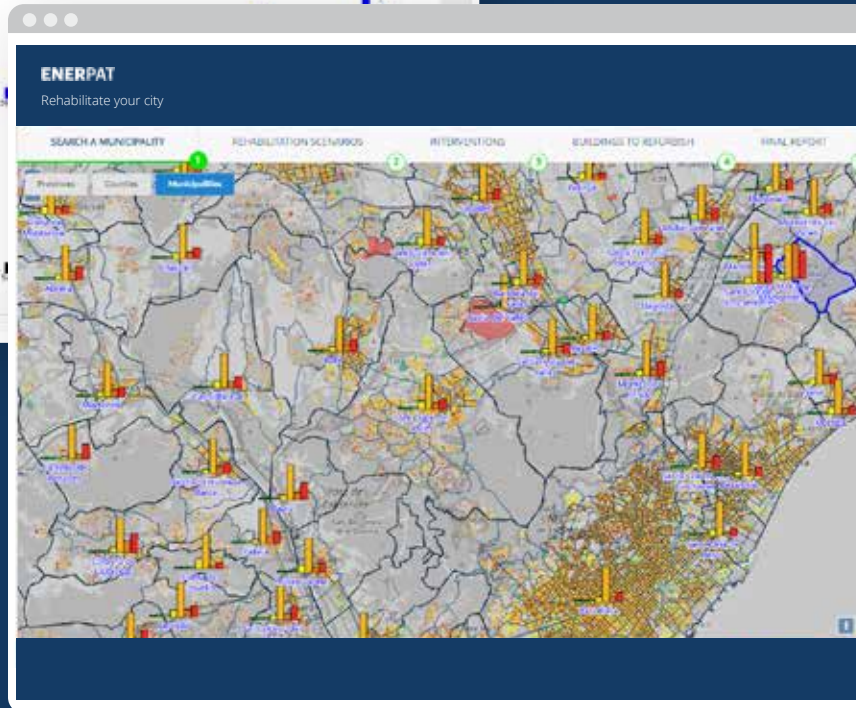
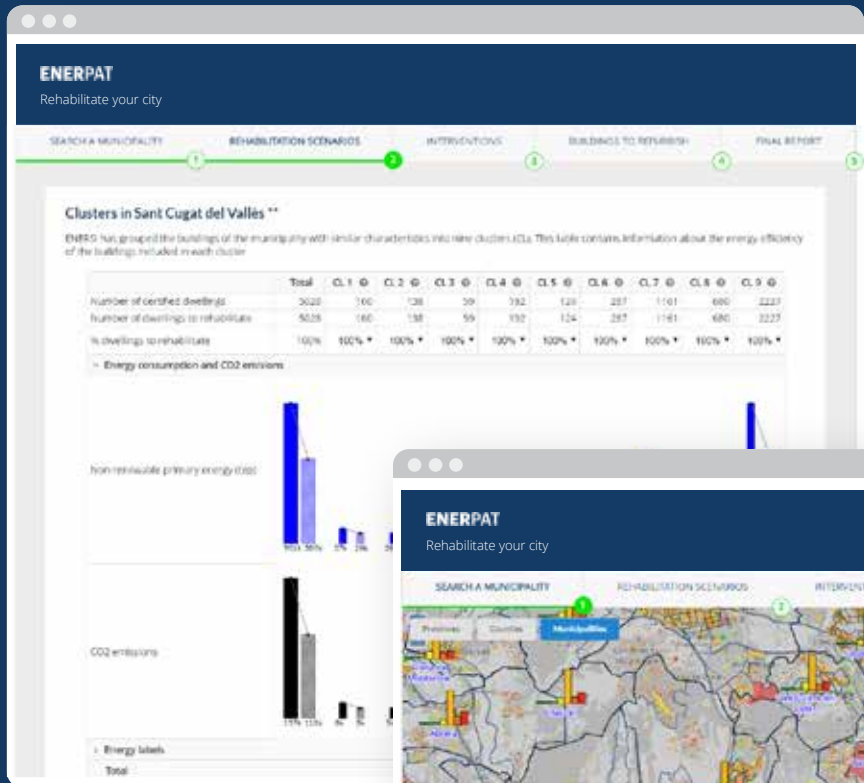


**ENERPAT**



# ENERPAT

- ENERPAT (Energy Planning Assessment Tool), is an application that enables professionals in the building sector (architects, urban planners, builders, technicians and municipal managers) to assess the state of the residential building stock and define rehabilitation strategies to improve the energy efficiency of the buildings
- The application integrates the data obtained from the Energy Performance Certificates provided by the Catalan Institute of Energy (ICAEN), the cadastre and the census sections, together with geographic information
- The rehabilitation measures are based on the ICAEN simulation tool and the "Long-term strategy for energy rehabilitation in the building sector in Spain" (ERESEE 2014)



**Enerpat says:**

Are you an urban planner or urban environmental manager?





**Enerpat says:**

Are you an urban planner or urban environmental manager?

**User says:**

Yes, I work in the urban quality department of the municipality of Sant Cugat del Vallès





**Enerpat says:**

Are you interested in developing refurbishing programmes for residential buildings in your municipality?

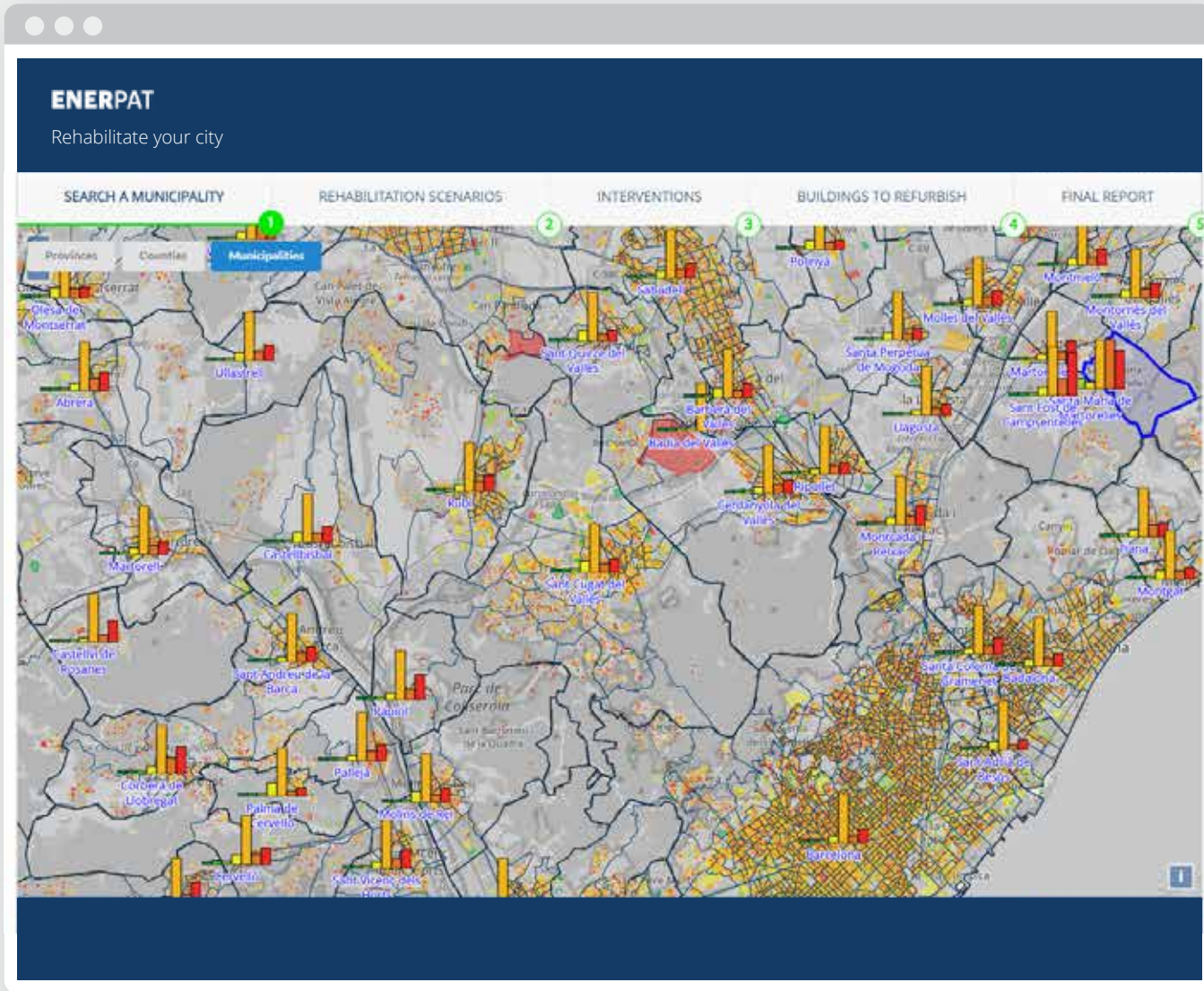
**Enerpat says:**

ENERPAT offers you the information you need to carry them out, step by step

**User says:**

Yes, I work in the urban quality department of the municipality of Sant Cugat del Vallès





**Enerpat says:**

First, you have to select the municipality on the map

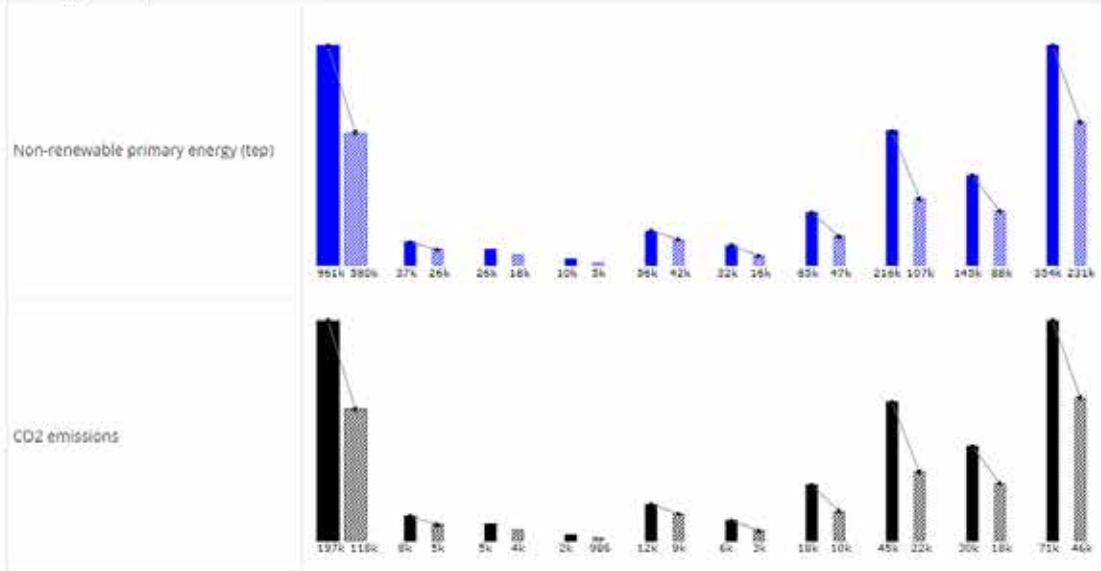


## Clusters in Sant Cugat del Vallès \*\*

ENERSI has grouped the buildings of the municipality with similar characteristics into nine clusters (CL). This table contains information about the energy efficiency of the buildings included in each cluster.

	Total	CL 1	CL 2	CL 3	CL 4	CL 5	CL 6	CL 7	CL 8	CL 9
Number of certified dwellings	5028	160	138	59	192	124	287	1161	680	2227
Number of dwellings to rehabilitate	5028	160	138	59	192	124	287	1161	680	2227
% dwellings to rehabilitate	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Energy consumption and CO2 emissions



Energy labels

Total



**Enerpat says:**

Then, in the second step, the residential buildings stock is classified into groups according to their year of construction, use, number of floors and building characteristics





## Cluster nº 7

Cluster of multi-family buildings built between 1981 and 1990. They are considered buildings constructed generally with walls with air chamber and thermal insulation, flat roof and air chamber under first floor slab.

Rehabilitation measure	Housing to be applied	Cost per unit	Energy savings	Return (years)
Passive measures to be applied: <ul style="list-style-type: none"> <li>Apply insulation on the outside of the facade</li> <li>Install PVC windows and low emissivity glass</li> <li>Insulate the roof by the exterior</li> </ul>	1181	12030€	40,3% - 49,6%	17,3 - 40,7
A1. Natural gas condensing boiler	609	1946,2€	17,3% - 22,5%	6,2 - 15,7
A5. Multifamily housing heat pump	40	1140€	2,4%	30,4
A9. Aerothermal heat pump for hot and cold water for sanitary use	0	8600€	51% - 63,1%	16 - 32,4

The ICAEN simulator of rehabilitation measures for residential buildings does not include interventions on façade exteriors. Because of this, the suggestion is to place the insulation in the outer wall.

## Cluster nº 8

Cluster of single-family buildings built between 1991 and 2011 with 1 to 3 floors. They are considered to be buildings constructed generally with walls with air chamber and thermal insulation, sloping roof without air chamber and air chamber under first floor slab.

Rehabilitation measure	Housing to be applied	Cost per unit	Energy savings	Return (years)
Passive measures to be applied: <ul style="list-style-type: none"> <li>Apply insulation on the outside of the facade</li> <li>Install PVC windows and low emissivity glass</li> <li>Insulate the roof by the exterior</li> </ul>	660	23669€	29,6% - 38,8%	29,2 - >50
A3. Natural gas condensing boiler	391	2600€	13,8% - 21,3%	5,8 - 17,8
A4. Pellet boiler	8	7650€	9,1% - 15,8%	17 - 50
A6. Single family housing heat pump	30	2120€	4,2%	21,6
A7. Aerothermal heat pump for hot and cold water for sanitary use	3	8800€	42,7% - 55%	15,5 - 22,2



## Enerpat says:

In the third step, the rehabilitation measures proposed for each of the groups are shown, including the cost of the investment, the energy savings and the return on investment





**ENERPAT**  
Rehabilitate your city

SEARCH A MUNICIPALITY | REHABILITATION SCENARIOS | INTERVENTIONS | **BUILDINGS TO REFURBISH** | FINAL REPORT

**Buildings to refurbish in Sant Cugat del Vallès**

Map view | Table view | Graph view | Download

← INTERVENTIONS | FINAL REPORT →



**Enerpat says:**

In the fourth step, the location of the buildings to be rehabilitated is displayed on the map



**ENERPAT**  
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SEARCH A MUNICIPALITY    REHABILITATION SCENARIOS    INTERVENTIONS    BUILDINGS TO REFURBISH    FINAL REPORT


1    2    3    4    5

Print report  
New window

**ENERPAT**  
Rehabilita la teva ciutat  
Copyright © 2017 ABC Seguros, L'Arquitecta La Salle

**laSalle**  
RAMON LLULL UNIVERSITY


### Clusters in Sant Cugat del Vallès



ENERSI has grouped the buildings of the municipality with similar characteristics into nine clusters (CL). This table contains information about the energy efficiency of the buildings included in each cluster

	Total	CL 1	CL 2	CL 3	CL 4	CL 5	CL 6	CL 7	CL 8	CL 9
Number of certified dwellings	2028	100	138	59	192	124	287	1101	680	2227
Number of dwellings to rehabilitate	2028	160	138	59	192	124	287	1161	680	2227
% dwellings to rehabilitate	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Energy consumption and CO2 emissions



Non-renewable primary energy (tpe)



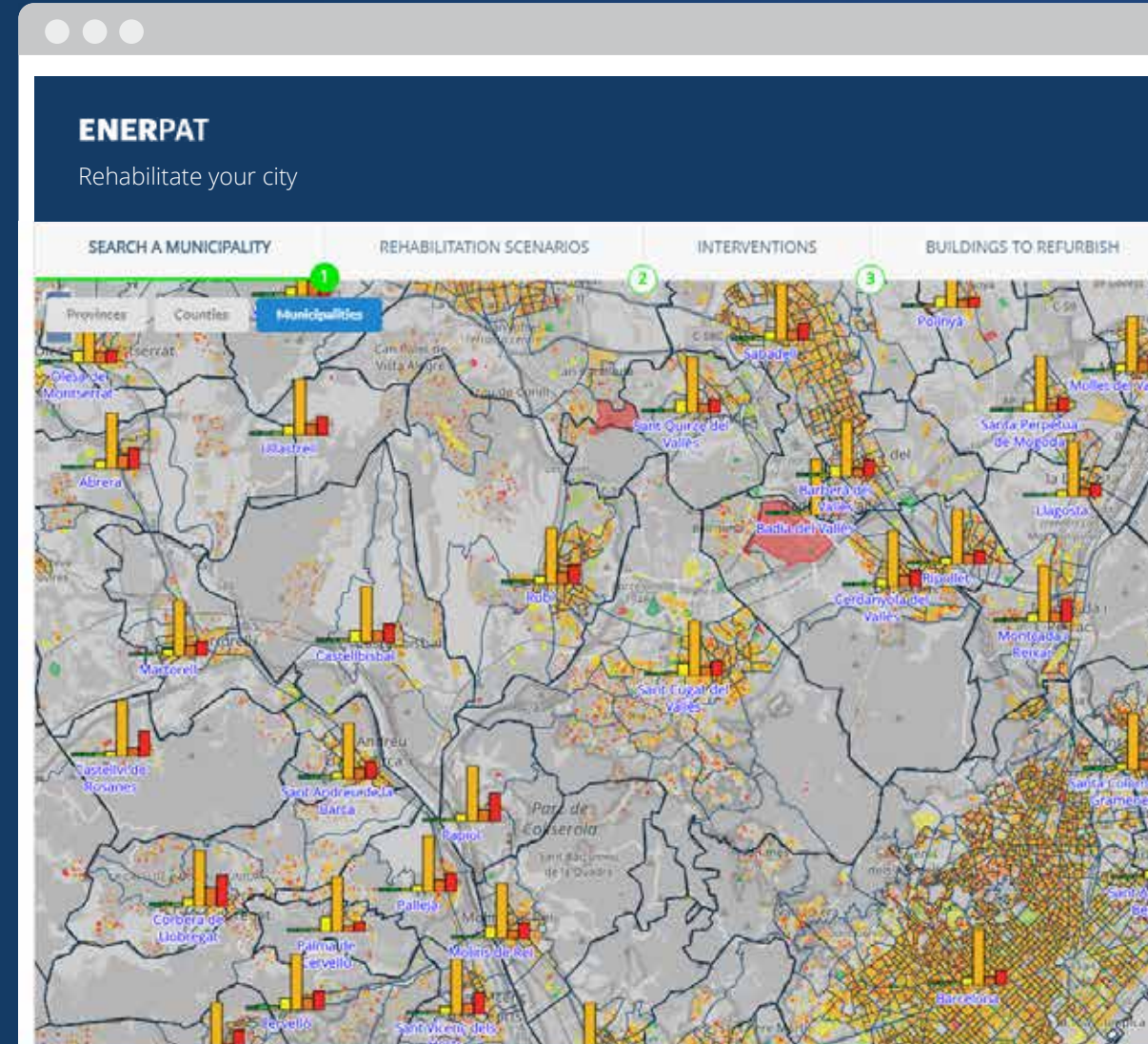
### Enerpat says:

At the end of the process, you can save all the information that have been provided in each step

