



Renovation of public lighting in Municipality Brda - using the ESCO approach

Matej Pahor, GOLEA

5th International Conference for European EnergyManagers
14th - 15th May 2014, Vienna



Introducing the Agency

GOLEA – Goriška Local Energy Agency, Nova Gorica

- **Founded** in 2006 by Municipality Nova Gorica. Co-financed from EU-Intelligent Energy Europe – IEE programme.
- **Mission of GOLEA:** promotion of Renewable Energy Source - RES and Rational Use of Energy - RUE with focus on creating an energy self-reliant region and an energy sustainable region.
- **Our motto:** Creating a Renewable and Sustainable Future.



Introducing the Agency

• Agency activities:

- Drafting Local Energy Concept (LEK) documents for municipalities.
- Implementing and executing energy management at municipalities.
- Developing public lighting feasibility studies.
- Developing investment studies for energy projects.
- Energy reviews (including thermo-vision examination).
- Energy audits.
- Energy monitoring and targeting (M&T).
- Issuing energy performance certificates.
- Energy project management.
- Implementing ESCO models of financing.



Renovation objectives for PL Brda

- Reducing light pollution.
- Compliance with regulatory limit values for light pollution.
- Improving traffic safety.
- Environmental protection (especially animals that are disturbed by night lights).
- Preservation of unspoiled night sky views.
- Energy savings.
- Improving quality of life for citizens.
- Ensuring equivalent living conditions in rural areas.



Current state

Current State	Year 2011
No. of inhabitants	5763
No. of lights	856
Installed power (W)	129.576
Annual el. Consumption (kWh) yr. 2011	502.520
Annual costs yr. 2011	56.131,50 €
Annual consumption per inhabitant in kWh yr. 2011	87,20

Legal basis

Regulation on limit values for light pollution (Ur. I. RS št. 81/07, 109/07 in 62/10) - 44,5 kWh / inhabitant

Renovation variants for PL

- 1. Without investment
 - PL lighting renovation is disregarded, leading to cost rises in the following 10 years.

- 2. PL renovated by municipality – as investor in public-private partnership agreement:
 - Financed from municipality's own funds.
 - As investor and PL owner, the municipality seeks and obtains grants.
 - As investor, the municipality partakes in cost savings.
 - The risk for achieving cost savings is with either the municipality or the renovation contractor.
 - The municipality signs a concessionary agreement for only the maintenance of PL after renovation, this can be a shorter period e.g. 5 years.

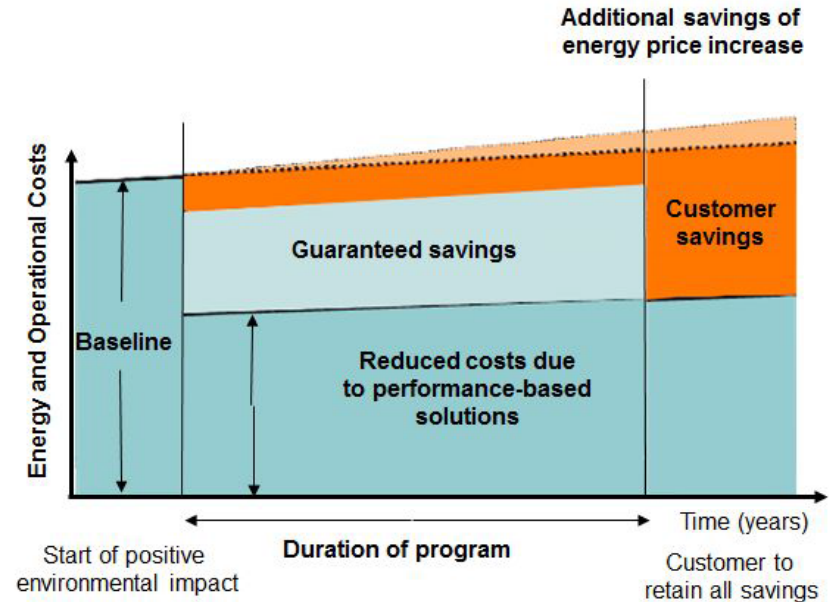
Renovation variants for PL

- 3. The municipality signs concessionary agreement for renovation (construction) and management (service) of PL using public-private partnership (ESCO):
 - The municipality need not invest own funds into the renovation of PL (as owner, the municipality makes use of grants).
 - The concessionaire renovates PL and implements PL services, being paid by the municipality a monthly fee for the PL service.
 - On the basis of the concession agreement, the consessionaire may also obtain grants.
 - (pure ESCO model of contractually guaranteed savings), the concession period is typically longer e.g. 15 – 20 years.

Renovation variants for PL

- 4. The municipality invests in PL renovation and subsequently grants a concession for the PL service.
 - Financed from municipality's own funds.
 - As investor and PL owner, the municipality seeks and obtains grants.
 - As investor, the municipality partakes in cost savings.
 - The municipality signs the PL service concession agreement with the PL renovation contractor – the concessionaire takes over the risk of achieving savings.
 - On handover of PL into management, the concessionaire pays a one-time concession fee due to the special exclusive rights.
 - The municipality benefits from grants and obtains a one-time concession fee.

