



FEASIBLE

Fostering Sustainable Living Cities

Grant number 847118

**D3.4 Signed contract with ESCO**

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Deliverable nature:	Report
Dissemination level: (Confidentiality)	Public
Contractual delivery date:	Month 17
Actual delivery date:	12 March 2021
Version:	1
Total number of pages:	5
Keywords:	Energy savings, Public Buildings refurbishment

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## 1 Foreword

On December 2nd 2020 ASP AD Personam signed the contract for the energy efficiency interventions on its residences for elderly people with the ESCO SIRAM. With this signature the Feasible project has achieved the investment objective concerning the energy efficiency interventions in public building. In the following chapters of this deliverable the economic framework of the investment, the interventions to be carried out in the six elderly residences owned by ASP Ad Personam as well as the corresponding energy savings are illustrated in detail.

The documents concerning the signed contract and its main annex (the performance indicators) are annexed to this deliverable:

- Annex K2: contract signed by the ESCO SIRAM
- Annex 1 to the contract: Performance indicators.

It is worth noting that the contractual annex 1 on the performance indicators refers in turn to another official document making part of the AD Ad Personam “Private-Public Partnership Proposal” set of documents. This document indicates the minimum contractual energy savings to be achieved by the winning ESCO. The energy savings indicated in this document includes all the interventions foreseen in the PPPP proposal among which there are those that are object of the SIRAM contract and fall within those envisaged by the Feasible grant agreement (see Table 4 at the end of this paper).

## 2 The economic framework of the investment

The contract provides for a total investment of **2,406,999 Euro + VAT** for energy efficiency interventions to be carried out in six buildings owned by the contractor. This amount includes **2,123,877 Euro + VAT** for the carrying out of the energy saving works and **283,122 Euro + VAT** for technical expenses, expenses incurred for the preparation of the partnership proposal, guarantees and tender expenses. It is worth noting that, as regards the reporting of the Feasible project, of the total actual investments for the works to improve the energy efficiency of the buildings, it is necessary to remove those relating to "S. Tiburzio" because they refer to the ASP Ad Personam offices of and not to its residences. The total of investments attributable to Feasible is therefore **2.018.829 Euro + VAT** inclusive of the work quota and other expenses. Table 1 shows more in detail the break-down of this investment:

**Table 1: Economic framework of the investment**

Break-down of the investments		
Investment for energy efficiency interventions	Contractual amount	Of which on “Feasible” buildings
S.Tiburzio	€ 356.668	
Gulli	€ 143.156	€ 143.156
Lecci + CT villa parma	€ 214.435	€ 214.435
S.Mauro	€ 858.661	€ 858.661
Tigli	€ 499.746	€ 499.746
Pontirolo Battisti	€ 35.747	€ 35.747
Via Scola	€ 15.465	€ 15.465
<b>Total for works, including on site safety measures</b>	<b>€ 2.123.877</b>	<b>€ 1.767.209</b>

Technical expenses	€ 208.223	€ 176.721
Expenses for the preparation of the proposal	€ 57.690	€ 57.690
Guaranties and insurance	€ 13.410	€ 13.410
Tender expenses	€ 3.799	€ 3.799
<b>Total investment without VAT</b>	<b>€ 2.406.999</b>	<b>€ 2.018.829</b>
Total VAT	€ 271.725	€ 201.833
<b>Overall investment with VAT</b>	<b>€ 2.678.724</b>	<b>€ 2.220.711</b>

Table 2 shows the detail of the energy saving interventions carried out in the six elderly residences owned by ASP Ad Personam. Of these interventions:

- two concern the building refurbishment through insulation of walls, roof and windows and improvement of the heating and cooling systems (Residences Tigli and San Mauro Abate) substitution;
- two (residences Gulli and Lecci) only the improvement of the heating system;
- and two (residences Pontirolo Battisti and via Scola) the simple improvement of the remote control and the lighting system.