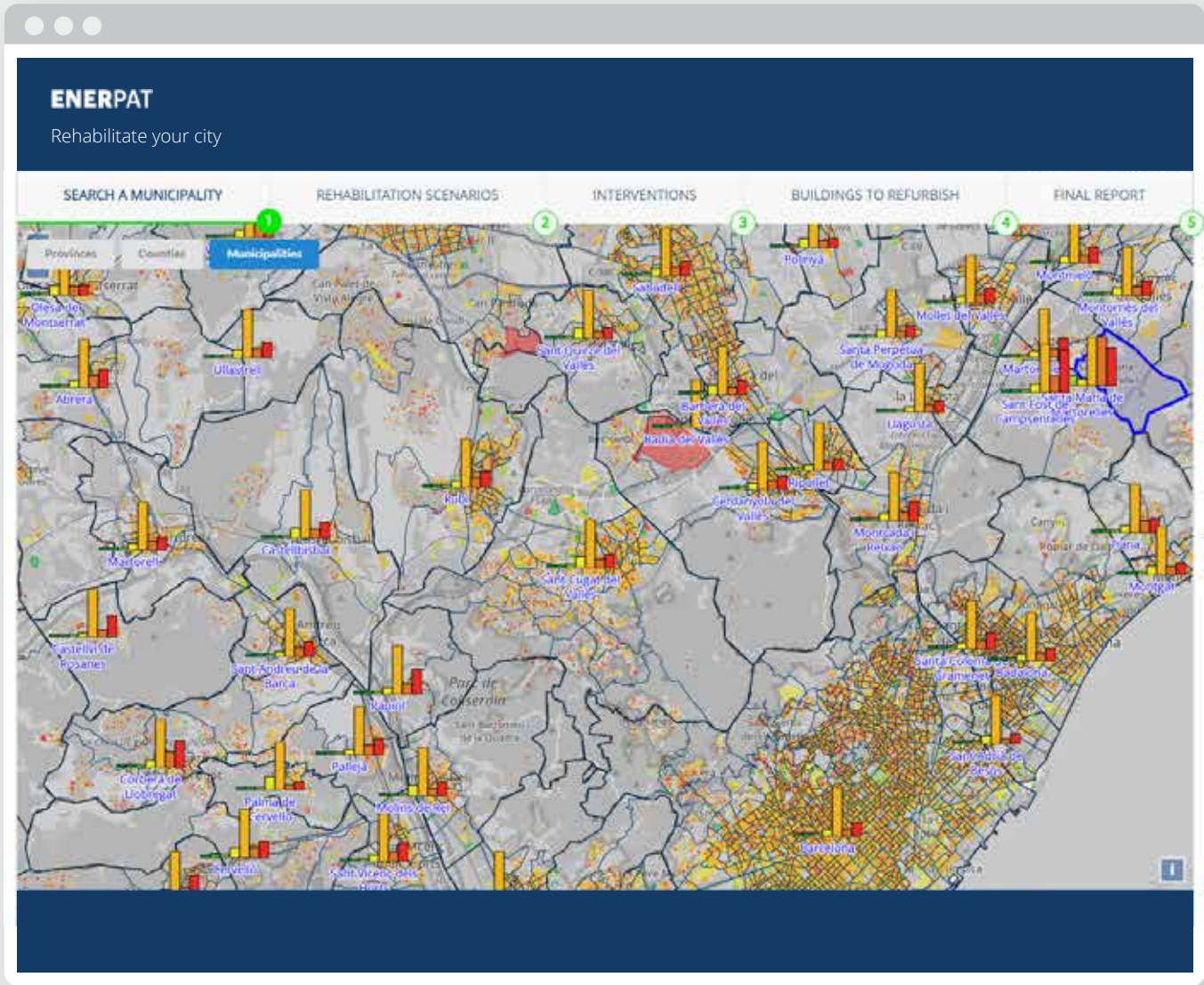


# ENERPAT

Step 1: Select  
a municipality



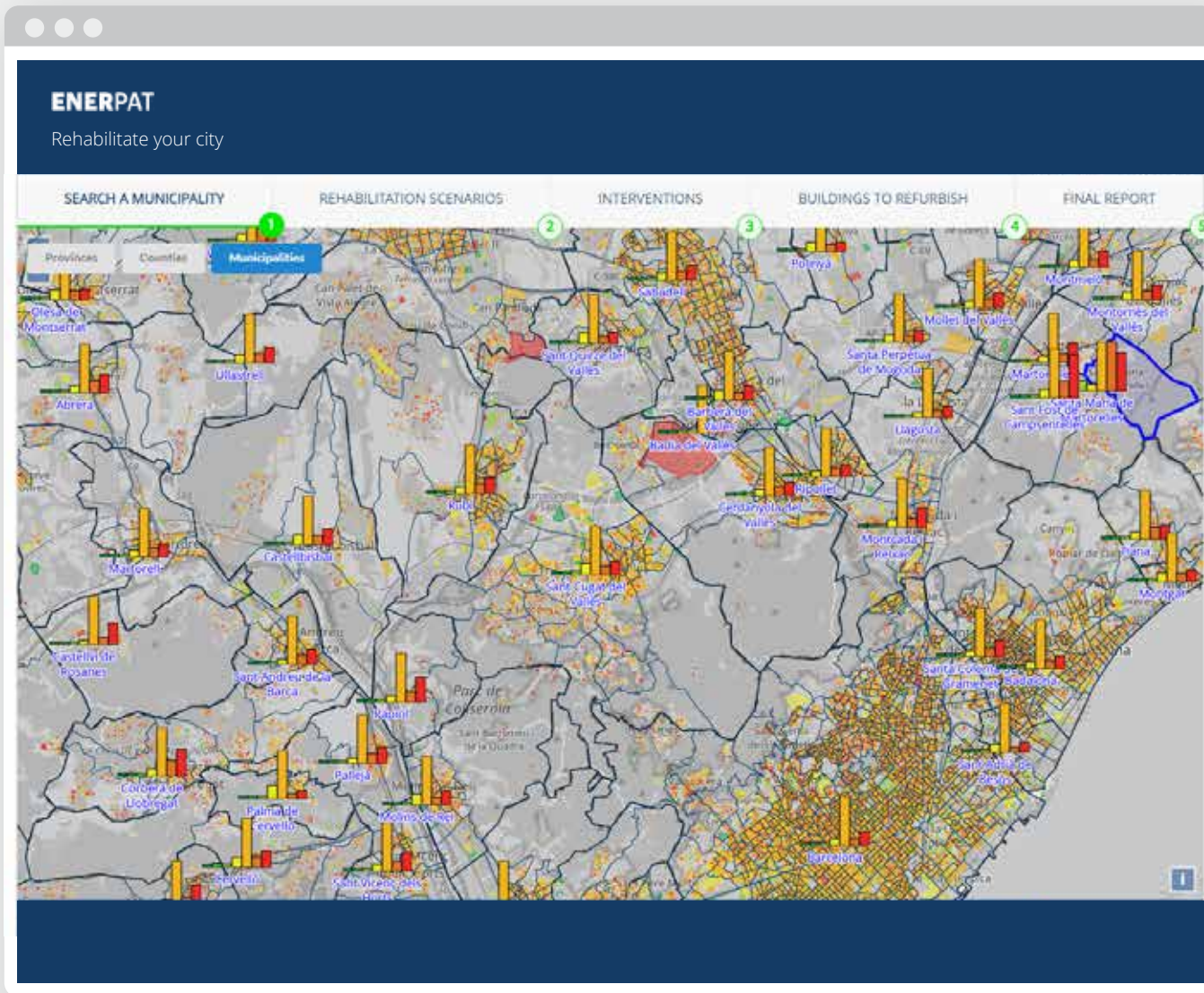




**Enerpat says:**

The map shows the Energy Performance Certificates of residential buildings at three scales: municipality, county and province





**Enerpat says:**

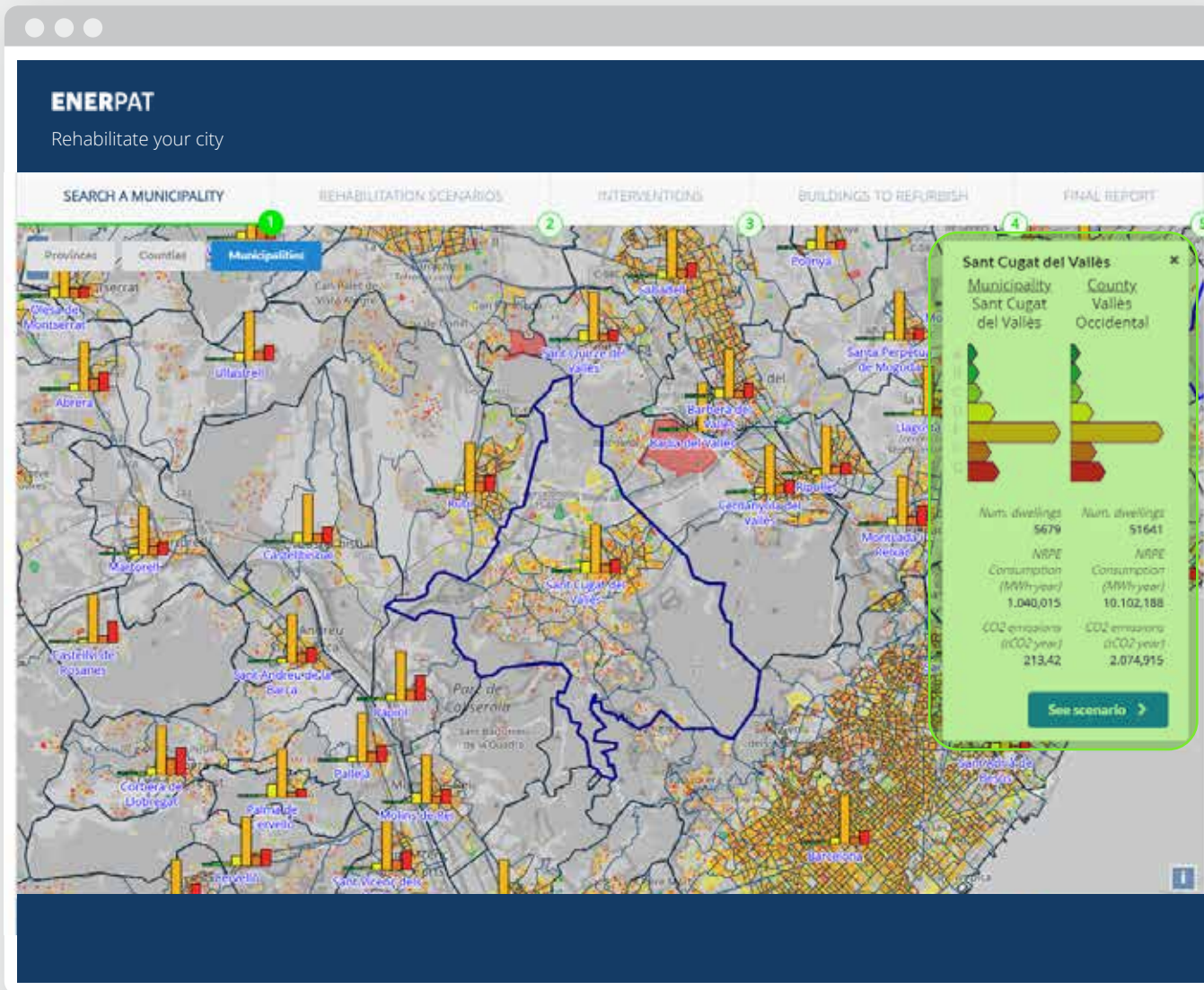
The map shows the Energy Performance Certificates of residential buildings at three scales: municipality, county and province

**Enerpat says:**

To begin with, you have to locate the municipality of Sant Cugat del Vallès







**Enerpat says:**

The map shows the Energy Performance Certificates of residential buildings at three scales: municipality, county and province

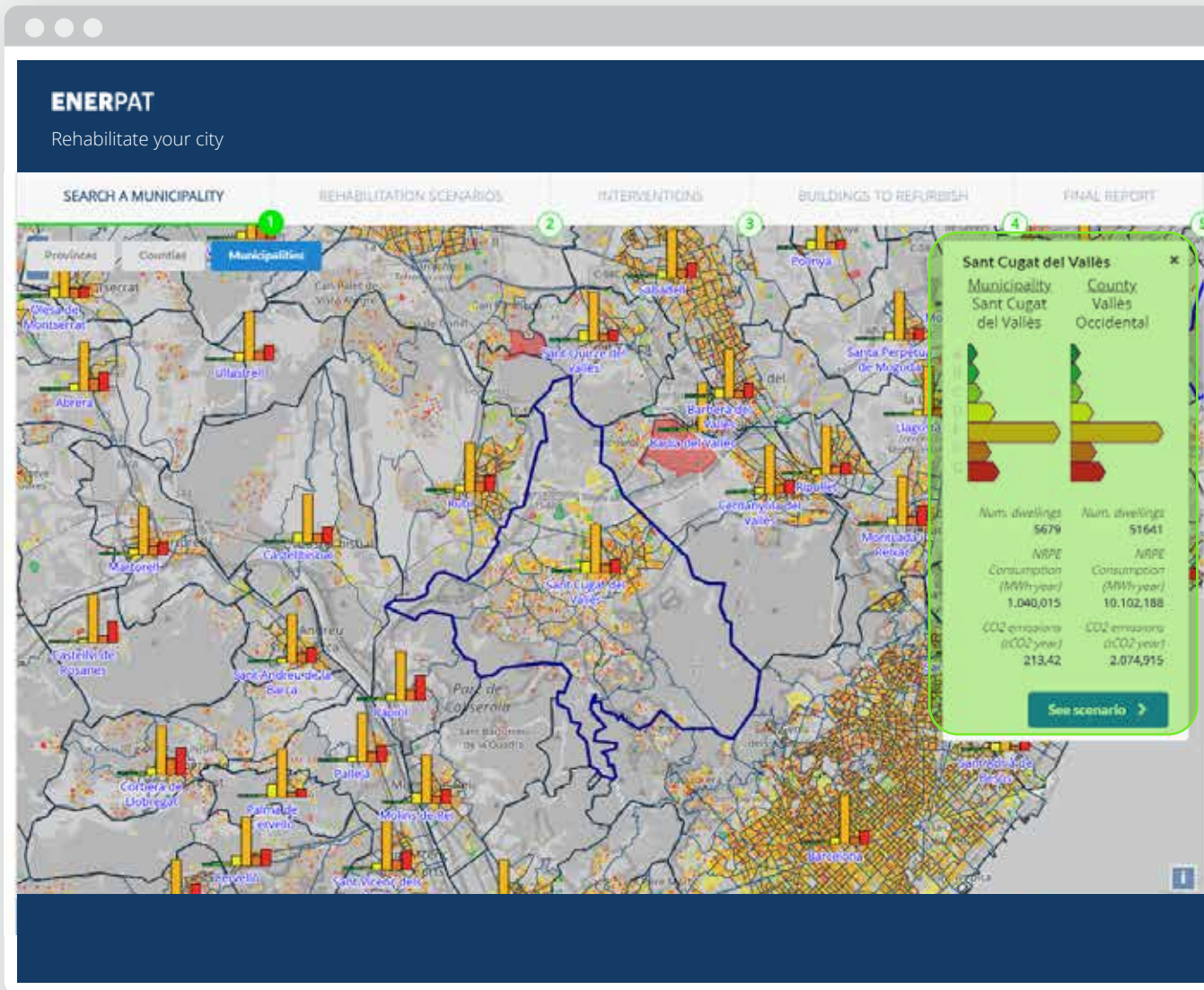
**Enerpat says:**

To begin with, you have to locate the municipality of Sant Cugat del Vallès

**User says:**

OK, I have found it. After selecting it on the map, the energy rating scales appear in a box on the right





and province

**Enerpat says:**

To begin with, you have to locate the municipality of Sant Cugat del Vallès

**User says:**

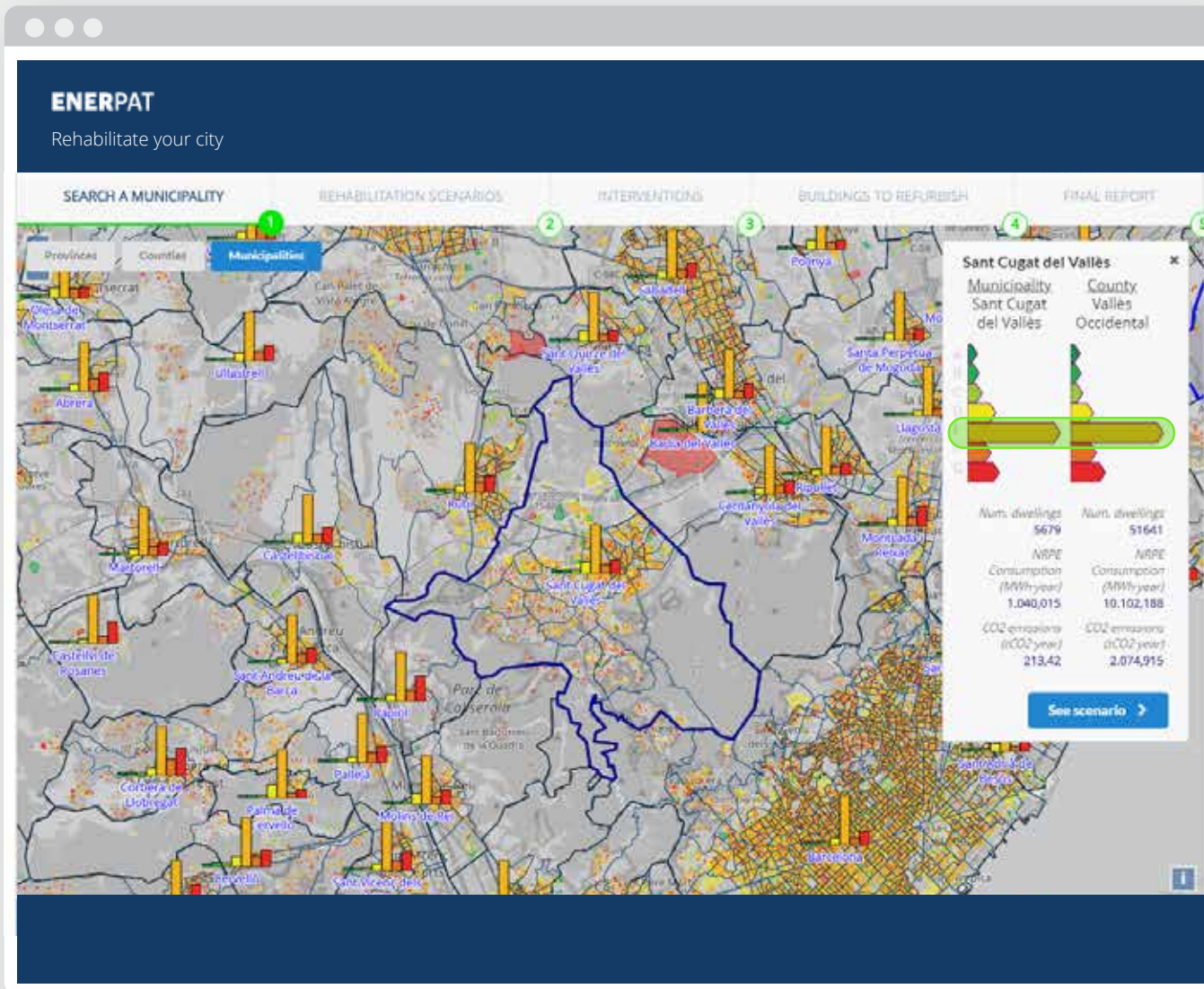
OK, I have found it. After selecting it on the map, the energy rating scales appear in a box on the right



**Enerpat says:**

In this box, you can see the total number of residential buildings with an Energy Performance Certificate in the municipality, and their corresponding energy label





**User says:**

OK, I have found it. After selecting it on the map, the energy rating scales appear in a box on the right



**Enerpat says:**

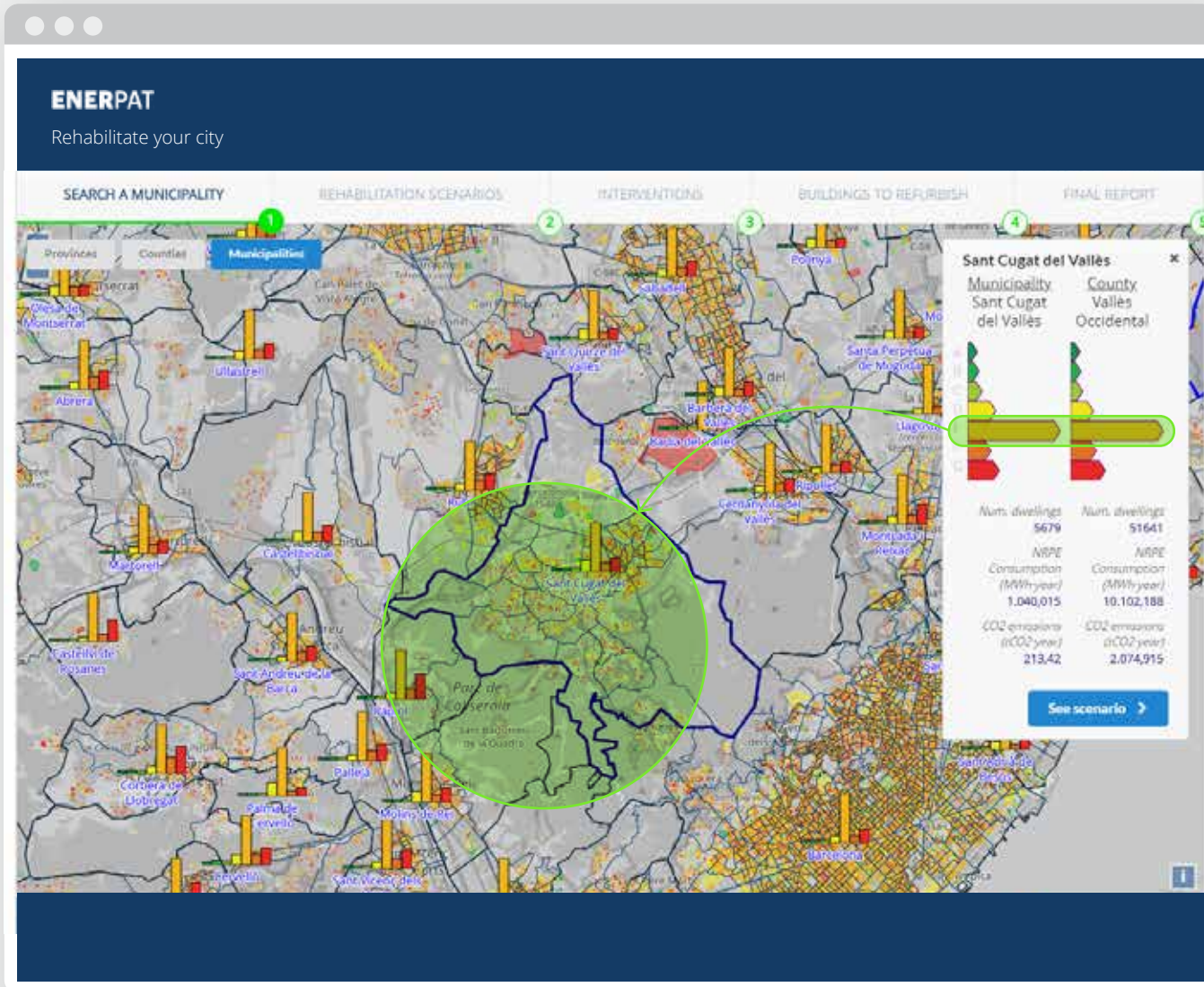
In this box, you can see the total number of residential buildings with an Energy Performance Certificate in the municipality, and their corresponding energy label

**User says:**

I see on this scale that the majority of certified buildings belong to category E



appear in a box on the right



**Enerpat says:**

In this box, you can see the total number of residential buildings with an Energy Performance Certificate in the municipality, and their corresponding energy label

**User says:**

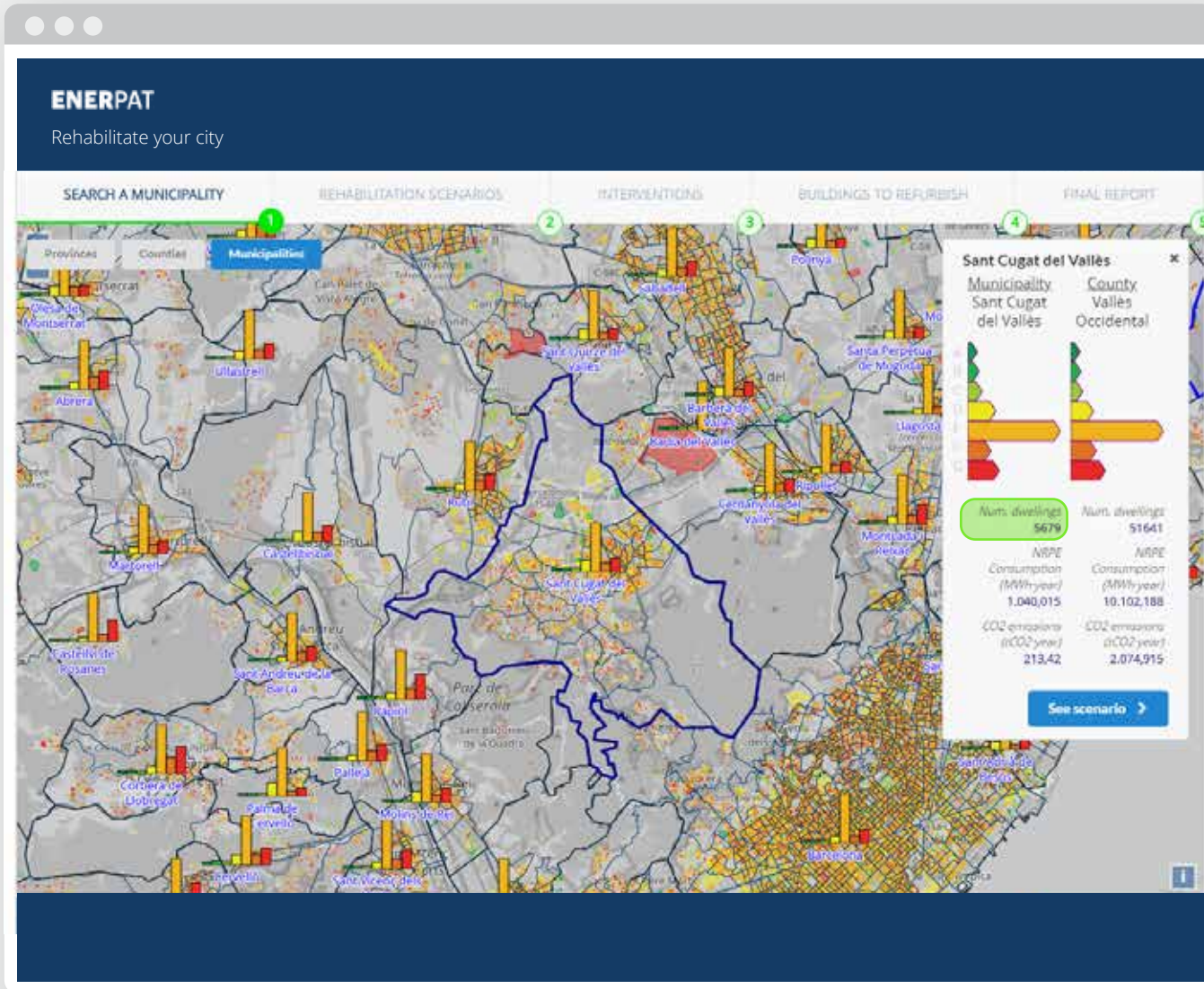
I see on this scale that the majority of certified buildings belong to category E