ESC - Energy Supply Contract



$$SUM = (RP \times C + RV) \times F$$

SUM – annual payment for user (Municipality) (€)

RP – the reference energy consumption (MWh)

C – the price of energy in the reference year (€/MWh)

RV – the reference costs of maintenance and / or service

F – a factor of Division achieved savings

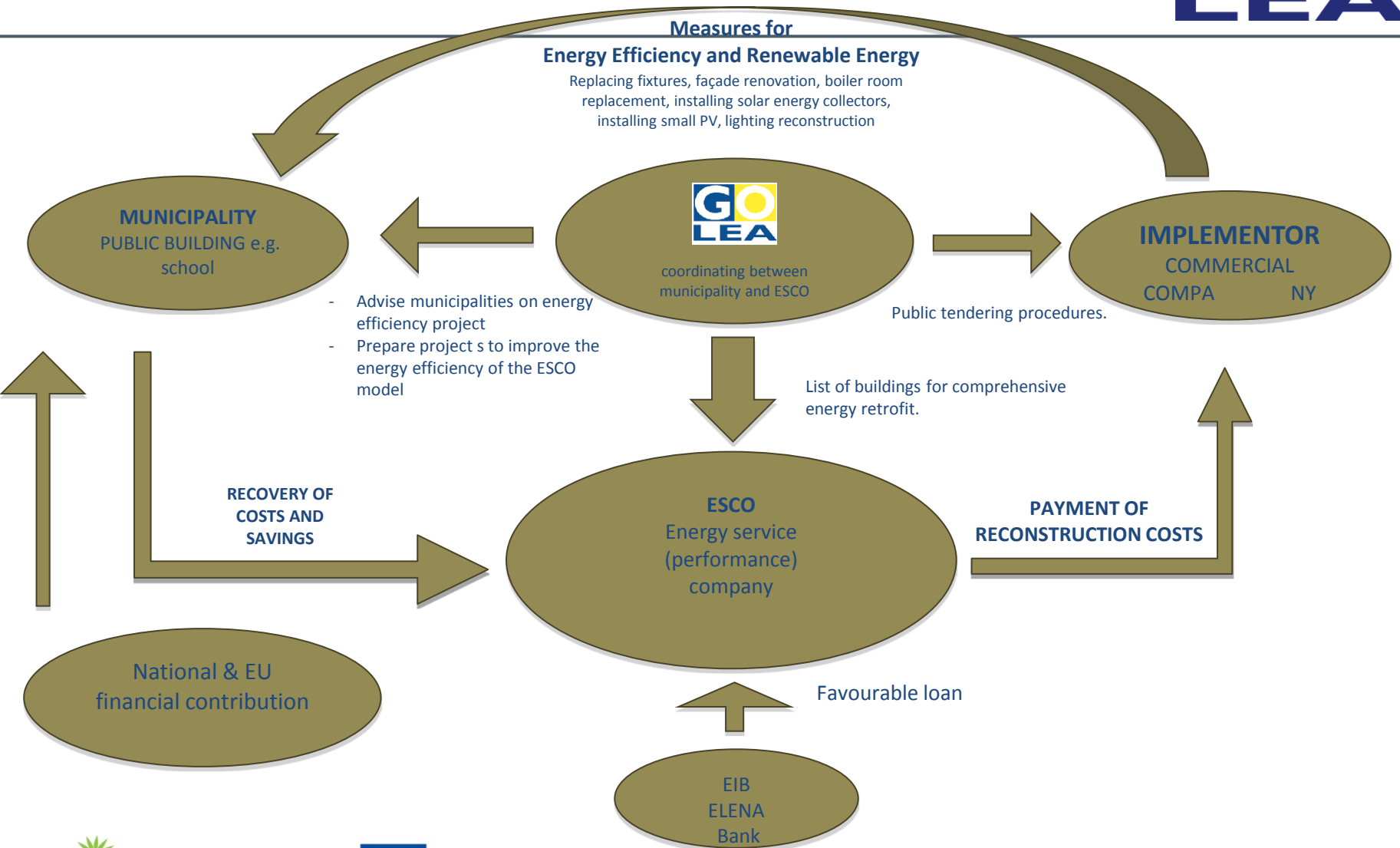
F < 1!!!