**Table 2: Detail of the investment per residence**

Buildings	Interventions	Interventions cost including the safety in site
GULLI	Remote control	€ 21.991,47
	Inverter pumps	€ 2.990,96
	Improving of environmental control	€ 44.282,29
	Relamping	€ 39.934,65
	Solar PV system	€ 32.671,08
	Safety in site	€ 1.285,52
		<b>€ 143.155,97</b>
LECCI	Boiler substitution*	€ 77.852,60
	Heat pumps	€ 58.691,13
	Remote control	€ 21.569,99
	Inverter pumps	€ 7.685,90
	Relamping	€ 47.320,87
	Safety in site	€ 1.314,03
		<b>€ 214.434,52</b>
SAN MAURO ABATE	Thermostatic valves	€ 10.567,20
	Remote control	€ 42.713,01
	Inverter pumps	€ 11.963,84
	Cold chain replacement (cold appliances and cold rooms)	€ 26.880,65
	New distribution buildings E and B	€ 86.501,38
	Relamping	€ 78.303,78
	Doors and windows replacement	€ 272.475,78
	Roof insulation	€ 19.460,09

Buildings	Interventions	Interventions cost including the safety in site
	Walls insulation	€ 235.295,51
	Solar PV system	€ 32.396,72
	Safety in site	€ 42.103,00
		€ 858.660,96
TIGLI	Walls insulation	€ 196.952,31
	Roof insulation	€ 51.351,82
	Doors and windows replacement	€ 138.204,12
	Sun protection	€ 12.432,42
	Thermostatic valves	€ 6.642,24
	Remote control	€ 951,60
	Relamping	€ 52.963,14
	Safety in site	€ 40.248,40
		€ 499.746,05
PONTIROL BATTISTI	Remote control	€ 981,91
	Relamping	€ 33.522,95
	Safety in site	€ 1.241,91
		€ 35.746,77
VIA SCOLA	Remote control	€ 475,80
	Relamping	€ 13.983,86
	Safety in site	€ 1.005,52
		€ 15.465,18
	<b>TOTAL AMOUNT</b>	<b>€ 1,767.209.45</b>
	<b>Other Expenses</b>	<b>€ 283,122</b>
	<b>VAT, Taxes</b>	<b>€ 201,833</b>
	<b>OVERALL TOTAL</b>	<b>€ 2,220,711</b>

\*The boiler substitution indicated for the residence “Lecci” regards also the residence “Tigli” as the boiler provides the heating for both buildings.

### 3 The expected energy saving

Against the investment shown in table 2 a total of 1,356 MWh/y of final energy and 1,672 MWh/y of primary energy savings are expected. Of this amount the final electricity saving are of 181 MWh/a and those concerning the thermal energy of 1,176 MWh/y corresponding to a minor consumption of 110,928 standard cubic meters of natural gas (that is the fossil source used for the thermal uses for the residences).

Starting from an overall energy consumption (in primary energy) of 7,021 MWh/a, these savings lead to a global ratio of the **24%** of saved energy and to an avoided amount of CO<sub>2</sub> emission of **589** Tons/y (adopting the official coefficient of 352.4 gr of equivalent CO<sub>2</sub> per kWh calculate at the domestic electric counter).

Table 3 below show the detail of these energy saving per each of the six residences in which the energy saving interventions will be carried out.

**Table 3: Energy consumption and expected energy savings per residence**

BUILDINGS	ENERGY CONSUMPTION "ANTE OPERAM"				ENERGY SAVING "POST OPERAM"				
	Electricity kWh/y	Natural Gas KWh/y	Total Final KWh/a	Tot. Primary KWh/y	Electricity kWh/y	Natural Gas KWh/y	Total Final KWh/y	Tot. Primary KWh/y	% Saving Primary Energy
Residence "TIGLI"	223,018	1,259,195	1,482,213	1,861,859	41,175	633,371	674,546	764,683	41.07%
Residence "GULLI"	243,018	358,842	601,860	964,887	44,311	8,968	53,279	116,649	12.09%
Residence "S.MAURO ABATE"	608,218	1,001,806	1,610,024	2,523,784	48,361	465,838	514,199	606,164	24.02%
Residence "LECCI"	239,947	819,009	1,058,956	1,440,631	35,945	67,660	103,605	158,030	10.97%
Building "PONTIROL BATTISTI"	67,082		67,082	162,338	5,695		5,695	13,782	8.50%
Building "Via SCOLA"	28,150		28,150	68,123	5,547		5,547	13,424	19.70%
TOTAL	1,409,433	3,438,852	4,848,285	7,021,622	181,034	1,175,837	1,356,871	1,672,731	23.82%

It is worth adding that the residences Tigli and Lecci share the same boiler that will be replaced with a more efficient one. This entails an overall saving of 135 MWh/y that, as the real distribution of the heat generated by the boiler has not been calculated, for accounting reasons it has been here divided equal parts between these two buildings (67 MWh/y each).