**User says:**

Also, I see on the map that the orange color of the label E predominates in the municipality





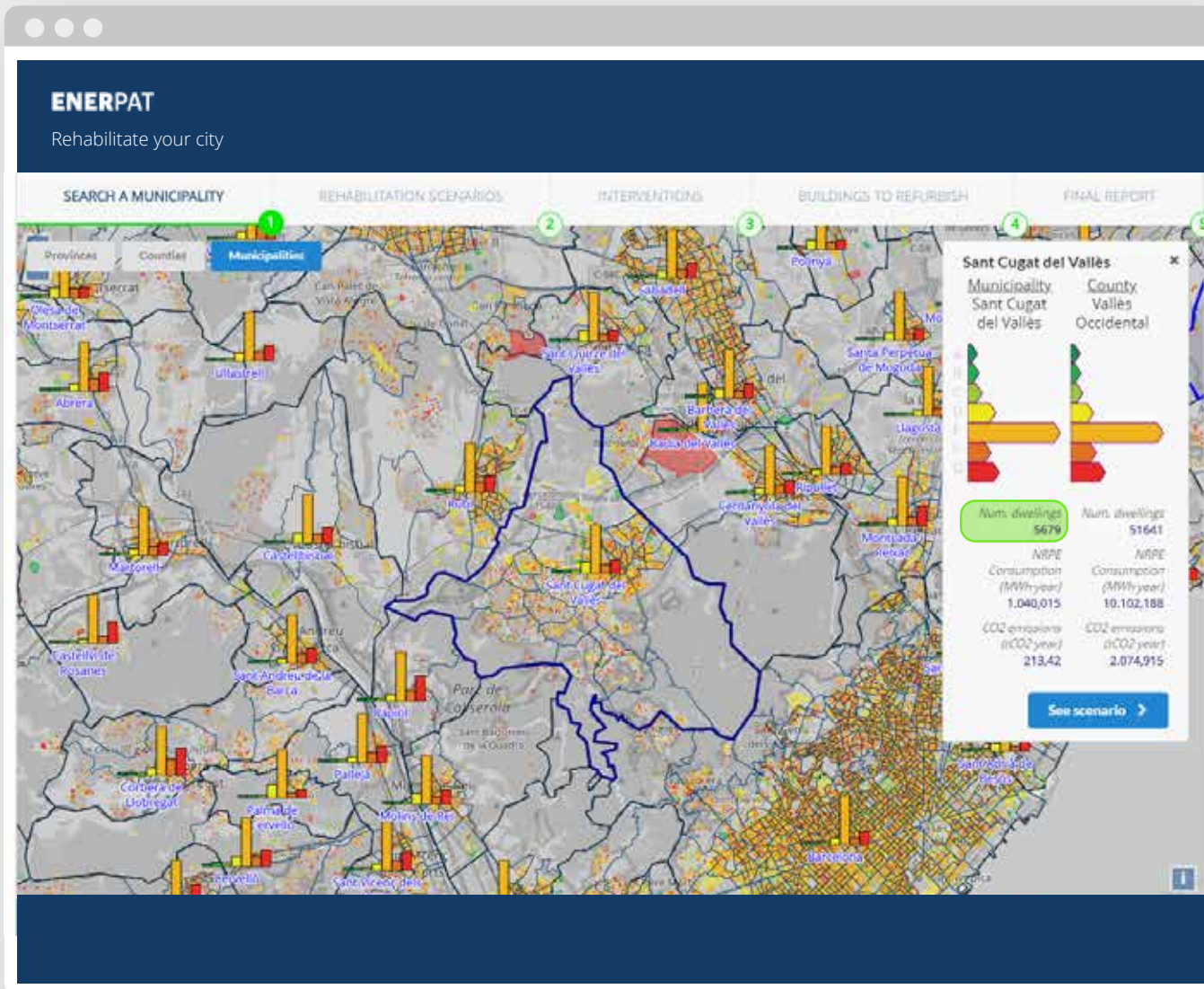
In this box, you can see the total number of residential buildings with an Energy Performance Certificate in the municipality, and their corresponding energy label

**User says:**  
I see on this scale that the majority of certified buildings belong to category E



**User says:**  
Also, I see on the map that the orange color of the label E predominates in the municipality

**User says:**  
One question, why is the number of dwellings (5,679) smaller than the number of dwellings in the municipality?



**User says:**

I see on this scale that the majority of certified buildings belong to category E



**User says:**

Also, I see on the map that the orange color of the label E predominates in the municipality

**User says:**

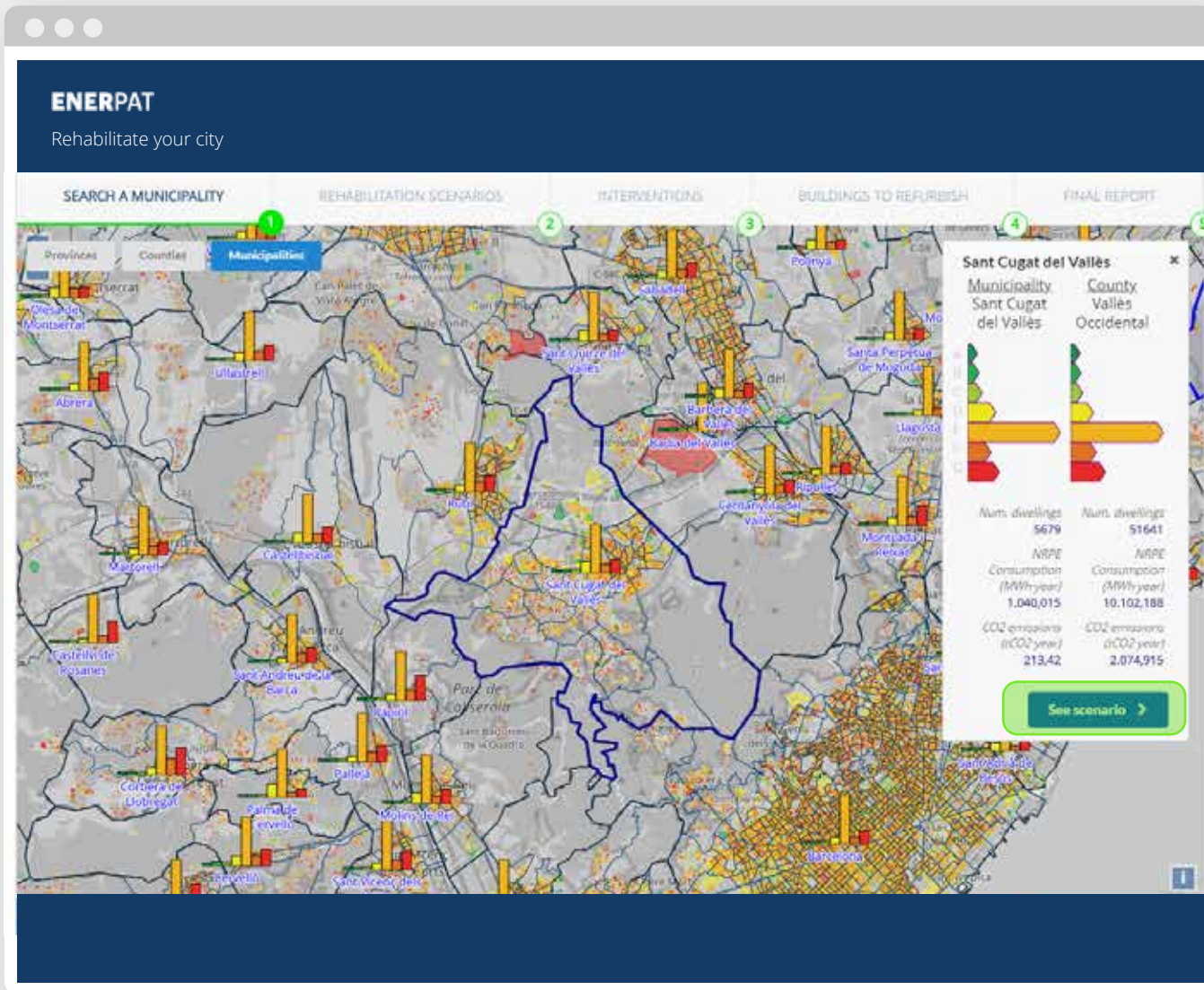
One question, why is the number of dwellings (5,679) smaller than the number of dwellings in the municipality?



**Enerpat says:**

The number of dwellings is smaller because only those that have an Energy Performance Certificate are considered





color of the label E predominates in the municipality

**User says:**

One question, why is the number of dwellings (5,679) smaller than the number of dwellings in the municipality?



**Enerpat says:**

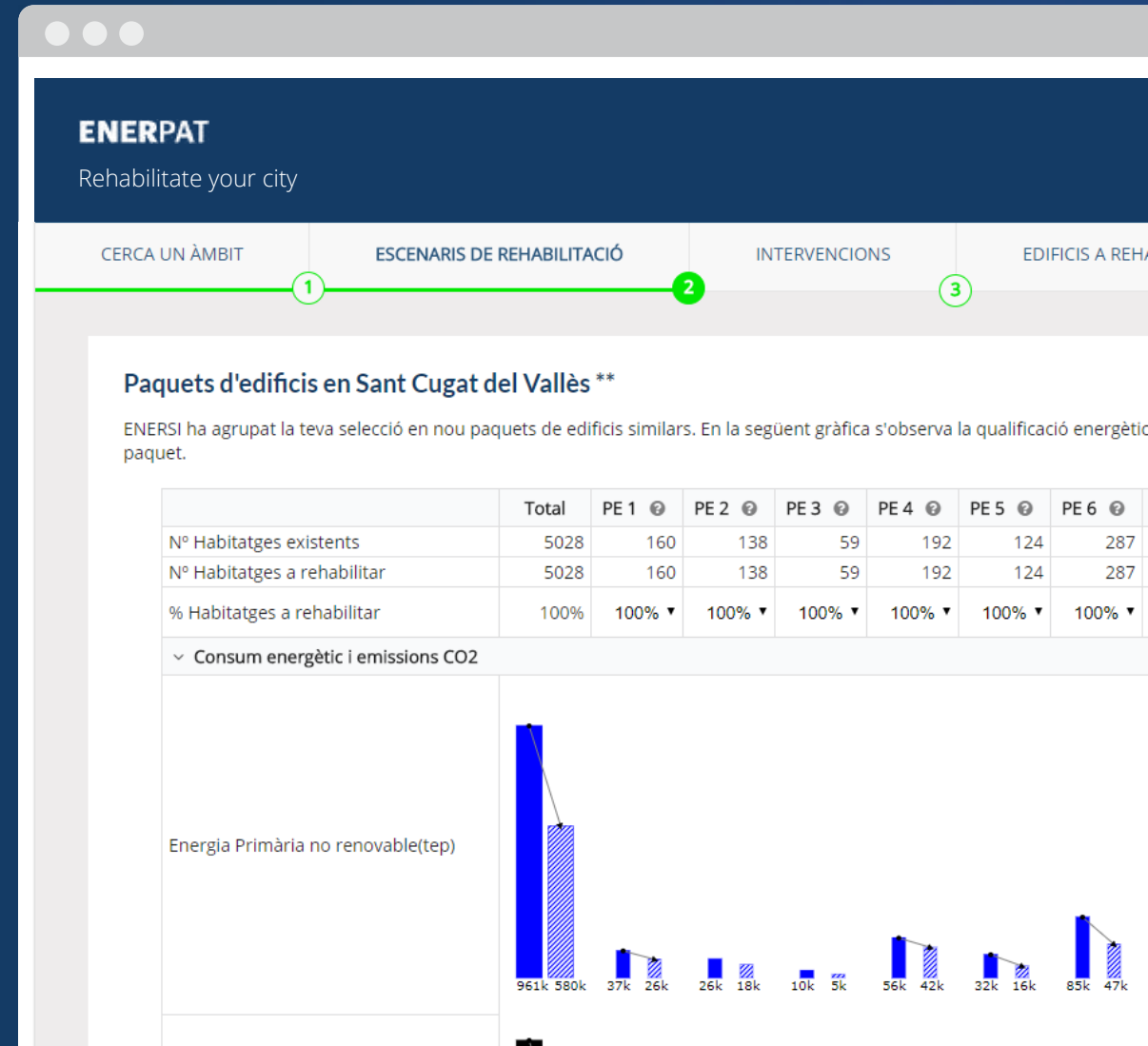
The number of dwellings is smaller because only those that have an Energy Performance Certificate are considered

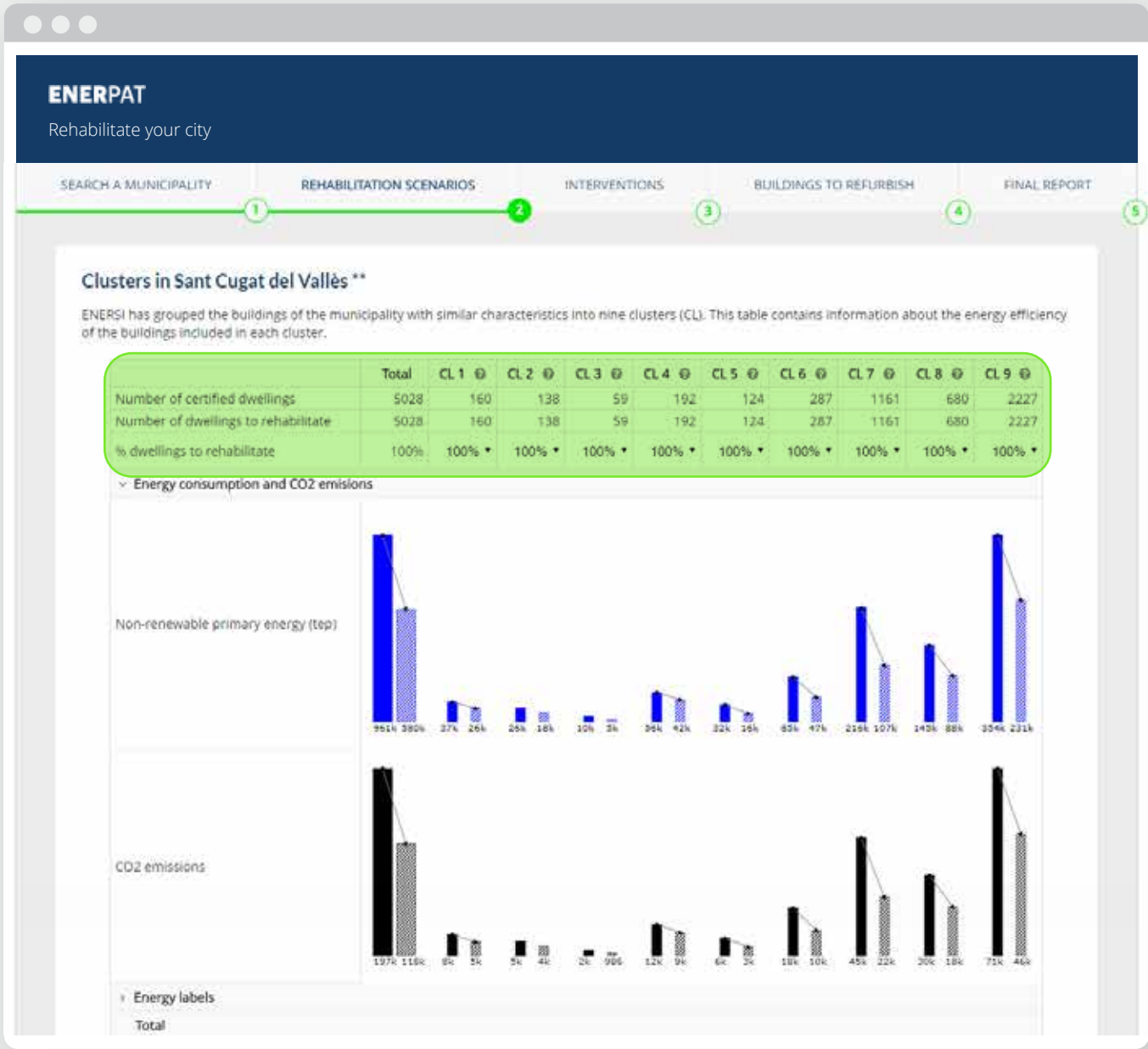
**Enerpat says:**

Then, ENERPAT classifies the residential buildings with an Energy Performance Certificate into groups to determine the appropriate rehabilitation measures for each group

# ENERPAT

## Step 2: Refurbishing scenarios



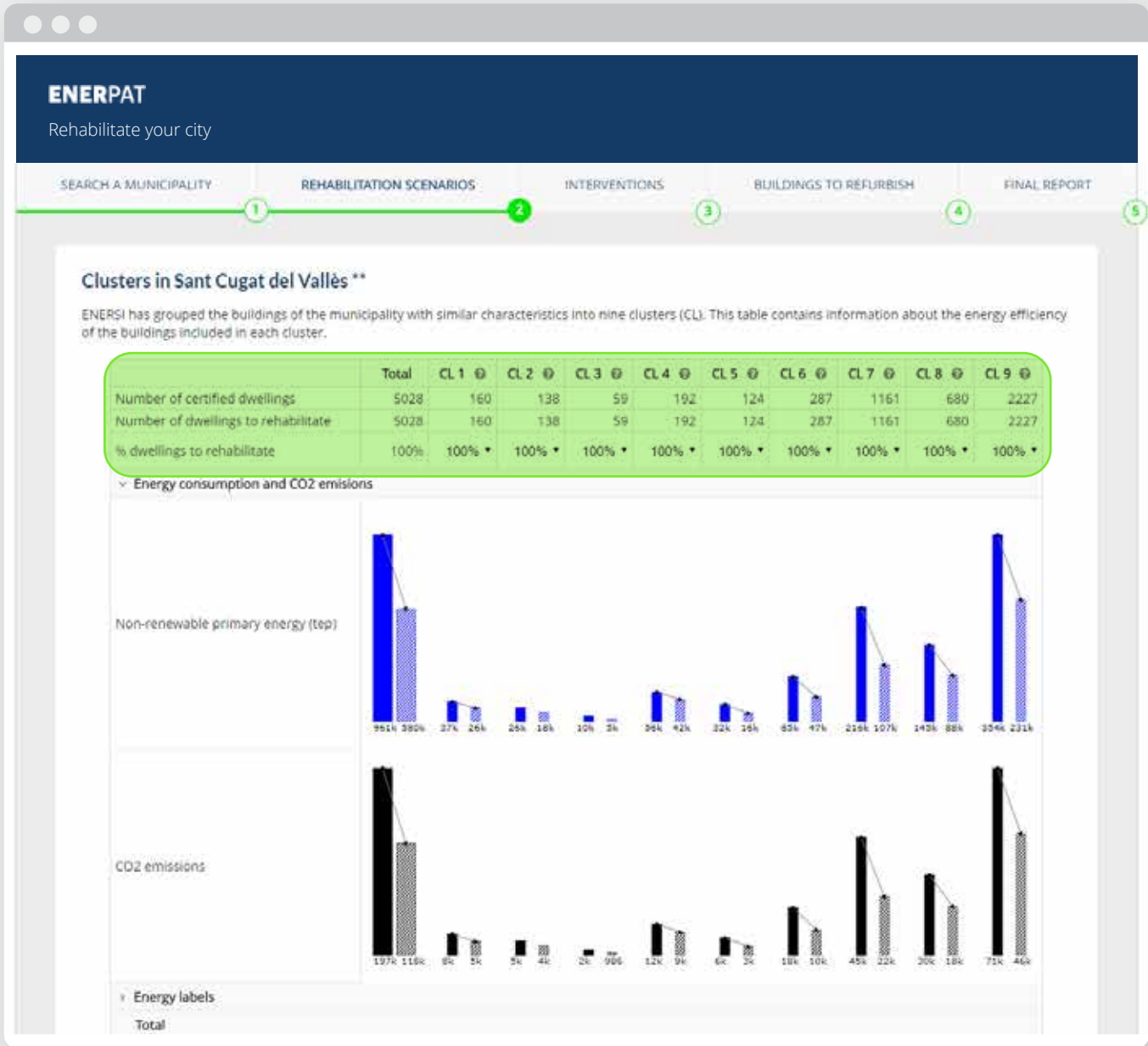


**Enerpat says:**

Here you see the residential buildings with an Energy Performance Certificate grouped into nine groups (G1, G2, G3... G9)







