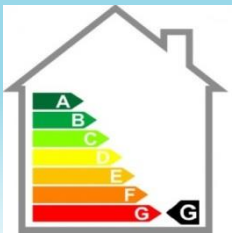
- Training of **Condominium Facilitators**:

- TECHNICAL and PSYCHOLOGICAL work (Open call – 80 hours of free training)
- **Light energy Audits** and participation in Condominium **Assemblies**



Stakeholders Involvement & Engagement - the Activities





Technical Engineering – Light Energy Audit

CONDOMINIUM n.1 - STARTING POINT



CONDOMINIUM n.1	Padova
Built in	1966
Dwellings	10
Floors heated	3
Square Meters heated	1.750 mq
Window frames	Wood, single glazed
Heating system	<ul style="list-style-type: none"> • type: centralised • Installed: 1994 • fuel: gas • Plant Power: 165 kW

Consumption	Average cons. [kWh, smc]	Average cost [€/year]
Electricity	6.000 kWh	€ 2.000
Gas	22.600 smc	€ 22.000



Technical Engineering – Light Energy Audit



EXAMPLE OF IMPROVEMENT MEASURES

Description	Cost [€]	Energy savings [%]	Money savings [€]	Pay Back <u>(without tax incentives)</u> [years]
Heating system refurbishment:				
- central heating boiler	€ 50.000	23%	€ 5.060	9,88
- individual heat counters				
External Thermal Insulation	€ 58.000	20%	€ 4.400	13,18
Attic insulation	€ 9.000	14%	€ 3.080	2,92
Double glazed windows	€ 47.000	18%	€ 3.960	11,87
Solar thermal plant+ Heat cost allocators (50% need coverage)	€ 18.000	50%	€ 2.750	6,55
Photovoltaic plant (5 kW)	€ 12.000	80%	€ 1.600	7,50



Technical Engineering – What type of contract?

CONDOMINIUM VS ESCo

EPC (**Energy Performance Contracting**) based on certified performance:

ESCo (Energy Service Company) investment paid back according to energy savings achieved

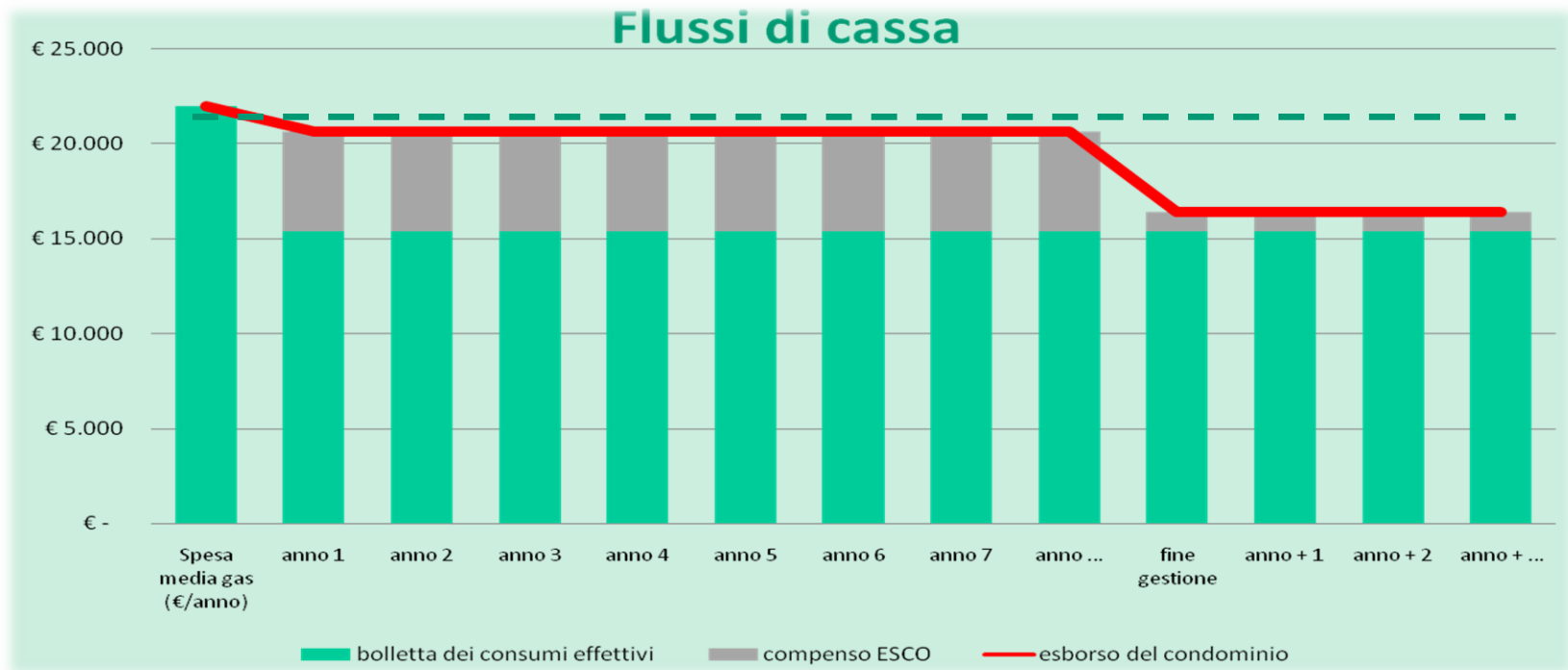
EPC contract highlights:

- Energy Audit and project design of works
- Works planning and timing
- ESCo Investment
- Condominium-ESco Contract Template validated by Municipality
- Duration of the contract
- Energy saving % (guaranteed) to be achieved
- Definition of baseline of energy consumption
- Quality assurance and performance monitoring methodology
- Management and maintenance of system(s) installed
- Energy service provider (heating, cooling, lighting)



Technical Engineering–Why EPC contracts are convenient?

- ESCo entirely funds and implement the works + manages all systems installed
- Condominiums start saving a little bit on energy bill right after works end
- When contracts end (normally 9 years) full savings % guaranteed



Added value for citizens

- **Free energy audit** lead by energy experts
- **Increased knowledge** on Energy issues and Energy Performance Contracting
- **Delivery Partner takes care of all** organisational, technical and financial aspects
plus management and maintenance of the new plants
- **Heating costs** are blocked/reduced against future increase in fuel costs
- Reduced use of fossil fuels at local level: **reduced CO₂ emissions**
- Improved **comfort**
- Increased **value** of property



Padova FIT! – Lessons learnt

Which buildings are the most interesting?

- Built in the **20. century** with no recent energy investments
- At least **6 dwellings** (or heated surface $> 500 \text{ m}^2$)
- **Centralised** heating plant (10+ years old) – ESCo has direct control on it
- **Delayed/missing payments** on utilities/condominium bills $< 10\%$.
- **Individual heaters** (one per apartment): no EPC, regular contract + dedicated credit line



Padova FIT! ...If we could start over.....

- **Tender documents** and contract templates to be developed ASAP
- **More than one Delivery Partner**
- Select Delivery Partners very soon – **sign “easy” contracts early**
- **Geographical scale** - large enough to guarantee demand (success rate of ca. 10%)
- **Building Managers** engaged as facilitators
- Training of **Facilitators** just in time (facilitation actions not too early)
- **Financial institutions** to be engaged from the very beginning (keep in mind ESCo financial needs as well as regular credit lines for individual citizens)
- Engagement of **potential Delivery Partners** in the preparation phase





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