The energy consumptions and the corresponding energy savings indicated in Table 3 represent contractual obligations under the annex 1 to the ASP AD Personam – SIRAM contract. These obligations are indicated in the table “Energy Baselines” of the Private-Public Partnership Proposal between ASP Ad Personam and SIRAM S.p.a shown below under Table 4.

**Table 4: Energy consumption and minimum contractual energy savings per residence**

## 2 Baseline Energetiche

Nella tabella seguente vengono riportati i consumi energetici dello stato di fatto (Energia Elettrica e Gas Metano) suddivisi per Edificio, i risparmi energetici generati dagli Interventi proposti nel Progetto di Fattibilità, e conseguentemente i Consumi energetici previsti nello stato di progetto oggetto di verifica nel corso della durata contrattuale. A seguito dell'avvio disgiunto del Servizio Energia presso gli Edifici, gli obiettivi di risparmio energetico saranno verificati a partire dall'anno successivo al termine di tutti i lavori di riqualificazione.

Cod	Edificio	Volumi edifici [mc]	Riq. Energetica		CONSUMI STATO DI FATTO		RISPARMI ENERGETICI			CONSUMI STATO DI PROGETTO		
			Elettrico	Termico	Energia elettrica [kWh/a]	Gas metano [Smc/a]	Energia Elettrica [kWh/a]	Energia Elettrica [%]	Gas metano [smc/a]	Gas metano [%]	Energia Elettrica [kWh/a]	Gas metano [smc/a]
01	Uffici - San Tiburzio	7.334	X	X	52.309	21.251	8.159	15,6%	4.157	19,6%	44.150	17.094
02	Portineria Villa Parma	48			6.122	399			30		6.122	370
03	CRA Tamerici	9.371			65.249	78.105			5.811		65.249	72.294
04	CRA Lecci	9.270	X	X	239.947	77.265	35.945	15,0%	4.886		204.002	72.379
05	CRA Tigli	14.253	X	X	223.018	118.792	41.175	18,5%	53.369	44,9%	181.843	65.422
06	Officina Villa Parma	385			96.921	3.209			239		96.921	2.970
07	Cucina Villa Parma	1.421			0	0					0	
08	CRA Gulli	7.338	X	X	243.018	33.853	44.311	18,2%	846	2,5%	198.707	33.007
09	CRA Romanini	2.302				15.234						15.234
10	CRA Villa Ester	2.367			25.478	7.474					25.478	7.474
11	CRA San Mauro Abate	24.941	X	X	608.218	94.510	48.361	8,0%	43.947	46,5%	559.856	50.563
12	Residenza Pontirolo Battisti	6.825	X		67.082	21.551	5.695	8,5%		0,0%	61.387	21.551
14	Centro di via Olivieri	450			7.937						7.937	
15	Struttura di via La Scuola	6.500	X		28.150		5.547	8,3%			22.603	
16	Struttura di via Firenze	4.816			21.259	15.207					21.259	15.207
27	Struttura Strada Martinella	1.400			9.974	4.421					9.974	4.421
28	Magazzino Economale	600										
29	Oratorio Borgo Palmia	300										
<b>TOT edifici serviti</b>					<b>1.694.683</b>	<b>491.271</b>	<b>189.194</b>	<b>11,16%</b>	<b>113.285</b>	<b>23,06%</b>	<b>1.505.489</b>	<b>377.986</b>
Inizio Servizio Energia da ottobre 2020					Energy Consumption			Energy savings				
Inizio Servizio Energia da ottobre 2022												



SIRAM SpA  
Un Procuratore  
Sig. Marco Bongiorno



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Source: Private-Public Partnership Proposal between ASP Ad Peronam and SIRAM S.p.a.

Translation of the text above the table:

“The following table shows the energy consumption of the current state (Electricity and Natural Gas) divided by Building, the energy savings generated by the Interventions proposed in the Feasibility Project, and consequently the Energy Consumption foreseen in the project status subject to verification during the course of the contractual duration. Following the separate start-up of the Energy Service at the Buildings, the energy saving objectives will be verified starting from the year following the completion of all the redevelopment works.”