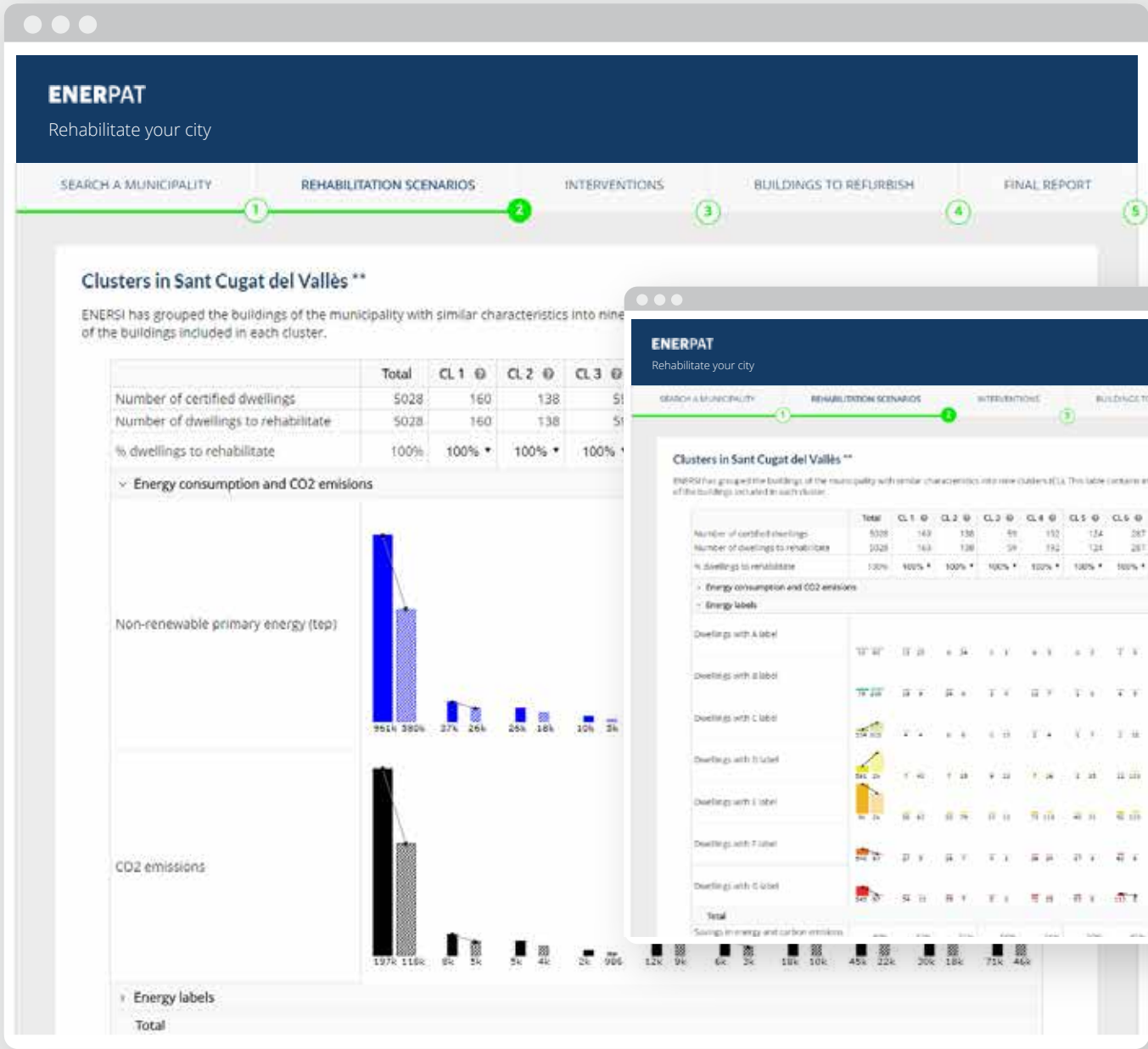
**Enerpat says:**

Here you see the residential buildings with an Energy Performance Certificate grouped into nine groups (G1, G2, G3... G9)

**Enerpat says:**

The table above indicates the number of dwellings in each group and, to the left, the total number of certified homes in the municipality (5,679). For each group, you can set the percentage of dwellings to be renovated to determine the cost of their rehabilitation, the energy savings achieved and the energy label they would obtain after the reform





of dwellings in each group and, to the left, the total number of certified homes in the municipality (5,679). For each group, you can set the percentage of dwellings to be renovated to determine the cost of their rehabilitation, the energy savings achieved and the energy label they would obtain after the reform

**Enerpat says:**

Before selecting the percentage of dwellings to be rehabilitated in each group, we recommend that you analyze the current situation of the buildings as reflected in these graphs: "Energy consumption and emissions", and "Energy ratings"





energy savings achieved and the energy label they would obtain after the reform

**Enerpat says:**

Before selecting the percentage of dwellings to be rehabilitated in each group, we recommend that you analyze the current situation of the buildings as reflected in these graphs: "Energy consumption and emissions", and "Energy ratings"

**Enerpat says:**

The top graph shows the total non-renewable primary energy consumed by the buildings of each group; the lower one, the CO2 emissions

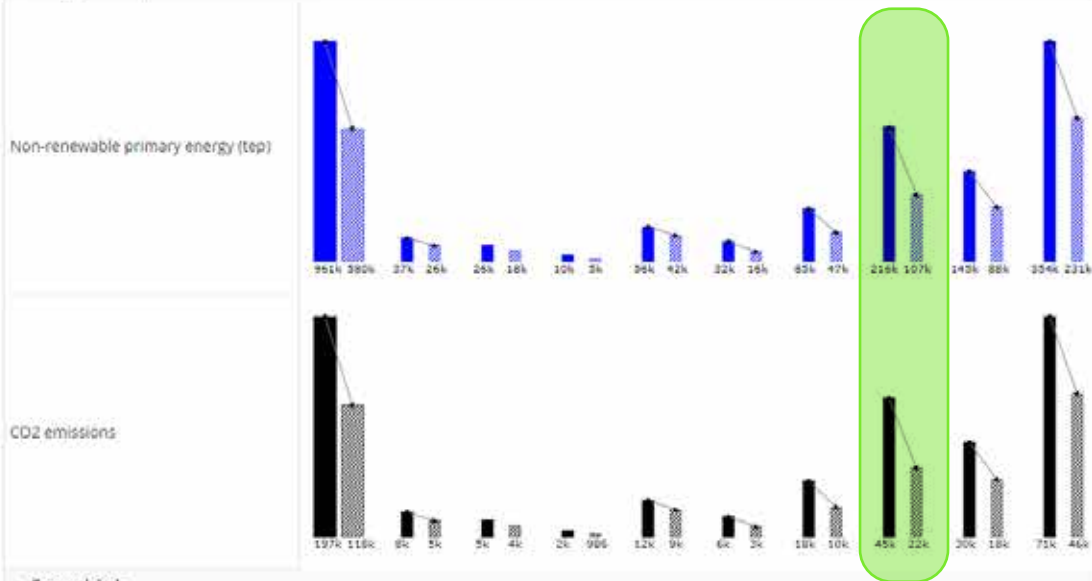


**Clusters in Sant Cugat del Vallès \*\***

ENERSI has grouped the buildings of the municipality with similar characteristics into nine clusters (CL). This table contains information about the energy efficiency of the buildings included in each cluster.

	Total	CL 1	CL 2	CL 3	CL 4	CL 5	CL 6	CL 7	CL 8	CL 9
Number of certified dwellings	5028	160	138	59	192	124	287	1161	680	2227
Number of dwellings to rehabilitate	5028	160	138	59	192	124	287	1161	680	2227
% dwellings to rehabilitate	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Energy consumption and CO2 emissions



**Enerpat says:**

Before selecting the percentage of dwellings to be rehabilitated in each group, we recommend that you analyze the current situation of the buildings as reflected in these graphs: "Energy consumption and emissions", and "Energy ratings"

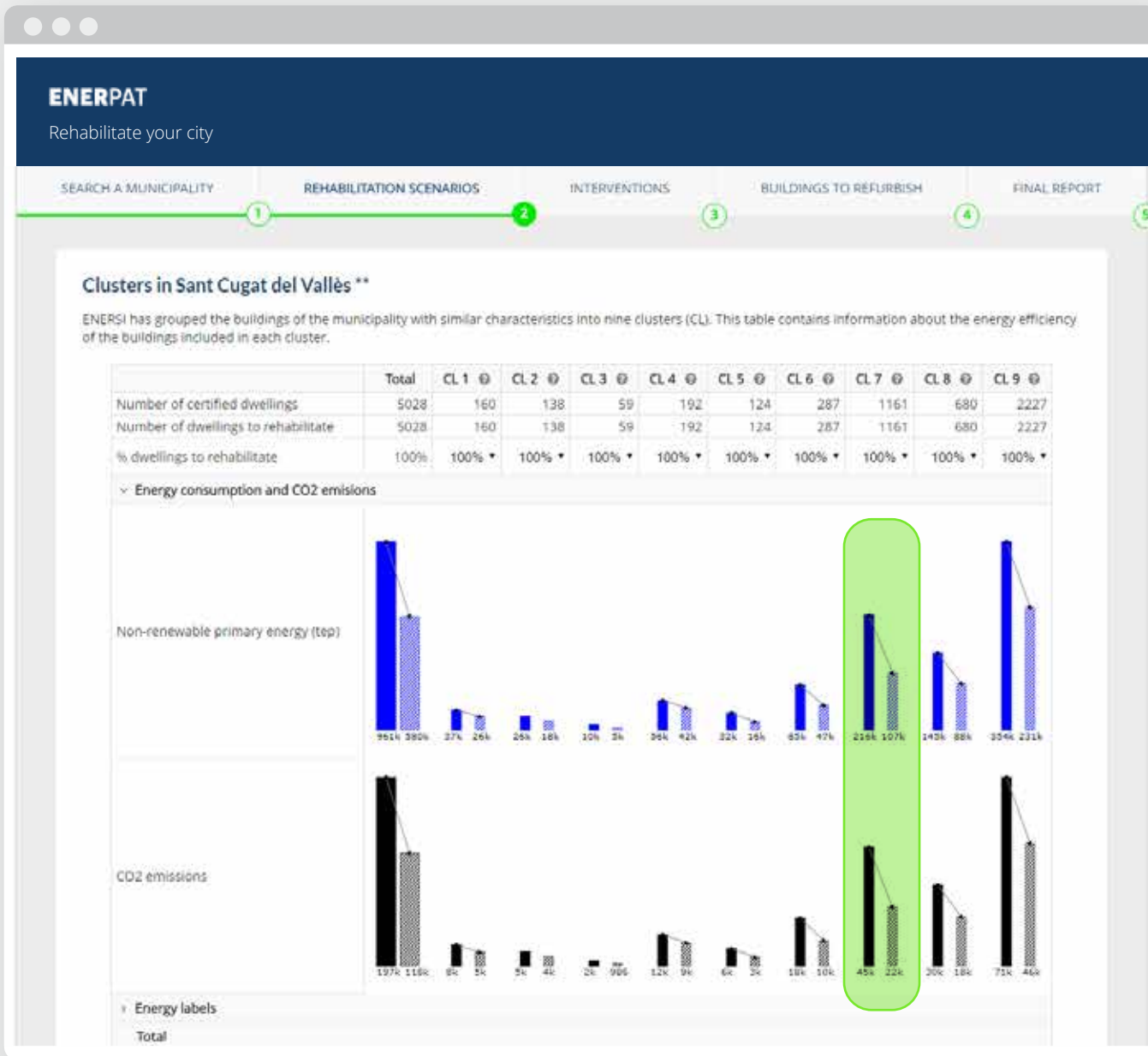
**Enerpat says:**

The top graph shows the total non-renewable primary energy consumed by the buildings of each group; the lower one, the CO2 emissions

**User says:**

And what do the two bars in each group represent?





User says:

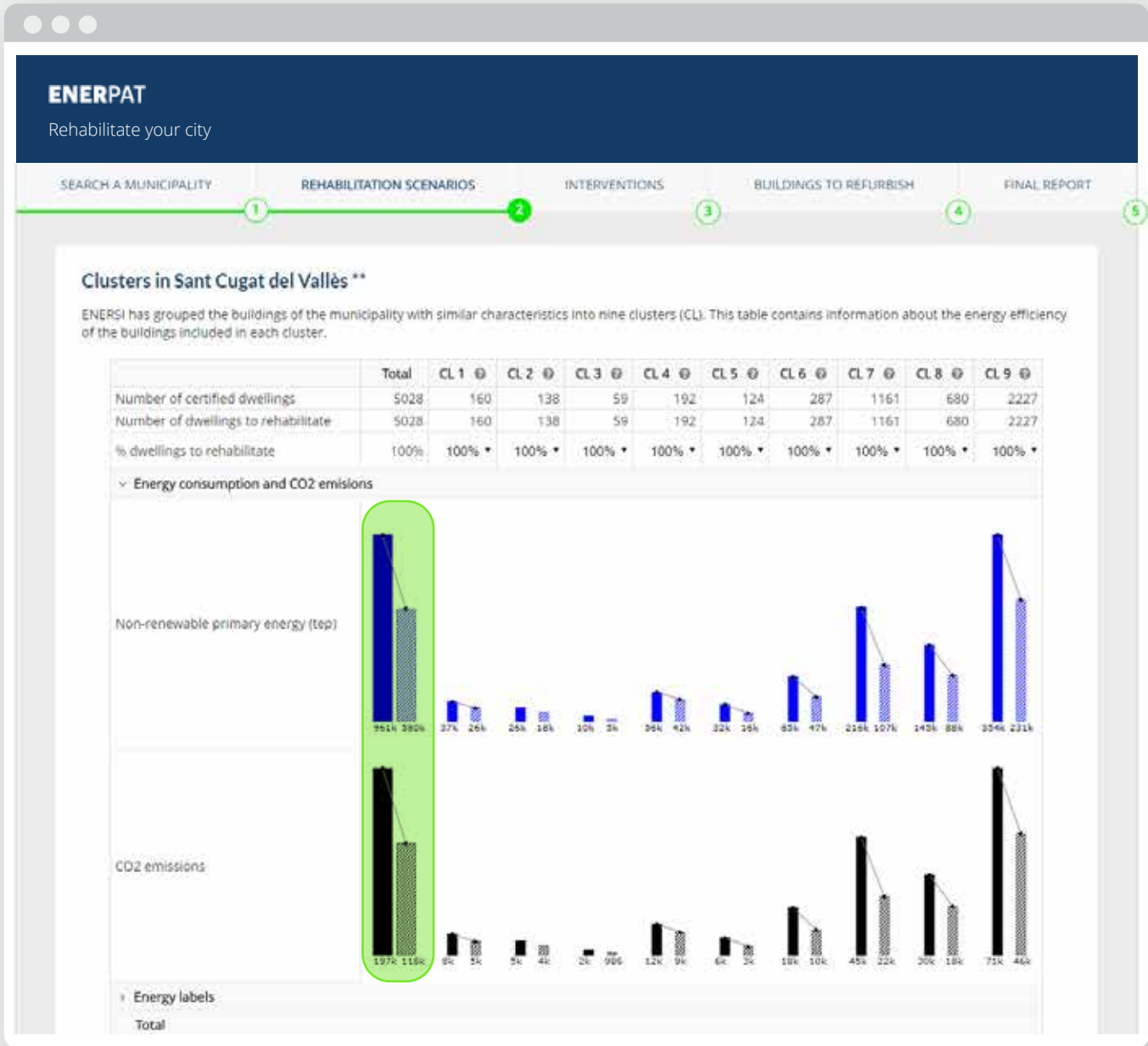
And what do the two bars in each group represent?



Enerpat says:

The solid bar indicates the current consumption of primary energy and the production of emissions of all the buildings in each group. The shaded bar represents the sum of the primary energy consumption and emissions after the rehabilitation of the buildings of the group, according to the percentage applied to it. The direction of the arrow that links both bars indicates the increase or decrease that would result from the rehabilitation





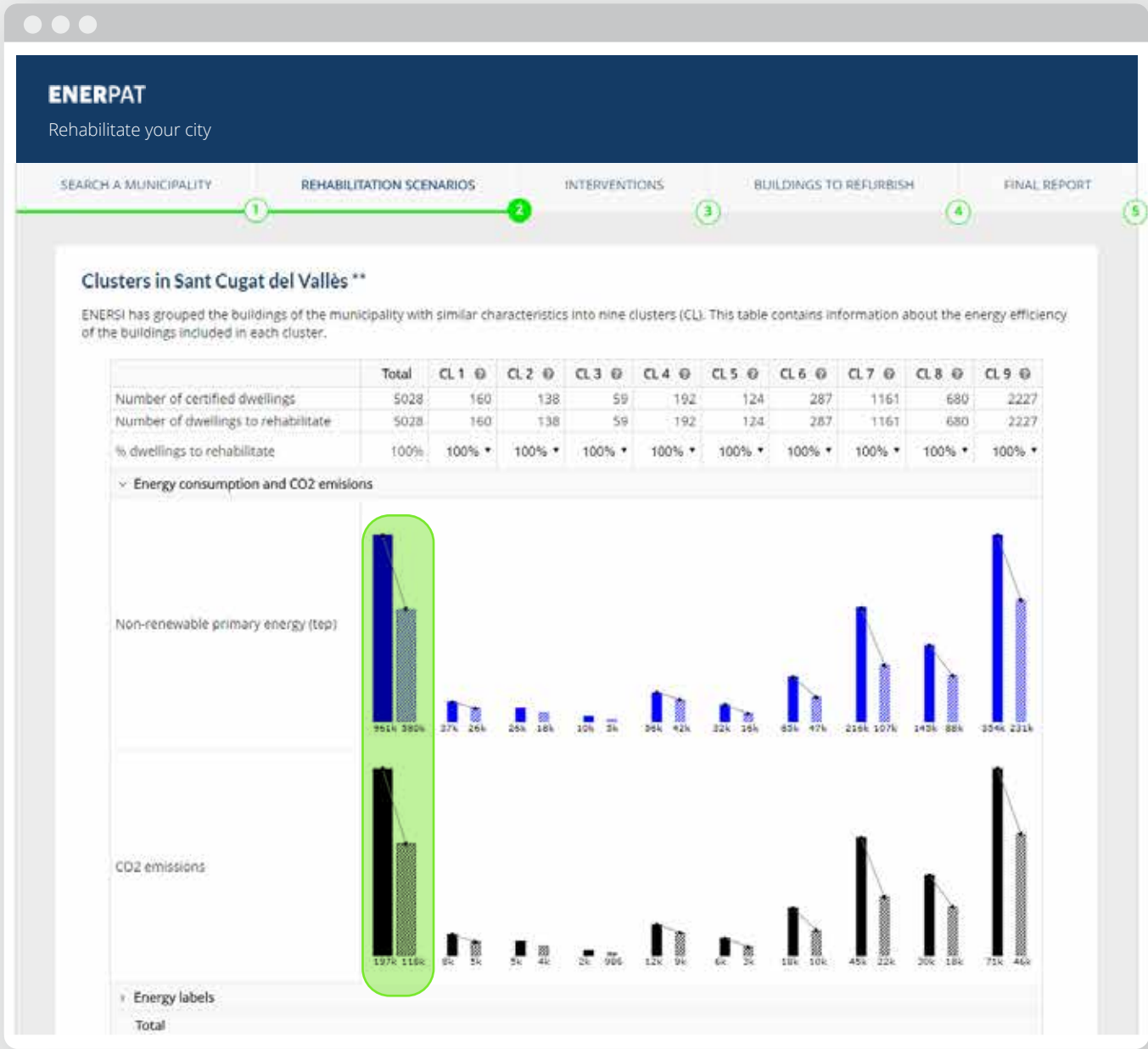
**Enerpat says:**

The solid bar indicates the current consumption of primary energy and the production of emissions of all the buildings in each group. The shaded bar represents the sum of the primary energy consumption and emissions after the rehabilitation of the buildings of the group, according to the percentage applied to it. The direction of the arrow that links both bars indicates the increase or decrease that would result from the rehabilitation

**User says:**

¿Y qué representan las barras de la primera columna por la izquierda?





represents the same for the primary energy consumption and emissions after the rehabilitation of the buildings of the group, according to the percentage applied to it. The direction of the arrow that links both bars indicates the increase or decrease that would result from the rehabilitation

**User says:**

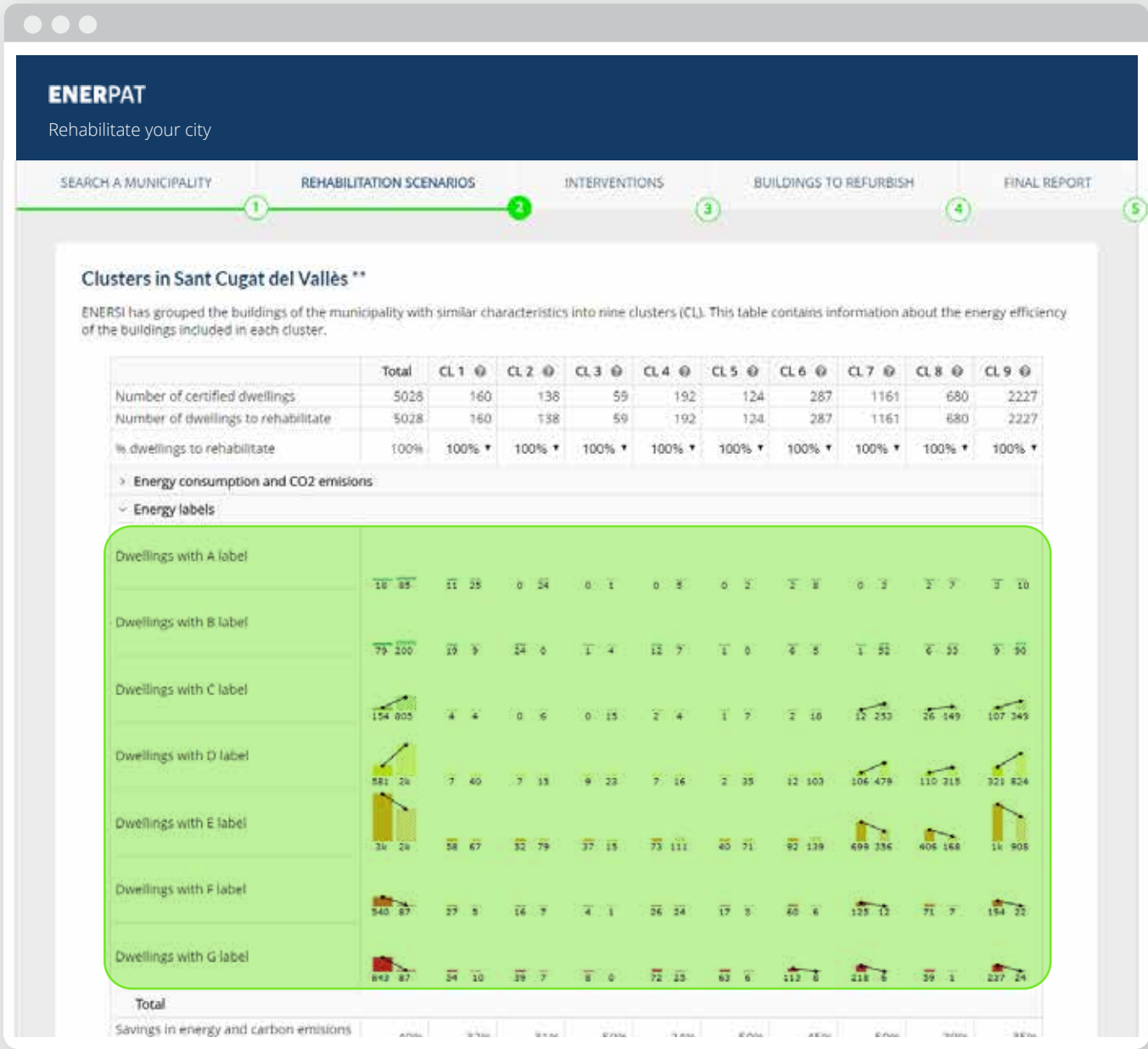
And what do the bars in the first column on the left represent?