Contracting comparison



Decision criteria	Own funds	ESCO	ESCO MARIE - GOLEA
Financing	100% ownership by municipality	100% ownership by concessionaire	100% ownership by municipality
Technical and economic risk	Municipality	ESCO	ESCO
Optimization, operation, maintenance	Own employees	Concessionaire interest	Concessionaire interest
Performance guarantee (savings)	No	Yes	Yes
Savings	100% savings	part	part

PROJECT BASED ON FINANCIAL CONTRACTING - ESCO



Varianta no. 1 - without investment



YEAR		Maintenance costs forgoing investment	El. energy costs forgoing investment	Operational costs forgoing invest. TOTAL
0	2011	19.333,00	56.131,50	75.464,50
0	2012	19.333,00	56.131,50	75.464,50
1	2013	20.492,98	57.534,79	78.027,77
2	2014	21.652,96	58.973,16	80.626,12
3	2015	22.812,94	60.447,48	83.260,42
4	2016	23.972,92	61.958,67	85.931,59
5	2017	25.132,90	63.507,64	88.640,54
6	2018	26.292,88	65.095,33	91.388,21
7	2019	27.452,86	66.722,71	94.175,57
8	2020	28.612,84	68.390,78	97.003,62
9	2021	29.772,82	70.100,55	99.873,37
10	2022	30.932,80	71.853,06	102.785,86
TOTAL		257.128,90	644.584,18	901.713,08

Variant no. 2

- The municipality invests in PL renovation and subsequently grants concession for management and maintenance of PL.

YEAR		Operational costs of investment			
		Maintaince PL	PL electricity	Financing costs	TOTAL
0	2011	19.333,00	56.131,50	0,00	75.464,50
0	2012	19.333,00	56.131,50	0,00	75.464,50
1	2013	10.000,00	24.264,48	7.039,61	41.304,09
2	2014	11.159,98	24.264,48	6.211,69	41.636,15
3	2015	12.319,96	24.871,09	5.532,21	42.723,26
4	2016	13.479,94	25.492,87	4.798,45	43.771,25
5	2017	14.639,92	26.130,19	4.088,47	44.858,58
6	2018	15.799,90	26.783,45	3.330,92	45.914,26
7	2019	16.959,88	27.453,03	2.612,90	47.025,81
8	2020	18.119,86	28.139,36	1.875,12	48.134,33
9	2021	19.279,84	28.842,84	1.125,61	49.248,29
10	2022	20.439,82	29.563,91	401,39	50.405,12
TOTAL		152.199,10	265.805,69	37.016,36	455.021,16

Operating costs forgoing investment	Operating costs with investment	Savings in annual operating costs
75.464,50	75.464,50	0,00
75.464,50	75.464,50	0,00
78.027,77	41.304,09	36.723,68
80.626,12	41.636,15	38.989,96
83.260,42	42.723,26	40.537,16
85.931,59	43.771,25	42.160,34
88.640,54	44.858,58	43.781,96
91.388,21	45.914,26	45.473,95
94.175,57	47.025,81	47.149,76
97.003,62	48.134,33	48.869,29
99.873,37	49.248,29	50.625,08
102.785,86	50.405,12	52.380,74
901.713,08	455.021,16	446.691,92

Cost savings: 49,5%

Variant no. 3 and variant no. 4

- Variant no. 3 (ESCO) economics are absent, as grants were made available -> economics elaborated for ESCO BRDA MARIE
- Variant no. 4: The cost to the municipality are PL costs, which amount to max. 90% of the current operational costs ($F \leq 0,9$)

YEAR	Cost of PL service Factor = 90,00%	Munic. savings
0 2011	0,00	0,00
0 2012	0,00	0,00
1 2013	67.918,05	10.109,72
2 2014	69.616,00	11.010,12
3 2015	71.356,40	11.904,02
4 2016	73.140,31	12.791,28
5 2017	74.968,82	13.671,72
6 2018	76.843,04	14.545,17
7 2019	78.764,11	15.411,46
8 2020	80.733,22	16.270,40
9 2021	82.751,55	17.121,82
10 2022	84.820,34	17.965,53
SKUPAJ	760.911,83	140.801,24
one-time concession fee		189.025,50

- The municipality need not take loans.
- The municipality may leverage grants.
(obtained 175.249,20 € in grants from Petrol URE public call)

Cost savings: 15%

PROCEDURE for PUBLIC PRIVATE PARTNERSHIP – PPP

1. Public interest indentified by representative body of Municipality (art. 11 ZJZP).
2. Develop the investment documentation for the PPP model (art. 8 ZJZP).
3. Procedure implemented by representative body (art. 31 ZJZP).
4. Act on PPP adopted by representative body of Municipality.
5. Prepare and publish the tender and the tender documents.
6. Select the concessionaire (ESCO).
7. Signing the ESC contract (Energy Supply Contract) or / and EPC (Energy Performance Contract)

ZJZP – Zakon o Javno Zasebnem Partnerstvu – The PPP Act in Slovenia

PPP – Private Public Partnership

Conclusion



	Before	After
Energy consumption	502,5 MWh	217,2
Energy costs	56.131 EUR	24.264 EUR
Energy consumption per municipality resident	87,20 kWh	37,69 kWh

- Energy consumption lowered by 57 %.
- Yearly cost savings of municipality lowered by 14.000 €.
- CO₂ emissions lowered by 145t per year.





GOLEA, Nova Gorica

Trg E. Kardelja 1
SI – 5000 Nova Gorica
Slovenia

Tel.: +386 4 393 42 60
e-mail: info@golea.si
web: www.golea.si

CREATING A SUSTAINABLE FUTURE