



JKP "ТОПЛАНА-ШАБАЦ"

*Heat metering and consumption-based billing*

*Experiance in City of Šabac, Serbia*



**Consumption metering in district heating**

**Webinar, November 24, 2020**

## Legislative framework

The Energy Law designates local governments as regulators in the district heating sector

District heating recognizes three energy activities: production, heat distribution, and heat supply.

The Ministry of Energy has prescribed a Methodology for heat billing.

$$C_E = C_V + C_F = \frac{\sum_{i=1}^n FuelCosts + \sum_i ElectricityCost + \sum FluidCosts}{\sum E_{HS}} + \frac{\sum_{i=1}^n OperatingCosts}{\sum A}$$

Operating rules of DH system adopted by Municipality

## **Legislative framework**

**Energy policy of the City of Šabac – the document has adopted by the local Assembly in 2018.**

### **Goals**

Efficient use of energy and fuels,

Implementation of sustainable renewable energy technologies,

Support to local economic development and support to the development of the local energy market,

Environmental protection,

Improvement of the quality of life in Sabac,

Energy independence.

## **Legislative framework**

Development of energy service market

Energy cooperatives that promote collective actions

Creation of prosumers as new citizens profile (investment in small RES DH, investment in PV where energy company rent PV systems and pay rent to energy cooperative)

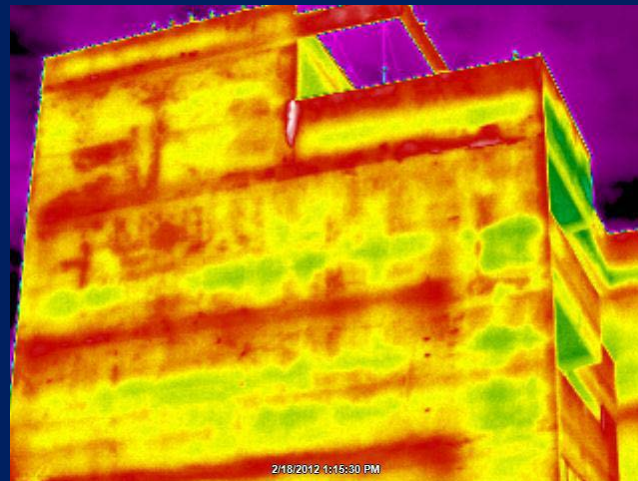
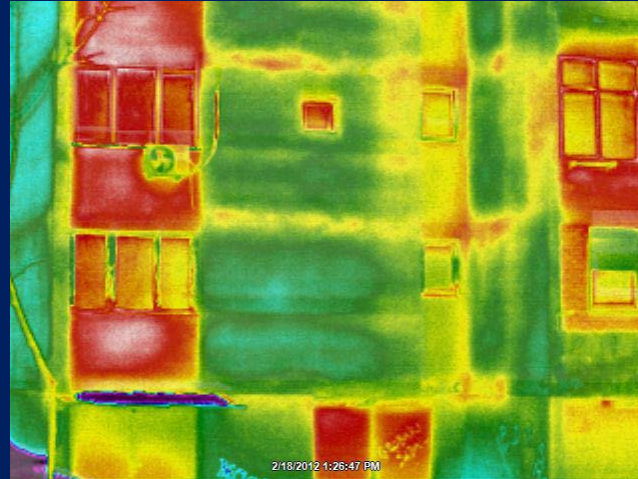
## **PUC „Toplana-Šabac“ takes the role of ESCO**

- Public utility company „TOPLANA-SABAC“ contracted with EBRD 2.5 million EUR loan for improvement of the energy performance of existing buildings
- The loan repayment period is 12 years
- Project implementation is based on EBRD rules
- Based on energy savings, DH company customers payoff their part of the investment
- Besides their own business TOPLANA-SABAC plays the role of ESCO
- Using energy metering the effects of the investment will be proven
- Financial model without incentives but with long-term pay-off period

## PUC „Toplana-Šabac“ takes the role of ESCO

Poor quality of buildings and inadequate maintenance of buildings cause extremely high heat losses.

Does it possible to introduce energy billing in a building like this one?