**Enerpat says:**

The total sum of the energy consumed and the emissions produced by the dwellings included in all the groups





or decrease that would result from the rehabilitation

User says:

And what do the bars in the first column on the left represent?

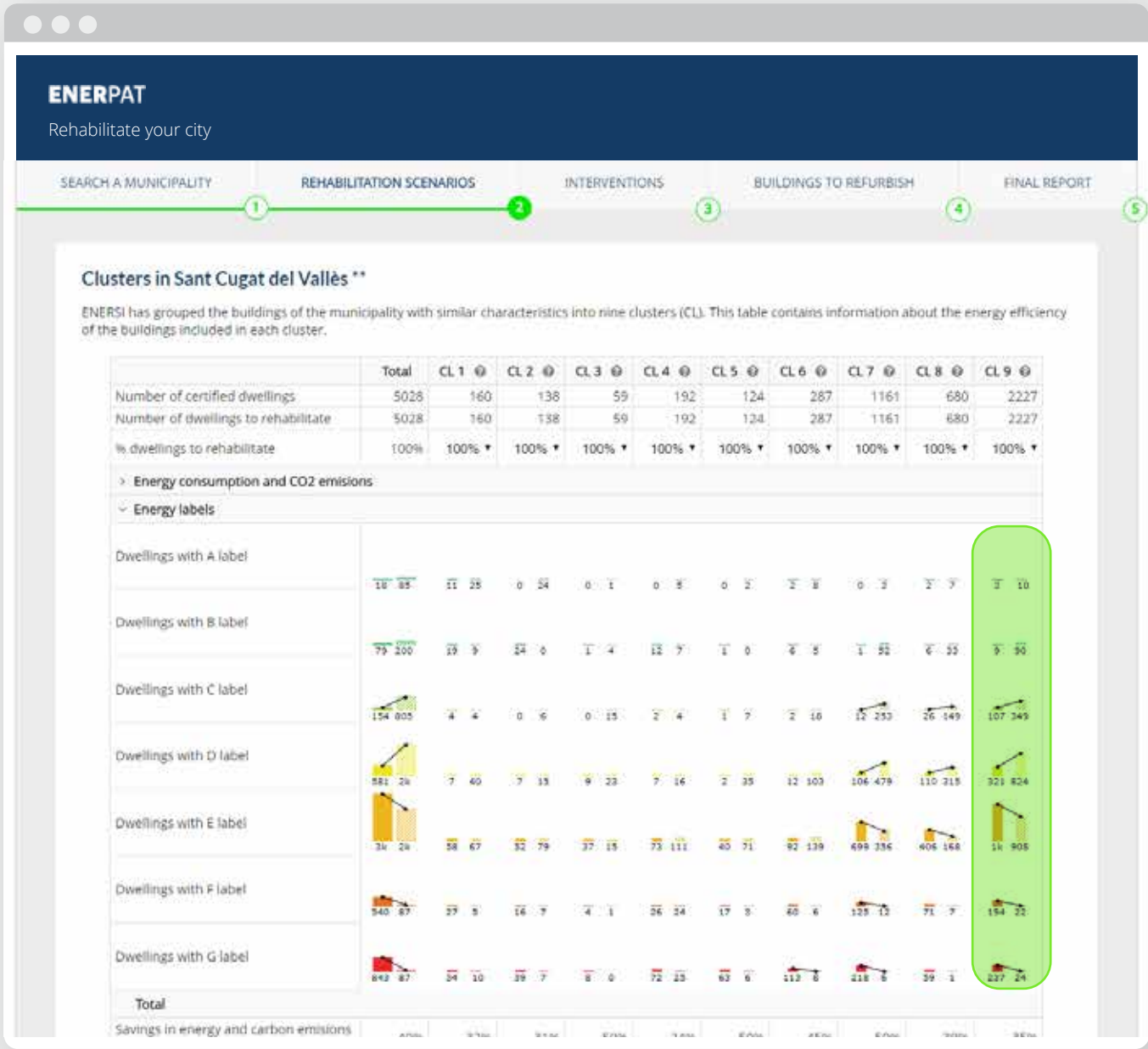


Enerpat says:

The total sum of the energy consumed and the emissions produced by the dwellings included in all the groups

Enerpat says:

The graph "Energy ratings" shows the classification of the buildings contained in the groups



**Enerpat says:**

The total sum of the energy consumed and the emissions produced by the dwellings included in all the groups

**Enerpat says:**

The graph "Energy ratings" shows the classification of the buildings contained in the groups

**Enerpat says:**

As in the previous graph, the bar on the left indicates the total number of dwellings with a specific rating within each group, and the number of dwellings of the same class after rehabilitation

**Clusters in Sant Cugat del Vallès \*\***

ENERSI has grouped the buildings of the municipality with similar characteristics into nine clusters (CL). This table contains information about the energy efficiency of the buildings included in each cluster.

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% dwellings to rehabilitate	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
> Energy consumption and CO2 emissions < Energy labels										
Dwellings with A label	18 85	21 25	0 04	0 1	0 8	0 2	2 8	0 3	2 7	3 10
Dwellings with B label	79 200	19 3	34 0	1 4	12 7	1 0	6 5	1 52	6 33	9 50
Dwellings with C label	154 005	4 4	0 6	0 15	2 4	1 7	2 16	12 253	26 149	107 349
Dwellings with D label	581 26	7 40	7 13	9 23	7 16	2 35	12 103	106 479	110 215	921 824
Dwellings with E label	34 24	38 67	32 79	37 15	73 111	40 71	92 139	499 336	406 168	14 905
Dwellings with F label	540 87	27 8	16 7	4 1	26 24	17 5	40 6	129 13	71 7	154 22
Dwellings with G label	843 87	34 10	39 7	8 0	72 23	82 6	113 8	218 8	39 1	237 24
<b>Total</b>										
Savings in energy and carbon emissions										

**Enerpat says:**

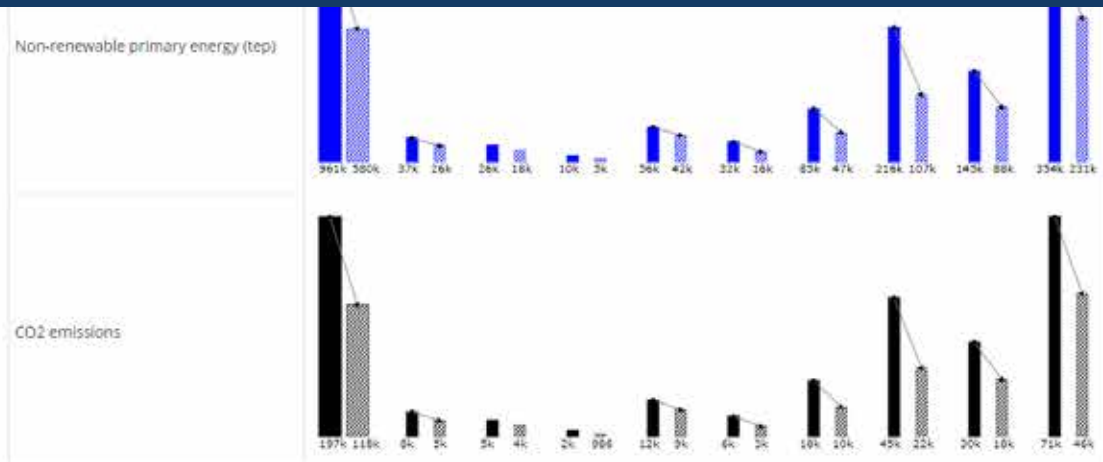
The graph "Energy ratings" shows the classification of the buildings contained in the groups

**Enerpat says:**

As in the previous graph, the bar on the left indicates the total number of dwellings with a specific rating within each group, and the number of dwellings of the same class after rehabilitation

**Enerpat says:**

Likewise, the first column indicates the values for all the dwellings contained in the groups



Energy labels

Total										
Savings in energy and carbon emissions (%)	40%	32%	31%	50%	24%	50%	45%	50%	39%	35%
Total investment (M€)	81,91M€	1,78M€	0,57M€	0,38M€	1,65M€	1,81M€	5,10M€	15,20M€	17,25M€	35,41M€
<b>Passive measures</b>										
Savings in energy and carbon emissions (%)	34,41%	27,15%	26,25%	36,60%	19,35%	45,65%	40,79%	44,95%	34,20%	29,80%
Investment per housing unit	14453€	9408€	3434€	5405€	7125€	13788€	16002€	12031€	23670€	14656€
Total investment (M€)	72,67M€	1,51M€	0,47M€	0,32M€	1,37M€	1,71M€	4,59M€	13,97M€	16,10M€	32,64M€
Return on investment	31,42 Anys	26,65 Anys	20,70 Anys	22,50 Anys	32,05 Anys	33,20 Anys	33,95 Anys	29,00 Anys	39,60 Anys	45,10 Anys
Refurbishing measures		<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>
<b>Active measures</b>										
Savings in energy and carbon emissions (%)	5,25%	4,59%	4,31%	13,04%	4,17%	4,02%	4,10%	5,37%	5,26%	5,03%
Investment per housing unit	1838€	1712€	662€	987€	1486€	815€	1779€	1060€	1694€	1243€
Total investment (M€)	9,24M€	0,27M€	0,09M€	0,06M€	0,29M€	0,10M€	0,51M€	1,23M€	1,15M€	2,77M€
Return on investment	15,37 Anys	8,93 Anys	13,71 Anys	14,19 Anys	8,41 Anys	17,83 Anys	10,04 Anys	12,15 Anys	12,84 Anys	19,20 Anys
Refurbishing measures		<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>

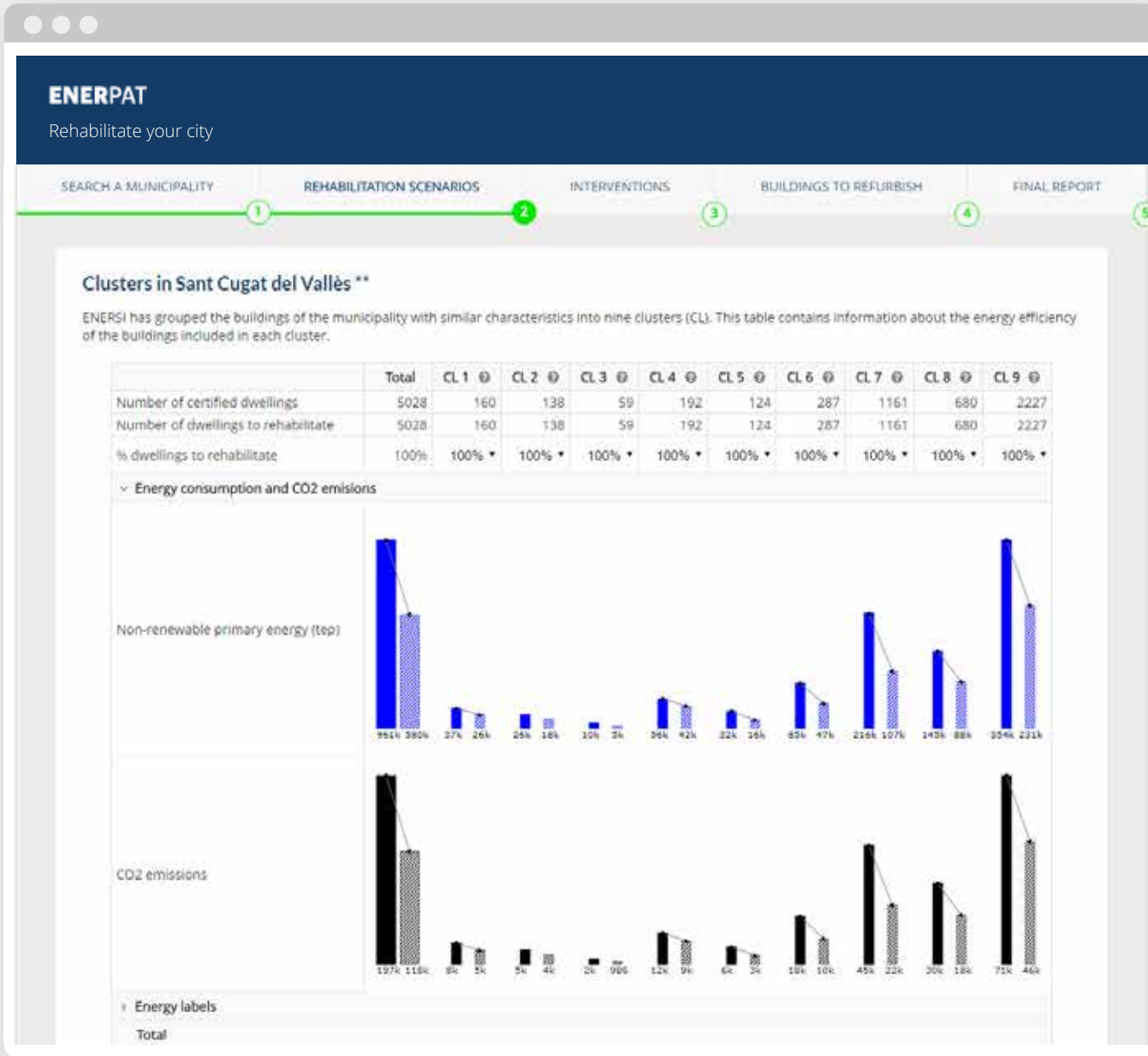
As in the previous graph, the bar on the left indicates the total number of dwellings with a specific rating within each group, and the number of dwellings of the same class after rehabilitation

**Enerpat says:**

Likewise, the first column indicates the values for all the dwellings contained in the groups

**Enerpat says:**

Below the graphs, the table continues to show the total energy and emission savings achieved in each group, and the investment to be made. Savings and costs can be broken down for active and passive measures



**Enerpat says:**

Likewise, the first column indicates the values for all the dwellings contained in the groups

**Enerpat says:**

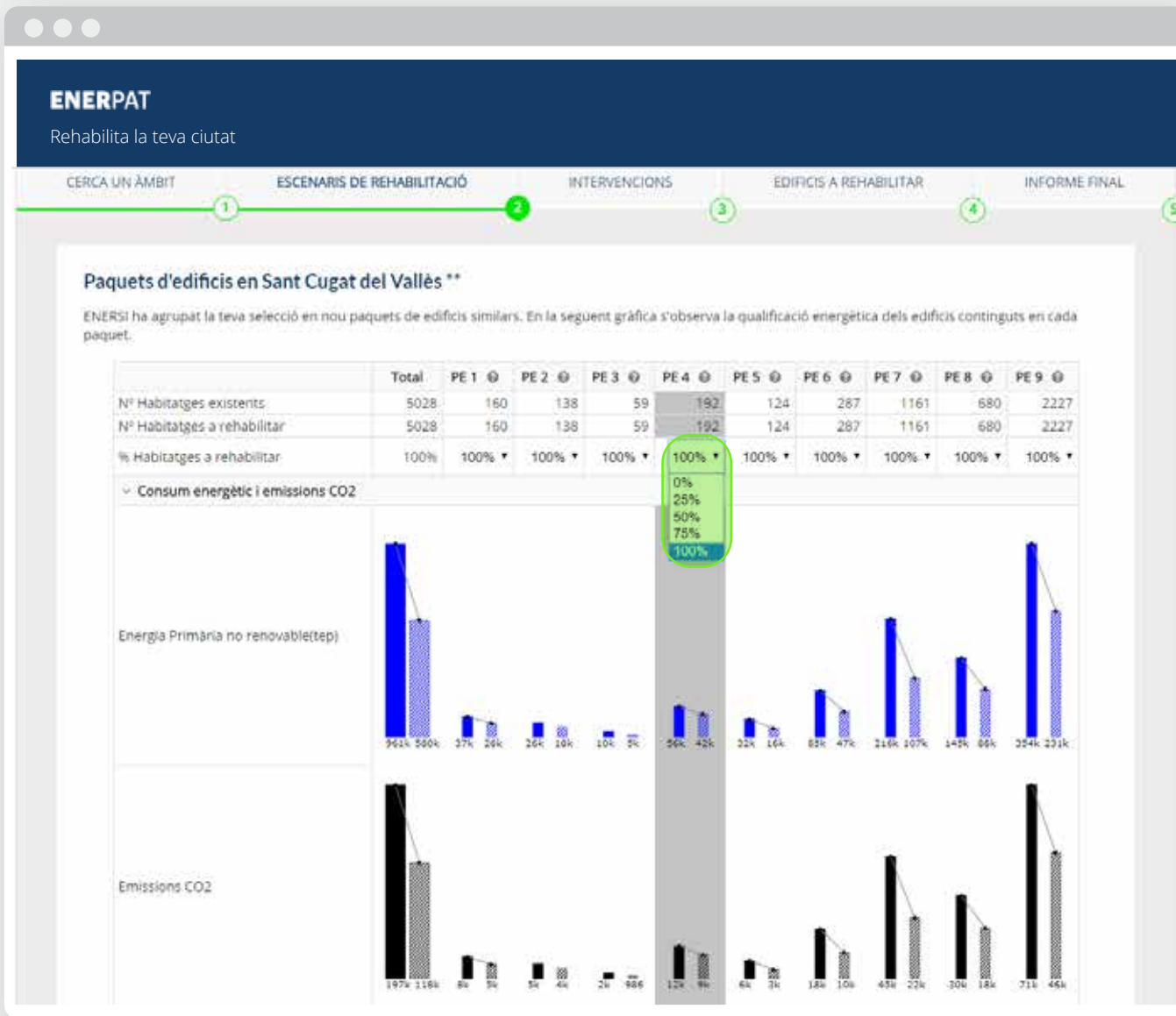
Below the graphs, the table continues to show the total energy and emission savings achieved in each group, and the investment to be made. Savings and costs can be broken down for active and passive measures

**User says:**

How can I assign the number of dwellings to be rehabilitated in each group?







**Enerpat says:**

Below the graphs, the table continues to show the total energy and emission savings achieved in each group, and the investment to be made. Savings and costs can be broken down for active and passive measures

**User says:**

How can I assign the number of dwellings to be rehabilitated in each group?

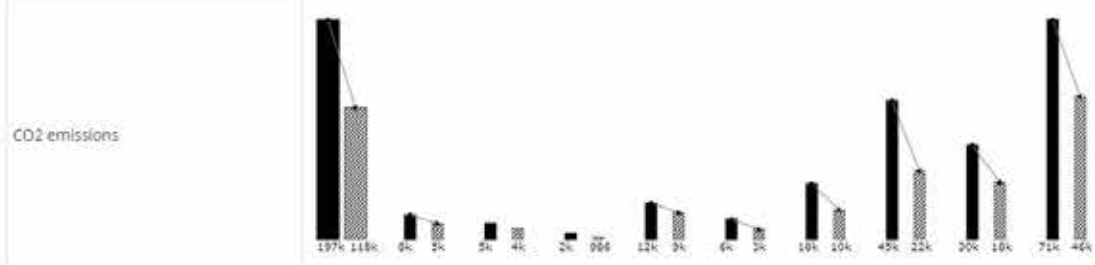
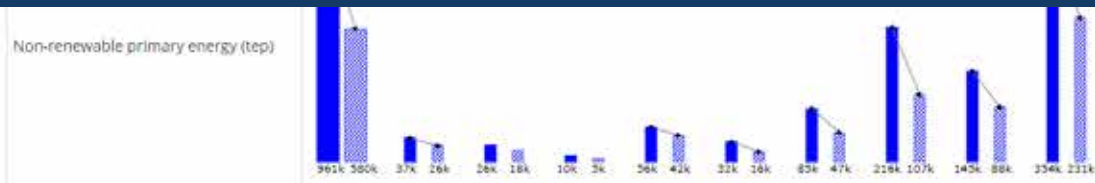


**Enerpat says:**

In this drop-down menu, the percentage of homes to be rehabilitated is selected

# ENERPAT

Rehabilitate your city



Energy labels										
Total										
Savings in energy and carbon emissions (%)	40%	32%	31%	50%	24%	50%	45%	50%	39%	35%
Total investment (M€)	81,91M€	1,78M€	0,57M€	0,38M€	1,65M€	1,81M€	5,10M€	15,20M€	17,25M€	35,41M€
Passive measures										
Savings in energy and carbon emissions (%)	34,41%	27,15%	26,25%	36,60%	19,35%	45,65%	40,79%	44,95%	34,20%	29,80%
Investment per housing unit	14453€	9408€	3434€	5405€	7125€	13788€	16002€	12031€	23670€	14656€
Total investment (M€)	72,67M€	1,51M€	0,47M€	0,32M€	1,37M€	1,71M€	4,59M€	13,97M€	16,10M€	32,64M€
Return on investment	31,42 Anys	26,65 Anys	20,70 Anys	22,50 Anys	32,05 Anys	33,20 Anys	33,95 Anys	29,00 Anys	39,60 Anys	45,10 Anys
Refurbishing measures		<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>
Active measures										
Savings in energy and carbon emissions (%)	5,25%	4,59%	4,31%	13,04%	4,17%	4,02%	4,10%	5,37%	5,26%	5,03%
Investment per housing unit	1838€	1712€	662€	987€	1486€	815€	1279€	1060€	1694€	1243€
Total investment (M€)	9,24M€	0,27M€	0,09M€	0,06M€	0,29M€	0,10M€	0,51M€	1,23M€	1,15M€	2,77M€
Return on investment	15,37 Anys	8,93 Anys	13,71 Anys	14,19 Anys	8,41 Anys	17,83 Anys	10,04 Anys	12,15 Anys	12,84 Anys	19,20 Anys
Refurbishing measures		<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>	<a href="#">See</a>

User says:

How can I assign the number of dwellings to be rehabilitated in each group?



Enerpat says:

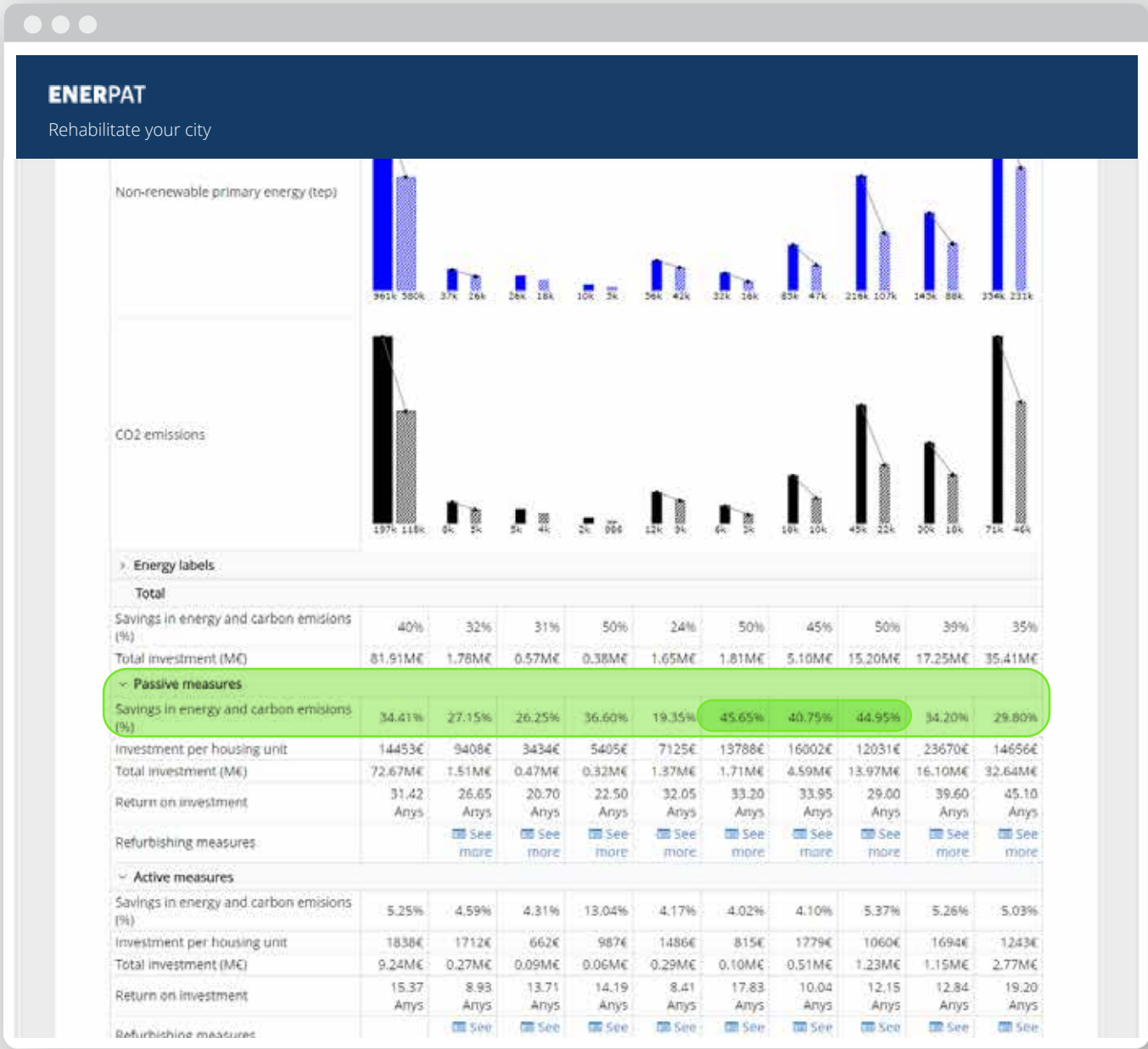
In this drop-down menu, the percentage of homes to be rehabilitated is selected

User says:

So, what do I have to do if my objective is to rehabilitate the minimum number of dwellings to achieve the maximum energy savings?







In this drop-down menu, the percentage of homes to be rehabilitated is selected

**User says:**

So, what do I have to do if my objective is to rehabilitate the minimum number of dwellings to achieve the maximum energy savings?



**Enerpat says:**

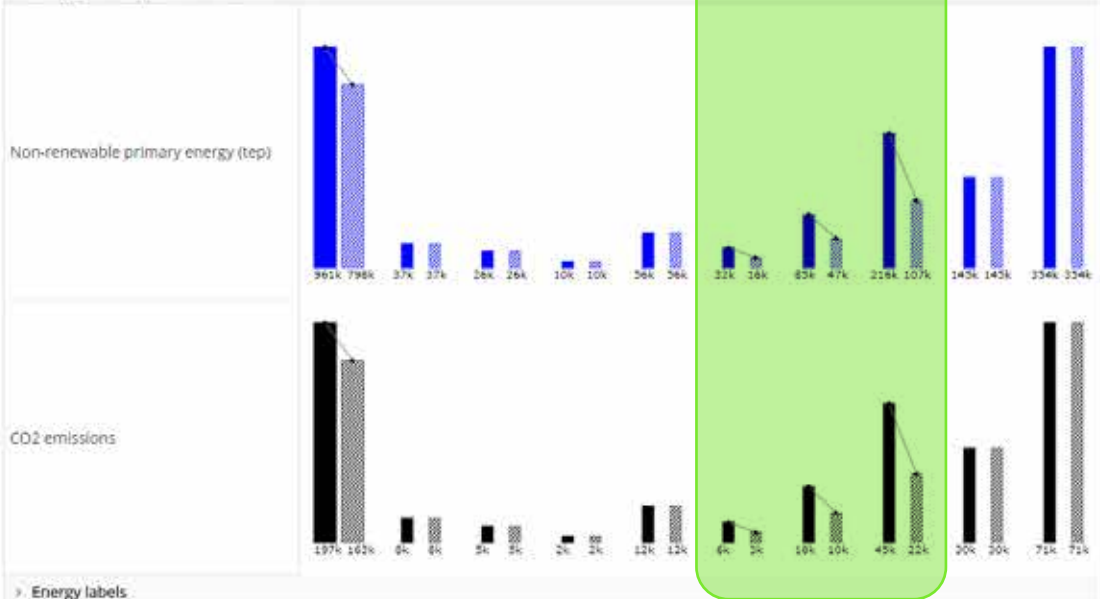
In this case it would be necessary to start by rehabilitating the housing groups with the highest percentage of energy savings and emissions, for example applying passive measures, as suggested by the information provided in the table and in the graphs

**Clusters in Sant Cugat del Vallès\*\***

ENERSI has grouped the buildings of the municipality with similar characteristics into nine clusters (CL). This table contains information about the energy efficiency of the buildings included in each cluster.

	Total	CL 1	CL 2	CL 3	CL 4	CL 5	CL 6	CL 7	CL 8	CL 9
Number of certified dwellings	5028	160	138	59	192	124	287	1161	680	2227
Number of dwellings to rehabilitate	1572	0	0	0	0	124	287	1161	0	0
% dwellings to rehabilitate	31%	0%	0%	0%	0%	100%	100%	100%	0%	0%

Energy consumption and CO2 emissions



Energy labels

Total	CL 1	CL 2	CL 3	CL 4	CL 5	CL 6	CL 7	CL 8	CL 9	
Savings in energy and carbon emissions (%)	17%	0%	0%	0%	0%	50%	45%	50%	0%	0%
Total investment (M€)	22.11M€	0.00M€	0.00M€	0.00M€	0.00M€	1.81M€	5.10M€	15.20M€	0.00M€	0.00M€

Is to rehabilitate the minimum number of dwellings to achieve the maximum energy savings?



**Enerpat says:**

In this case it would be necessary to start by rehabilitating the housing clusters with the highest percentage of energy savings and emissions, for example applying passive measures, as suggested by the information provided in the table and in the graphs

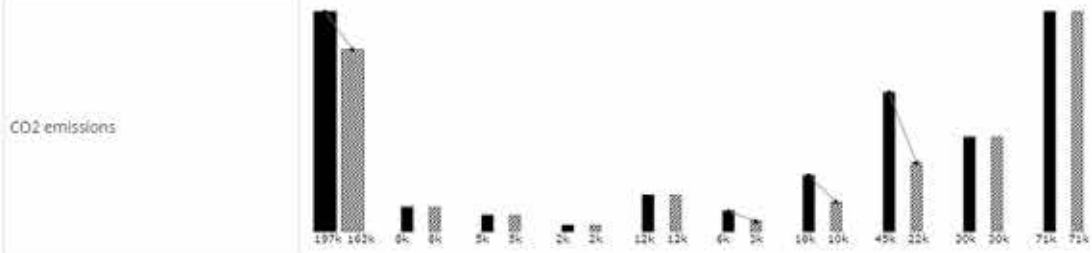
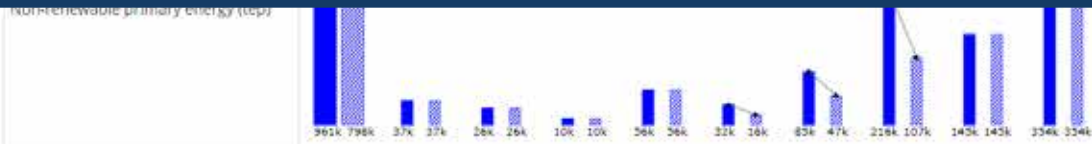
**User says:**

If I rehabilitate 100% of the dwellings in groups CL5, CL6 and CL7 we would only save 17% of energy



# ENERPAT

Rehabilitate your city



### Energy labels

Total										
Savings in energy and carbon emissions (%)	17%	0%	0%	0%	0%	50%	45%	50%	0%	0%
Total investment (M€)	22.11M€	0.00M€	0.00M€	0.00M€	0.00M€	1.81M€	5.10M€	15.20M€	0.00M€	0.00M€
Passive measures										
Savings in energy and carbon emissions (%)	13.83%	0.00%	0.00%	0.00%	0.00%	45.65%	40.75%	44.95%	0.00%	0.00%
Investment per housing unit	12895€	9408€	3434€	5405€	7125€	13788€	16002€	12031€	23670€	14656€
Total investment (M€)	20.27M€	0.00M€	0.00M€	0.00M€	0.00M€	1.71M€	4.59M€	13.97M€	0.00M€	0.00M€
Return on investment	32.05 Anys	0.00 Anys	0.00 Anys	0.00 Anys	0.00 Anys	33.20 Anys	33.95 Anys	29.00 Anys	0.00 Anys	0.00 Anys
Refurbishing measures	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>
Active measures										
Savings in energy and carbon emissions (%)	3.11%	0.00%	0.00%	0.00%	0.00%	4.02%	4.10%	5.37%	0.00%	0.00%
Investment per housing unit	1172€	0€	0€	0€	0€	815€	1779€	1060€	0€	0€
Total investment (M€)	1.84M€	0.00M€	0.00M€	0.00M€	0.00M€	0.10M€	0.51M€	1.23M€	0.00M€	0.00M€
Return on investment	12.11 Anys	0.00 Anys	0.00 Anys	0.00 Anys	0.00 Anys	17.83 Anys	10.04 Anys	12.15 Anys	0.00 Anys	0.00 Anys
Refurbishing measures	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>



### Enerpat says:

In this case it would be necessary to start by rehabilitating the housing groups with the highest percentage of energy savings and emissions, for example applying passive measures, as suggested by the information provided in the table and in the graphs

### User says:

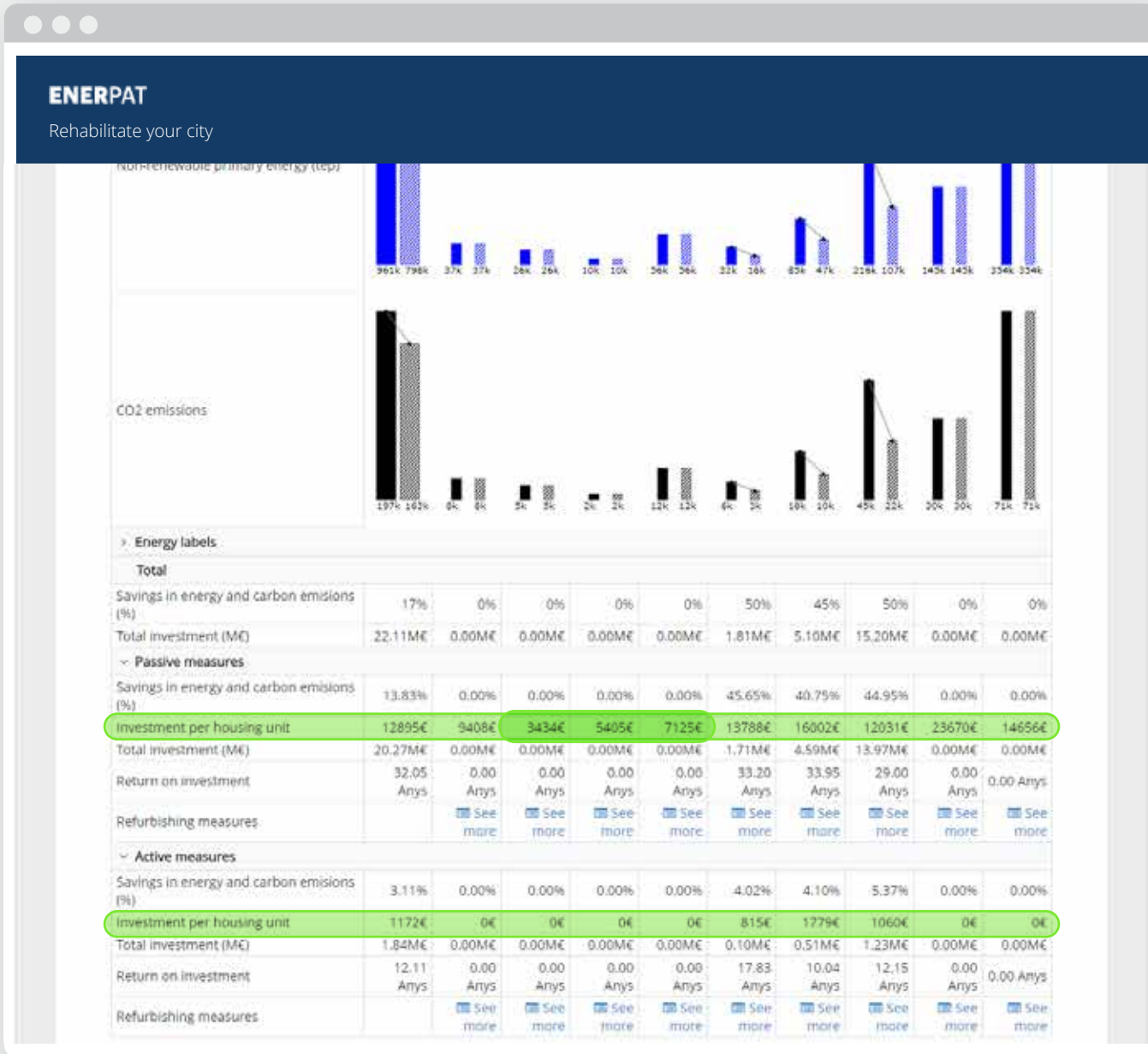
If I rehabilitate 100% of the dwellings in groups G5, G6 and G7 we would only save 17% of energy



### User says:

What if I am interested in rehabilitating the dwellings with a minimum investment per home?

in the table and in the graphs



User says:

If I rehabilitate 100% of the dwellings in groups G5, G6 and G7 we would only save 17% of energy



User says:

What if I am interested in rehabilitating the dwellings with a minimum investment per home?

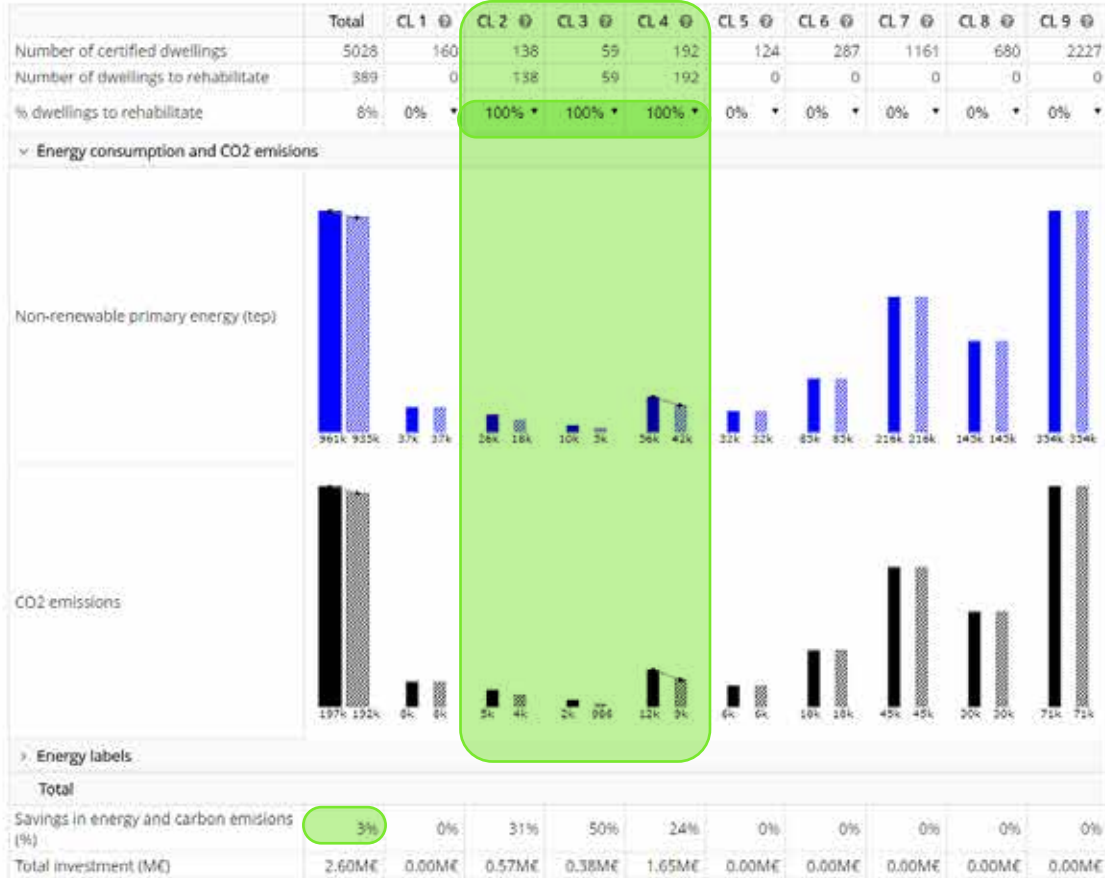


Enerpat says:

Then we should start by rehabilitating groups of dwellings with the lowest cost per unit

**Clusters in Sant Cugat del Vallès\*\***

ENERSI has grouped the buildings of the municipality with similar characteristics into nine clusters (CL). This table contains information about the energy efficiency of the buildings included in each cluster.



save 17% of energy

**User says:**

What if I am interested in rehabilitating the dwellings with a minimum investment per home?



**Enerpat says:**

Then we should start by rehabilitating groups of dwellings with the lowest cost per unit

**User says:**

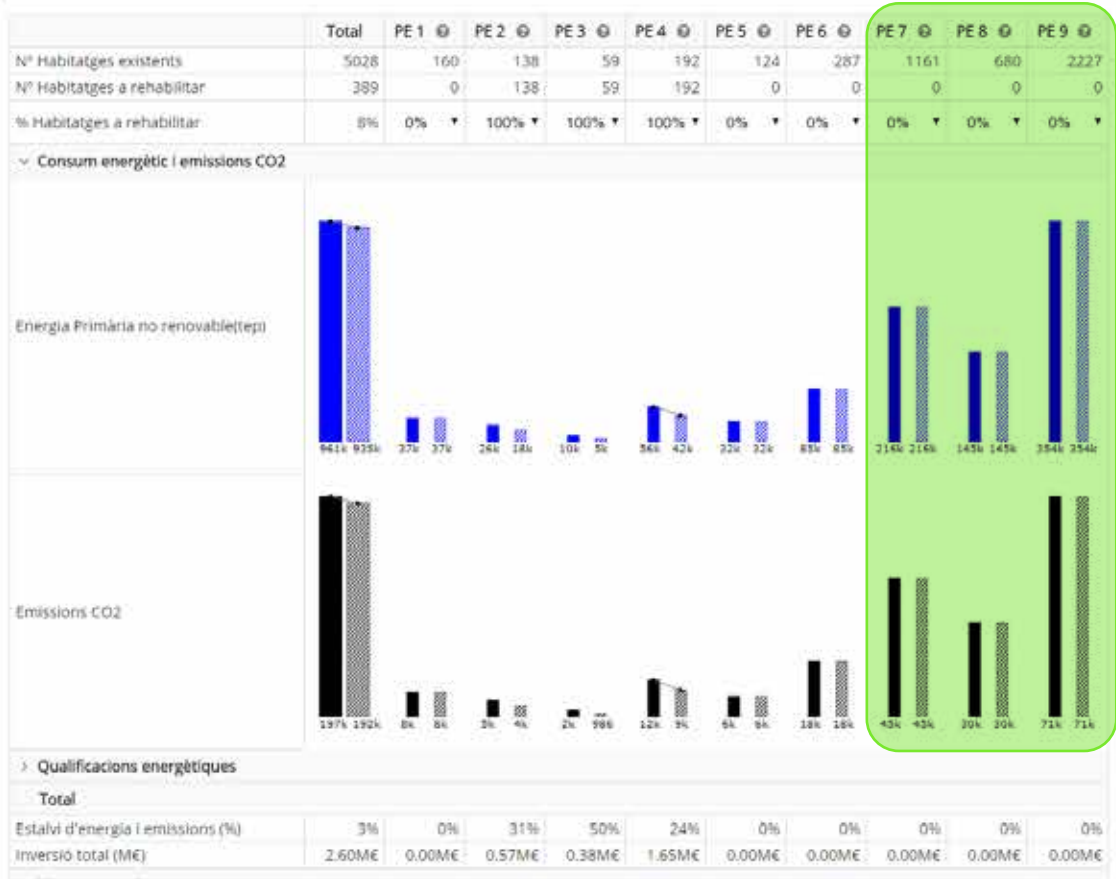
If the G2, G3 and G4 groups are rehabilitated, we would only save 3% of energy. It is not enough





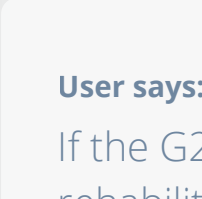
**Paquets d'edificis en Sant Cugat del Vallès \*\***

ENERSI ha agrupat la teva selecció en nou paquets de edificis similars. En la següent gràfica s'observa la qualificació energètica dels edificis continguts en cada paquet.