# PUC „Toplana-Šabac“ takes the role of ESCO



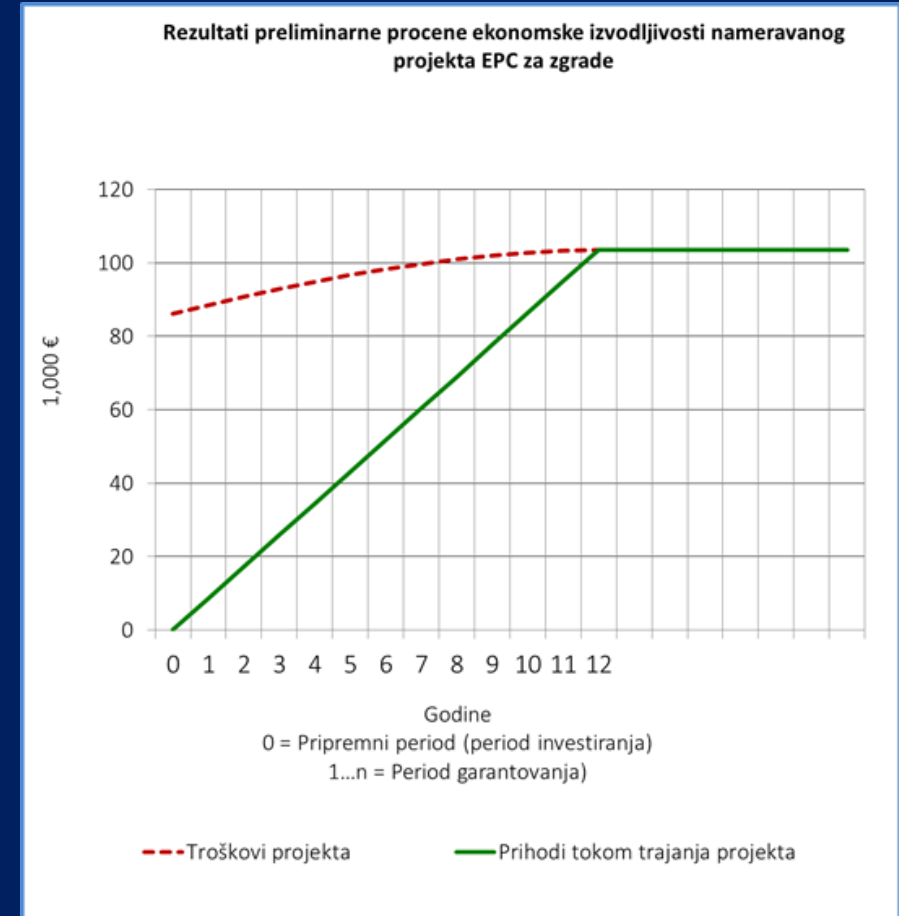
Before renovation



After renovation

Energy examination using an infrared camera

The average payback period is 12 years



## Consumption metering in district heating

### Consumption analysis

Year: 2019

Heated area: 55 m<sup>2</sup>



Units: kWh/m<sup>2</sup>

A – Thermal insulation +  
Thermostatic valves +  
Heat allocators

B – Thermal insulation  
without TS valves  
without allocators

C – Without thermal  
insulation  
without TS valves  
without allocators

Month	Consumption		
	A	B	C
January	9.85	21.73	31.30
February	4.86	20.08	28.78
March	2.54	9.73	15.27
April	1.47	6.24	7.87
May			
June			
July			
August			
September			
October	0.04	1.32	1.85
November	2.12	9.91	12.34
December	8.05	14.87	21.09
Average	28.94	83.88	118.51

	ЗГРАДА		<input type="checkbox"/> нова	<input type="checkbox"/> постојећа
	Категорија зграде		1. Зграда са једним станом 2. Зграда са више станова	
	Место, адреса:			
	Катастарска парцела:			
	Власник/инвеститор/правни заступник:			
	Извођач:			
	Година изградње:			
	Година реконструкције/енергетске санације:			
	Нето површина $A_N$ [m <sup>2</sup> ]:			
	Енергетски пасош за стамбене зграде	Прорачун		$Q_{T,ind,ext}$ [%]
A+		≤ 15		
A		≤ 25		
B		≤ 50		
C		≤ 100		
D		≤ 150		
E		≤ 200		
F		≤ 250		
G		> 250		
Подаци о лицу које је издало енергетски пасош				
Овашњена организација:				
Потпис овлашћеног лица и печат организације:				
			М.П.	
(потпис)				
Одговорни инжењер:				
Потпис и печат одговорног инжењера ЕЕ :				
			М.П.	
(потпис)				
Број пасоша:				
Датум издавања/рок важења:				

A – building Energy class „C“

< 70 kWh/m<sup>2</sup> a



## **Conclusion**

Energy efficiency is predictable for energy billing

Solving issue of energy poverty is one of outcomes

Financing of energy efficiency measures including TS valves and heat allocators installation

**Thank You for attention**

**Slobodan Jerotić**

**[slobodan.jerotic@yahoo.com](mailto:slobodan.jerotic@yahoo.com)**

**Šabac, November 24, 2020**