**Enerpat says:**

Then we should start by rehabilitating groups of dwellings with the lowest cost per unit



**User says:**

If the G2, G3 and G4 groups are rehabilitated, we would only save 3% of energy. It is not enough



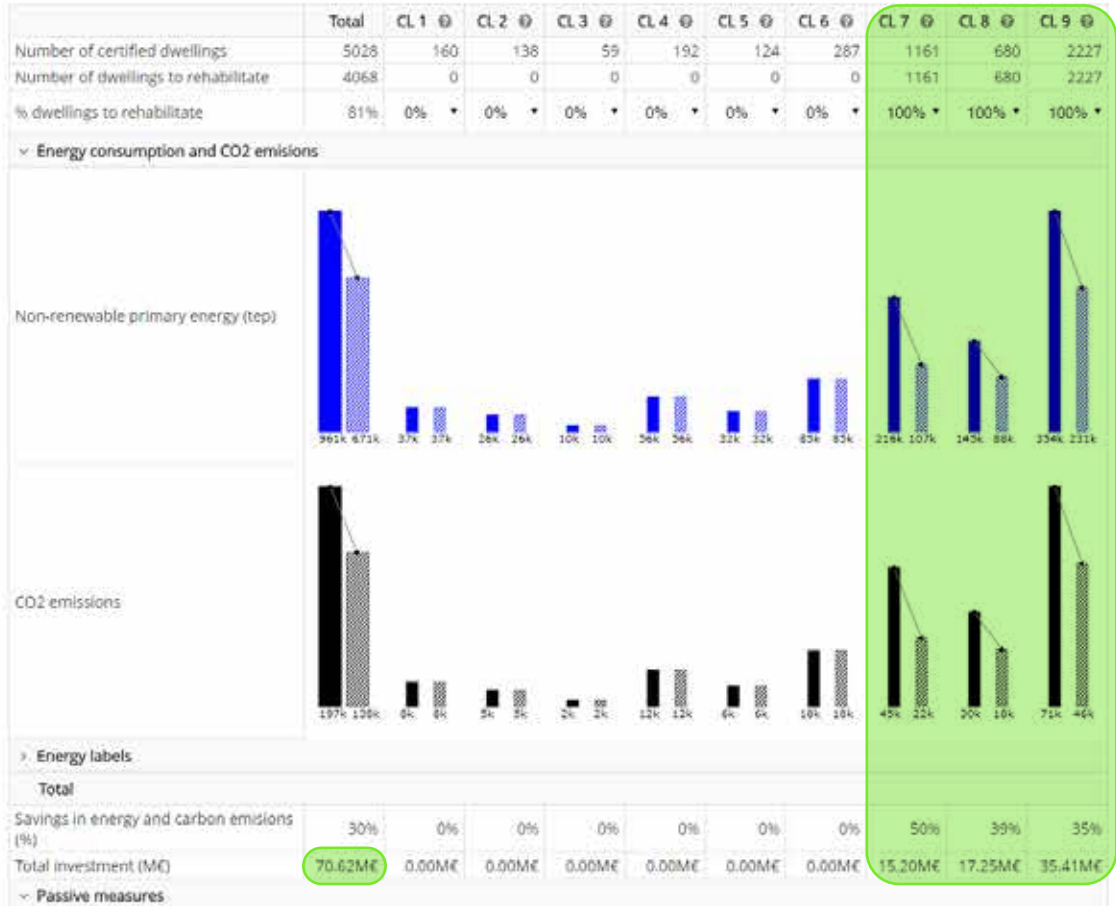
**Enerpat says:**

One suggestion: the best way to significantly reduce energy consumption and carbon emissions would be to rehabilitate the groups with the largest number of dwellings (those with the highest bars)



**Clusters in Sant Cugat del Vallès\*\***

ENERSI has grouped the buildings of the municipality with similar characteristics into nine clusters (CL). This table contains information about the energy efficiency of the buildings included in each cluster.



**User says:**

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**Enerpat says:**

One suggestion: the best way to significantly reduce energy consumption and carbon emissions would be to rehabilitate the groups with the largest number of dwellings (those with the highest bars)

**User says:**

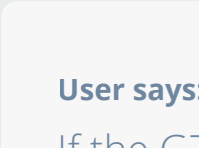
If the G7, G8 and G9 groups are rehabilitated, savings of up to 30% could be achieved. This value is closer to the municipality's savings objective





**Enerpat says:**

One suggestion: the best way to significantly reduce energy consumption and carbon emissions would be to rehabilitate the groups with the largest number of dwellings (those with the highest bars)



**User says:**

If the G7, G8 and G9 groups are rehabilitated, savings of up to 30% could be achieved. This value is closer to the municipality's savings objective



**Enerpat says:**

Perfect! If now we look at the energy ratings we see that from A to D have increased to the detriment of E to G





**User says:**

If the G7, G8 and G9 groups are rehabilitated, savings of up to 30% could be achieved. This value is closer to the municipality's savings objective

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Rehabilita la teva ciutat

	301 2k	37 7	7 7	9 8	7 7	2 2	12 12	108 479	110 315	311 824
Dwellings with E label										
Dwellings with F label										
Dwellings with G label										
<b>Total</b>										
Savings in energy and carbon emissions (%)	30%	0%	0%	0%	0%	0%	0%	50%	39%	35%
Total investment (M€)	70.62M€	0.00M€	0.00M€	0.00M€	0.00M€	0.00M€	0.00M€	15.20M€	17.25M€	35.41M€
<b>Passive measures</b>										
Savings in energy and carbon emissions (%)	28.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	44.95%	34.20%	29.80%
Investment per housing unit	15414€	9408€	3434€	5405€	7125€	13788€	16002€	12031€	23670€	14656€
Total investment (M€)	62.70M€	0.00M€	0.00M€	0.00M€	0.00M€	0.00M€	0.00M€	13.97M€	16.10M€	32.64M€
Return on investment	37.90 Anys	0.00 Anys	0.00 Anys	0.00 Anys	0.00 Anys	0.00 Anys	0.00 Anys	29.00 Anys	39.60 Anys	45.10 Anys
Refurbishing measures		<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>
<b>Active measures</b>										
Savings in energy and carbon emissions (%)	1.89%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.37%	5.26%	5.03%
Investment per housing unit	1947€	0€	0€	0€	0€	0€	0€	1060€	1694€	1243€
Total investment (M€)	7.92M€	0.00M€	0.00M€	0.00M€	0.00M€	0.00M€	0.00M€	1.23M€	1.15M€	2.77M€
Return on investment	16.25 Anys	0.00 Anys	0.00 Anys	0.00 Anys	0.00 Anys	0.00 Anys	0.00 Anys	12.15 Anys	12.84 Anys	19.20 Anys
Refurbishing measures		<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>	<a href="#">See more</a>

\*\* The rehabilitation measures are based on the ICAEN simulation tool and in the "Long-Term Strategy for Energy Renovation in the Building Sector in Spain (ERESEE 2014)"

**INTERVENTIONS >**



**Enerpat says:**

Perfect! If now we look at the energy ratings we see that from A to D have increased to the detriment of E to G

**Enerpat says:**

Once the type and number of buildings to be rehabilitated have been identified in accordance with the objectives of the city's action programme, we have access to more detailed information on the rehabilitation measures to be applied

## Step 3: Interventions

### ENERPAT

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CERCA UN ÀMBIT
ESCENARIS DE REHABILITACIÓ
1
2
3
4

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#### Paquet d'edificis n° 1

Paquet d'edificis unifamiliars construïts abans del 1950 d'entre 1 i 3 plantes. Es consideren edificis construïts amb sistemes tradicionals de mur massís i gruixut predominant la coberta inclinada amb cambra ventilada i amb solera en contacte amb el terreny

Acció de millora	Habitatges a aplicar	Preu per habitatge	Estalvi energètic	Retorn (Anys)
<b>Aplicar millores possibles:</b>				
<ul style="list-style-type: none"> <li>• Aplicar aïllament per a l'interior de la façana</li> <li>• Instal·lar finestres PVC i vidre baix emissió</li> <li>• Aïllar la coberta per l'interior</li> </ul>	160	9407€	23,4% - 30,9%	14,1 - 39,2
A2: Caldera de condensació gasoil	2	2600€	19,7% - 23,2%	5,2 - 12,8
A3: Caldera de condensació gas natural	46	2600€	19,7% - 23,2%	3,9 - 8,8
A4: Caldera de pellets	11	7600€	13,3% - 17,1%	10,4 - 41,8

S'han aproximat les accions proposades per l'estratègia Nacional de Rehabilitació del Ministeri de Foment del clúster B per unifamiliars a plurifamiliars entenent que són casos de característiques constructives, materials i d'entorn similars en tan sols varia el nombre d'habitatges per edifici

#### Paquet d'edificis n° 2

Paquet d'edificis plurifamiliars construïts abans del 1950 d'entre 1 i 3 plantes. Es consideren edificis construïts amb sistemes tradicionals de mur massís i gruixut predominant la coberta inclinada amb cambra ventilada i amb solera en contacte amb el terreny

Acció de millora	Habitatges a aplicar	Preu per habitatge	Estalvi energètic	Retorn (Anys)
<b>Aplicar millores possibles:</b>				
<ul style="list-style-type: none"> <li>• Aplicar aïllament per a l'interior de la façana</li> <li>• Instal·lar finestres PVC i vidre baix emissió</li> <li>• Aïllar la coberta per l'interior</li> </ul>	138	8433€	22,5% - 30%	13,1 - 28,3
A1: Caldera de condensació gas natural	44	1945,2€	17,9% - 22,5%	8,6 - 17
A2: Caldera de condensació gasoil	5	1100€	17,9% - 22,5%	11,5 - 23,5



## Cluster n° 7

Cluster of multi-family buildings built between 1981 and 1990. They are considered buildings constructed generally with walls with air chamber and thermal insulation, flat roof and air chamber under first floor slab.

Rehabilitation measure	Housing to be applied	Cost per unit	Energy savings	Return (years)
Passive measures to be applied: <ul style="list-style-type: none"> <li>Apply insulation on the outside of the facade</li> <li>Install PVC windows and low emissivity glass</li> <li>Insulate the roof by the exterior</li> </ul>	1181	12030€	40,3% - 49,6%	17,3 - 40,7
A1. Natural gas condensing boiler	609	1946,2€	17,3% - 22,5%	6,2 - 15,7
A5. Multifamily housing heat pump	40	1140€	2,4%	30,4
A9. Aerothermal heat pump for hot and cold water for sanitary use	0	8600€	51% - 63,1%	16 - 32,4

The ICAEN simulator of rehabilitation measures for residential buildings does not include interventions on façade exteriors. Because of this, the suggestion is to place the insulation in the outer wall.

## Cluster n° 8

Cluster of single-family buildings built between 1991 and 2011 with 1 to 3 floors. They are considered to be buildings constructed generally with walls with air chamber and thermal insulation, sloping roof without air chamber and air chamber under first floor slab.

Rehabilitation measure	Housing to be applied	Cost per unit	Energy savings	Return (years)
Passive measures to be applied: <ul style="list-style-type: none"> <li>Apply insulation on the outside of the facade</li> <li>Install PVC windows and low emissivity glass</li> <li>Insulate the roof by the exterior</li> </ul>	660	23669€	29,6% - 38,8%	29,2 - >50
A3. Natural gas condensing boiler	391	2600€	13,8% - 21,3%	5,8 - 17,8
A4. Pellet boiler	8	7650€	9,1% - 15,8%	17 - 50
A6. Single family housing heat pump	30	2120€	4,2%	21,6
A7. Aerothermal heat pump for hot and cold water for sanitary use	3	8800€	42,7% - 55%	15,5 - 22,2



## Enerpat says:

Here you have the rehabilitation measures to be applied in the buildings of the three selected groups: G7, G8 and G9



## Cluster nº 7

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Passive measures to be applied: <ul style="list-style-type: none"> <li>Apply insulation on the outside of the facade</li> <li>Install PVC windows and low emissivity glass</li> <li>Insulate the roof by the exterior</li> </ul>	1181	12030€	40,3% - 49,6%	17,3 - 40,7
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Rehabilitation measure	Housing to be applied	Cost per unit	Energy savings	Return (years)
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## Enerpat says:

Here you have the rehabilitation measures to be applied in the buildings of the three selected groups: G7, G8 and G9

## Enerpat says:

This table summarizes the characteristics of the dwellings of each group



## Cluster n° 7

Cluster of multi-family buildings built between 1981 and 1990. They are considered buildings constructed generally with walls with air chamber and thermal insulation, flat roof and air chamber under first floor slab.

Rehabilitation measure	Housing to be applied	Cost per unit	Energy savings	Return (years)
Passive measures to be applied: <ul style="list-style-type: none"> <li>Apply insulation on the outside of the facade</li> <li>Install PVC windows and low emissivity glass</li> <li>Insulate the roof by the exterior</li> </ul>	1181	12030€	40,3% - 49,6%	17,3 - 40,7
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Cluster of single-family buildings built between 1991 and 2011 with 1 to 3 floors. They are considered to be buildings constructed generally with walls with air chamber and thermal insulation, sloping roof without air chamber and air chamber under first floor slab.

Rehabilitation measure	Housing to be applied	Cost per unit	Energy savings	Return (years)
Passive measures to be applied: <ul style="list-style-type: none"> <li>Apply insulation on the outside of the facade</li> <li>Install PVC windows and low emissivity glass</li> <li>Insulate the roof by the exterior</li> </ul>	660	23669€	29,6% - 38,8%	29,2 - >50
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**Enerpat says:**

Here you have the rehabilitation measures to be applied in the buildings of the three selected groups: G7, G8 and G9

**Enerpat says:**

This table summarizes the characteristics of the dwellings of each group

**Enerpat says:**

And the rehabilitation measures to apply



**ENERPAT**  
Rehabilitate your city

SEARCH A MUNICIPALITY    REHABILITATION SCENARIOS    **INTERVENTIONS**    BUILDINGS TO REFURBISH    FINAL REPORT

1    2    **3**    4    5

### Cluster n° 7

Cluster of multi-family buildings built between 1981 and 1990. They are considered buildings constructed generally with walls with air chamber and thermal insulation, flat roof and air chamber under first floor slab.

Rehabilitation measure	Housing to be applied	Cost per unit	Energy savings	Return (years)
Passive measures to be applied: <ul style="list-style-type: none"> <li>Apply insulation on the outside of the facade</li> <li>Install PVC windows and low emissivity glass</li> <li>Insulate the roof by the exterior</li> </ul>	1181	12030€	40,3% - 49,6%	17,3 - 40,7
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Cluster of single-family buildings built between 1991 and 2011 with 1 to 3 floors. They are considered to be buildings constructed generally with walls with air chamber and thermal insulation, sloping roof without air chamber and air chamber under first floor slab.

Rehabilitation measure	Housing to be applied	Cost per unit	Energy savings	Return (years)
Passive measures to be applied: <ul style="list-style-type: none"> <li>Apply insulation on the outside of the facade</li> <li>Install PVC windows and low emissivity glass</li> <li>Insulate the roof by the exterior</li> </ul>	660	23669€	29,6% - 38,8%	29,2 - >50
A3. Natural gas condensing boiler	391	2600€	13,8% - 21,3%	5,8 - 17,8
A4. Pellet boiler	8	7650€	9,1% - 15,8%	17 - 50
A6. Single family housing heat pump	30	2120€	4,2%	21,6
A7. Aerothermal heat pump for hot and cold water for sanitary use	3	8600€	42,7% - 55%	15,5 - 22,2



**Enerpat says:**

Here you have the rehabilitation measures to be applied in the buildings of the three selected groups: G7, G8 and G9

**Enerpat says:**

This table summarizes the characteristics of the dwellings of each group

**Enerpat says:**

And the rehabilitation measures to apply

**User says:**

Can the suggested measures be modified?





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### Cluster nº 7

Cluster of multi-family buildings built between 1981 and 1990. They are considered buildings constructed generally with walls with air chamber and thermal insulation, flat roof and air chamber under first floor slab.

Rehabilitation measure	Housing to be applied	Cost per unit	Energy savings	Return (years)
Passive measures to be applied: <ul style="list-style-type: none"> <li>Apply insulation on the outside of the facade</li> <li>Install PVC windows and low emissivity glass</li> <li>Insulate the roof by the exterior</li> </ul>	1181	12030€	40,3% - 49,6%	17,3 - 40,7
A1. Natural gas condensing boiler	609	1946,2€	17,3% - 22,5%	6,2 - 15,7
A5. Multifamily housing heat pump	40	1140€	2,4%	30,4
A9. Aerothermal heat pump for hot and cold water for sanitary use	0	8600€	51% - 63,1%	16 - 32,4

The ICAEN simulator of rehabilitation measures for residential buildings does not include interventions on façade exteriors. Because of this, the suggestion is to place the insulation in the outer wall.

### Cluster nº 8

Cluster of single-family buildings built between 1991 and 2011 with 1 to 3 floors. They are considered to be buildings constructed generally with walls with air chamber and thermal insulation, sloping roof without air chamber and air chamber under first floor slab.

Rehabilitation measure	Housing to be applied	Cost per unit	Energy savings	Return (years)
Passive measures to be applied: <ul style="list-style-type: none"> <li>Apply insulation on the outside of the facade</li> <li>Install PVC windows and low emissivity glass</li> <li>Insulate the roof by the exterior</li> </ul>	660	23669€	29,6% - 38,8%	29,2 - >50
A3. Natural gas condensing boiler	391	2600€	13,8% - 21,3%	5,8 - 17,8
A4. Pellet boiler	8	7650€	9,1% - 15,8%	17 - 50
A6. Single family housing heat pump	30	2120€	4,2%	21,6
A7. Aerothermal heat pump for hot and cold water for sanitary use	3	8800€	42,7% - 55%	15,5 - 22,2

**Enerpat says:**

And the rehabilitation measures to apply

**User says:**

Can the suggested measures be modified?



**Enerpat says:**

No. These measures are based on the "Long-term Strategy for Energy Renovation in the Building Sector in Spain" and the data provided by the energy rehabilitation measures simulator for residential buildings of ICAEN

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Rehabilitation measure	Housing to be applied	Cost per unit	Energy savings	Return (years)
Passive measures to be applied: <ul style="list-style-type: none"><li>Apply insulation on the outside of the facade</li><li>Install PVC windows and low emissivity glass</li><li>Insulate the roof by the exterior</li></ul>	660	23609€	29,6% - 38,8%	29,2 -> 50
A3. Natural gas condensing boiler	391	2600€	13,8% - 21,3%	5,8 - 17,8
A4. Pellet boiler	6	7650€	9,1% - 15,8%	17 - 50
A6. Single family housing heat pump	30	2120€	4,2%	21,6
A7. Aerothermal heat pump for hot and cold water for sanitary use	3	8600€	42,7% - 55%	15,5 - 22,2

The ICAEN simulator of rehabilitation measures for residential buildings does not include interventions on façade exteriors. Because of this, the suggestion is to place the insulation in the outer wall.

### Cluster nº 9

Cluster of multi-family buildings built between 1991 and 2011. Buildings constructed generally with walls with air chamber and thermal insulation, flat roof and air chamber under first floor slab.

Rehabilitation measure	Housing to be applied	Cost per unit	Energy savings	Return (years)
Passive measures to be applied: <ul style="list-style-type: none"><li>Insulate insulation in the facade air chamber</li><li>Install PVC windows and low emissivity glass</li><li>Insulate the roof by the interior</li></ul>	2227	14656€	24,2% - 25,4%	40,2 -> 50
A1. Natural gas condensing boiler	1247	1940,2€	14% - 20,9%	9 - 26
A5. Multifamily housing heat pump	126	1140€	3%	32,4
A6. Aerothermal heat pump for hot and cold water for sanitary use	23	8600€	42,3% - 54,1%	31,6 - 46,5

The ICAEN simulator of rehabilitation measures for residential buildings does not include interventions on façade exteriors. Because of this, the suggestion is to place the insulation in the air chamber.

< REHABILITATION SCENARIOS

BUILDINGS TO REFURBISH >

User says:

Can the suggested measures be modified?



Enerpat says:

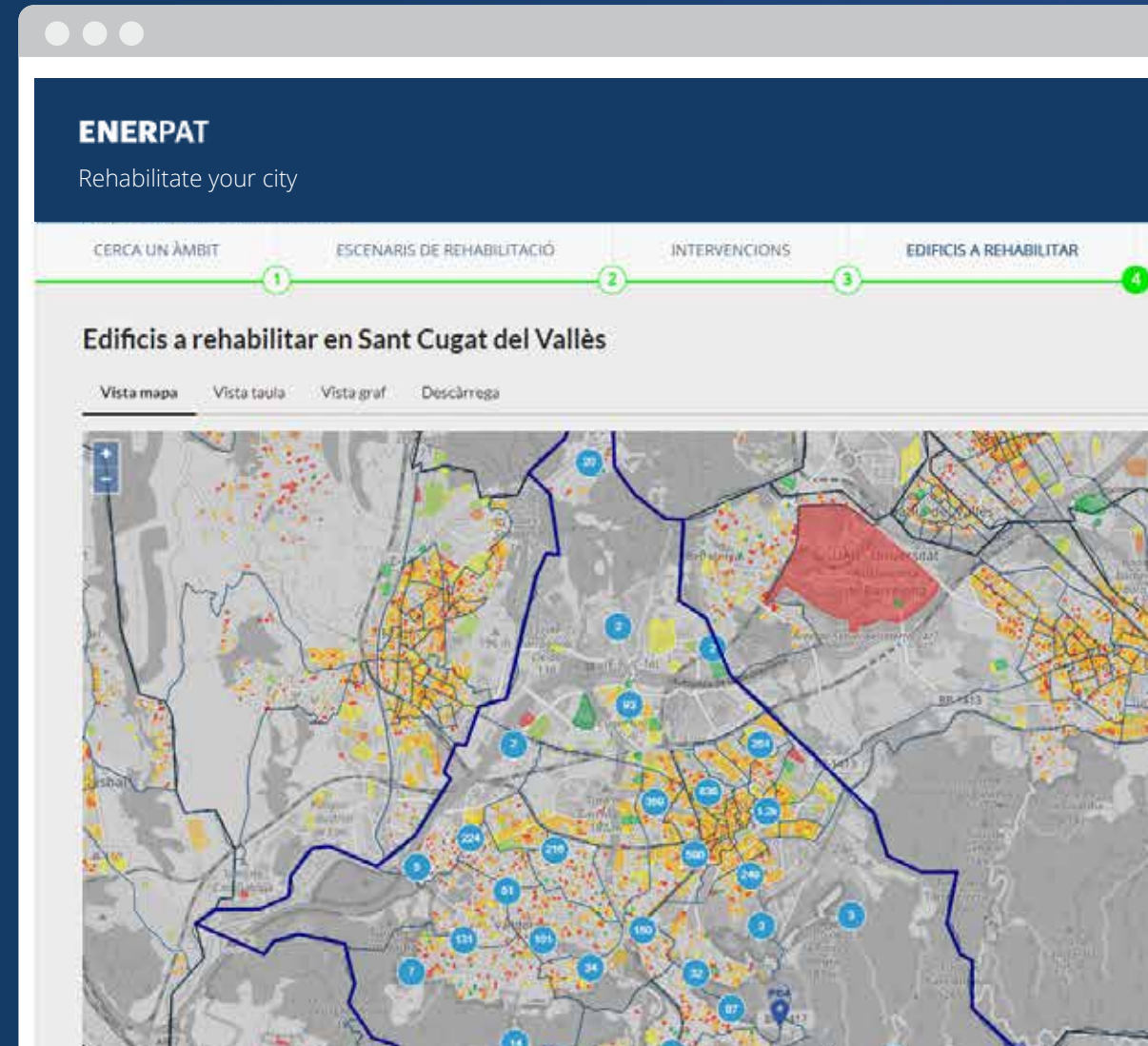
No. These measures are based on the "Long-term Strategy for Energy Renovation in the Building Sector in Spain" and the data provided by the energy rehabilitation measures simulator for residential buildings of ICAEN

Enerpat says:

Next, you will be able to find out the location of the dwellings to be rehabilitated

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## Step 4: Buildings to be rehabilitated





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### Buildings to refurbish in Sant Cugat del Vallès

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**Enerpat says:**

All of the buildings to be rehabilitated included in the selected groups are shown in the map





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**Buildings to refurbish in Sant Cugat del Vallès**

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Show 10 entries

Address	Year	Surface	Usage	Floors	CL	Energy savings (kWh/m <sup>2</sup> )		Emission reduction (kg/m <sup>2</sup> )	
						Current	Refurbished	Current	Refurbished
AV Torrellanca 13 Es:A Pl:01 Pt:03	1999	93	Unifamiliar	5	9	134.94	94.73	28.39	19.93
AV Pla del vinyet 71 Es:1 Pl:03 Pt:B1	2001	111	Unifamiliar	5	9	167.65	117.69	35.31	24.79
CL Pont de can vermet 7 Es:B Pl:03 Pt:01	2005	66	Unifamiliar	6	9	75.41	46.88	15.73	9.75
CL Migdia 27 Es:1 Pl:03 Pt:03	2007	48.35	Unifamiliar	9	9	223.33	156.78	37.83	26.56
CL Josep vidal grans 56 Es:D Pl:03 Pt:04	1999	102	Unifamiliar	5	9	84.51	53.26	17.25	10.83
CL Selva:pepessort 6 Es:1 Pl:02 Pt:04	1999	63	Unifamiliar	4	9	157.93	108.52	26.75	18.38
CL Carrasco i ferriguera 8 Es:3a Pl:02 Pt:01	1995	78.4	Unifamiliar	5	9	85.52	51.77	17.47	10.81
CL Costa i llobera 19 Es:C Pl:01 Pt:05	1997	87	Unifamiliar	4	9	102.8	63.25	21.73	13.37
AV Rius i saules 41 Es:2 Pl:02 Pt:01	1998	98	Unifamiliar	7	9	127.14	78.85	26.57	16.45
CM Can gacet 57 Es:2 Pl:01 Pt:02	1994	120	Unifamiliar	4	8	129.69	79.91	27.36	16.85

Showing 1 to 10 of 4,051 entries

Previous 1 2 3 4 5 ... 406 Next

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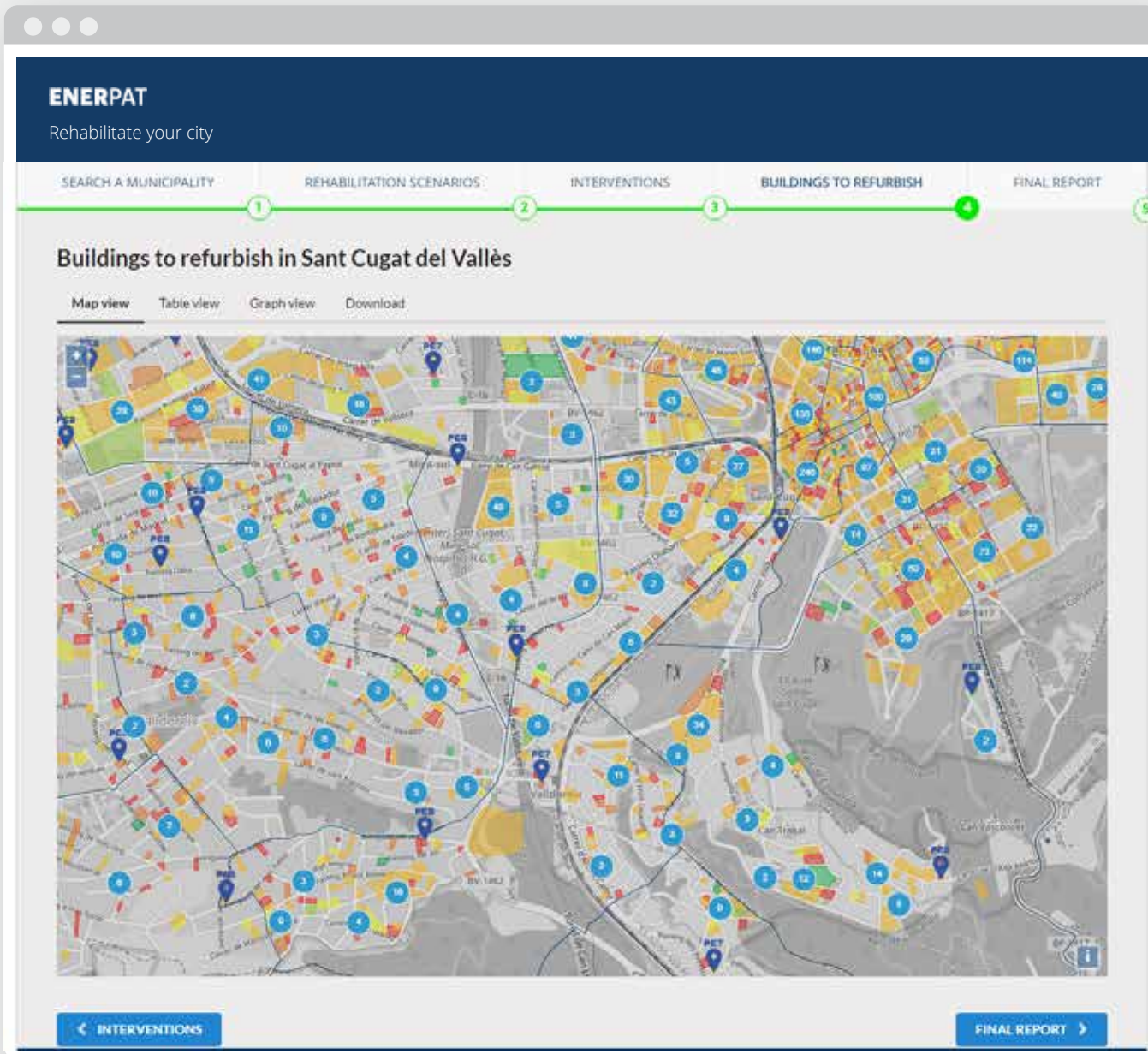
**Enerpat says:**

All of the buildings to be rehabilitated included in the selected groups are shown in the map

**Enerpat says:**

The same information is provided in this list





**Enerpat says:**

All of the buildings to be rehabilitated included in the selected groups are shown in the map

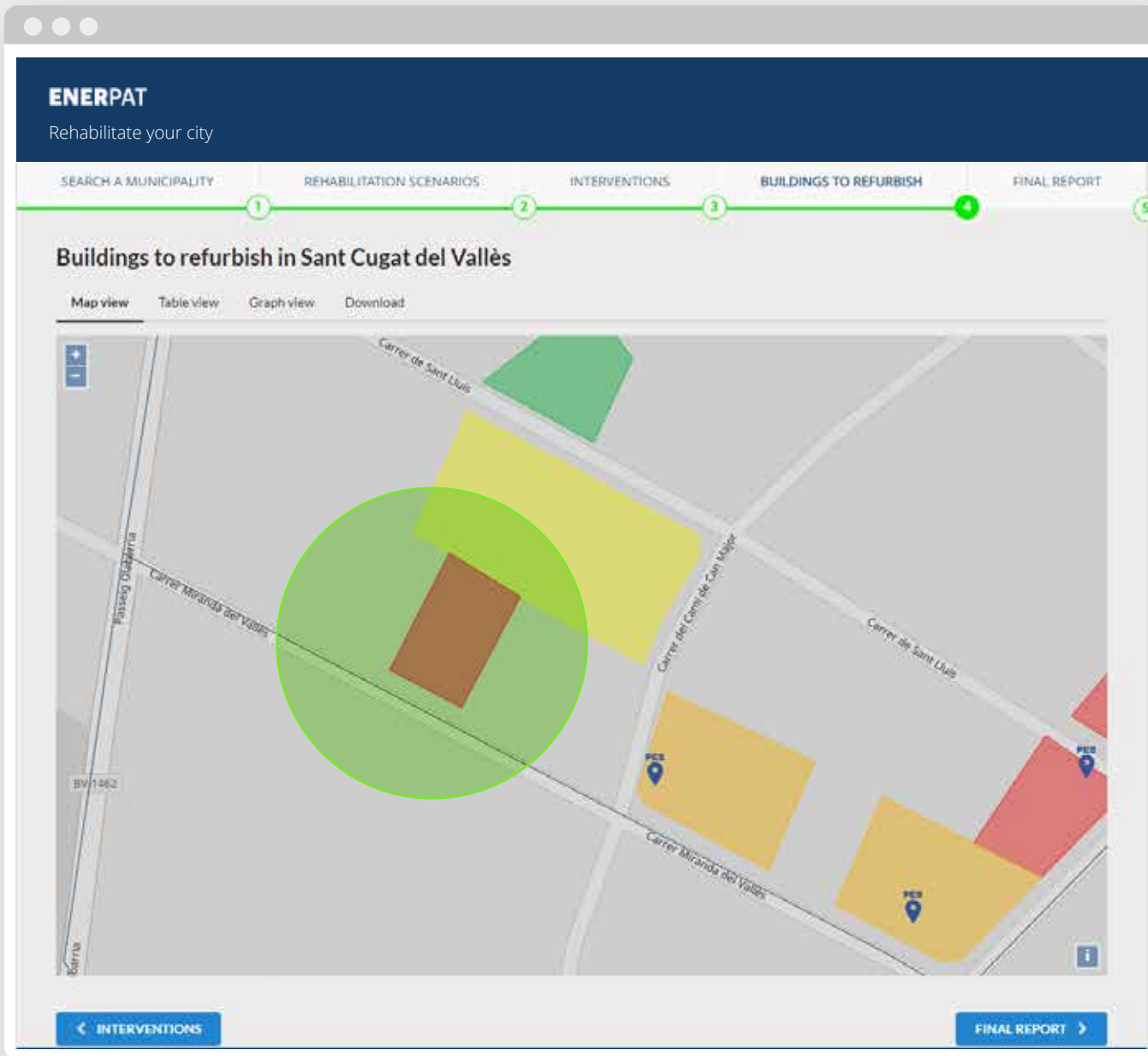
**Enerpat says:**

The same information is provided in this list

**User says:**

If I get closer, I can identify the location of the buildings in the map





**Enerpat says:**

All of the buildings to be rehabilitated included in the selected groups are shown in the map

**Enerpat says:**

The same information is provided in this list

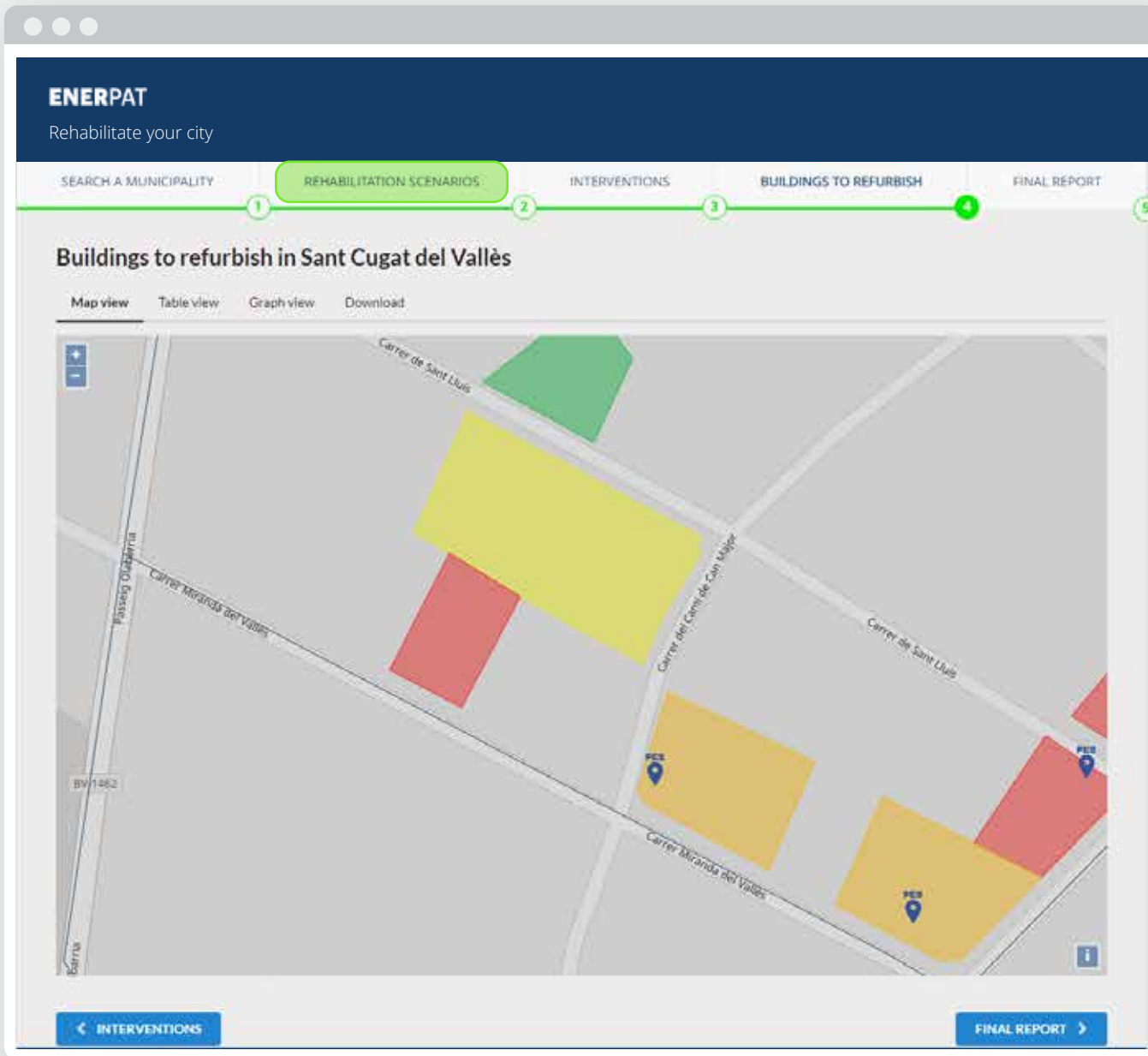
**User says:**

If I get closer, I can identify the location of the buildings in the map



**User says:**

I see now that there are buildings in need of rehabilitation, but they have not been included in the selected percentages



The same information is provided in this list

**User says:**

If I get closer, I can identify the location of the buildings in the map



**User says:**

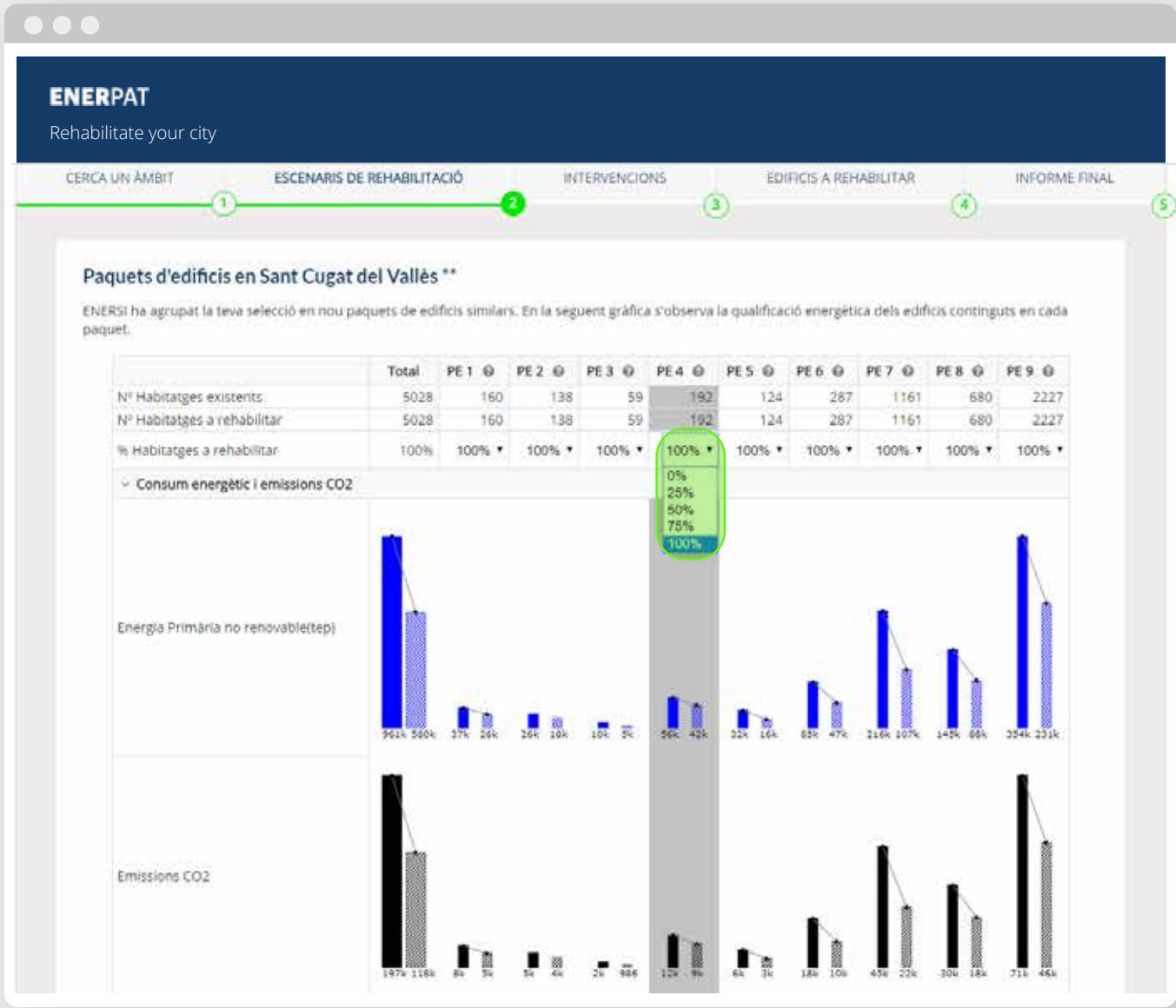
I see now that there are buildings in need of rehabilitation, but they have not been included in the selected percentages



**Enerpat says:**

No problem, you can change the percentages of buildings to be rehabilitated in each group





If I get closer, I can identify the location of the buildings in the map



**User says:**

I see now that there are buildings in need of rehabilitation, but they have not been included in the selected percentages



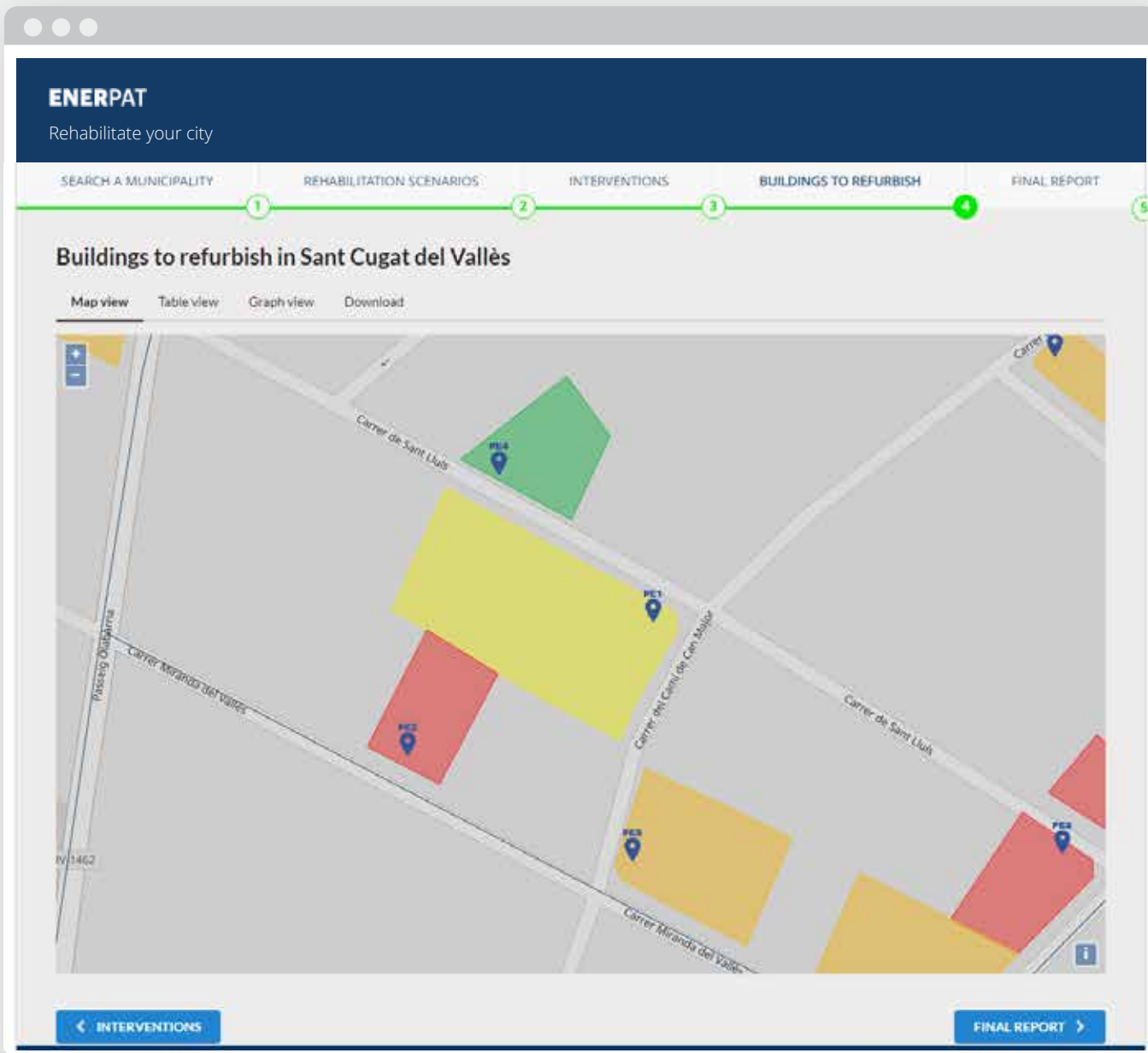
**Enerpat says:**

No problem, you can change the percentages of buildings to be rehabilitated in each group

**User says:**

I change the percentages again





I see now that there are buildings in need of rehabilitation, but they have not been included in the selected percentages



**Enerpat says:**

No problem, you can change the percentages of buildings to be rehabilitated in each group

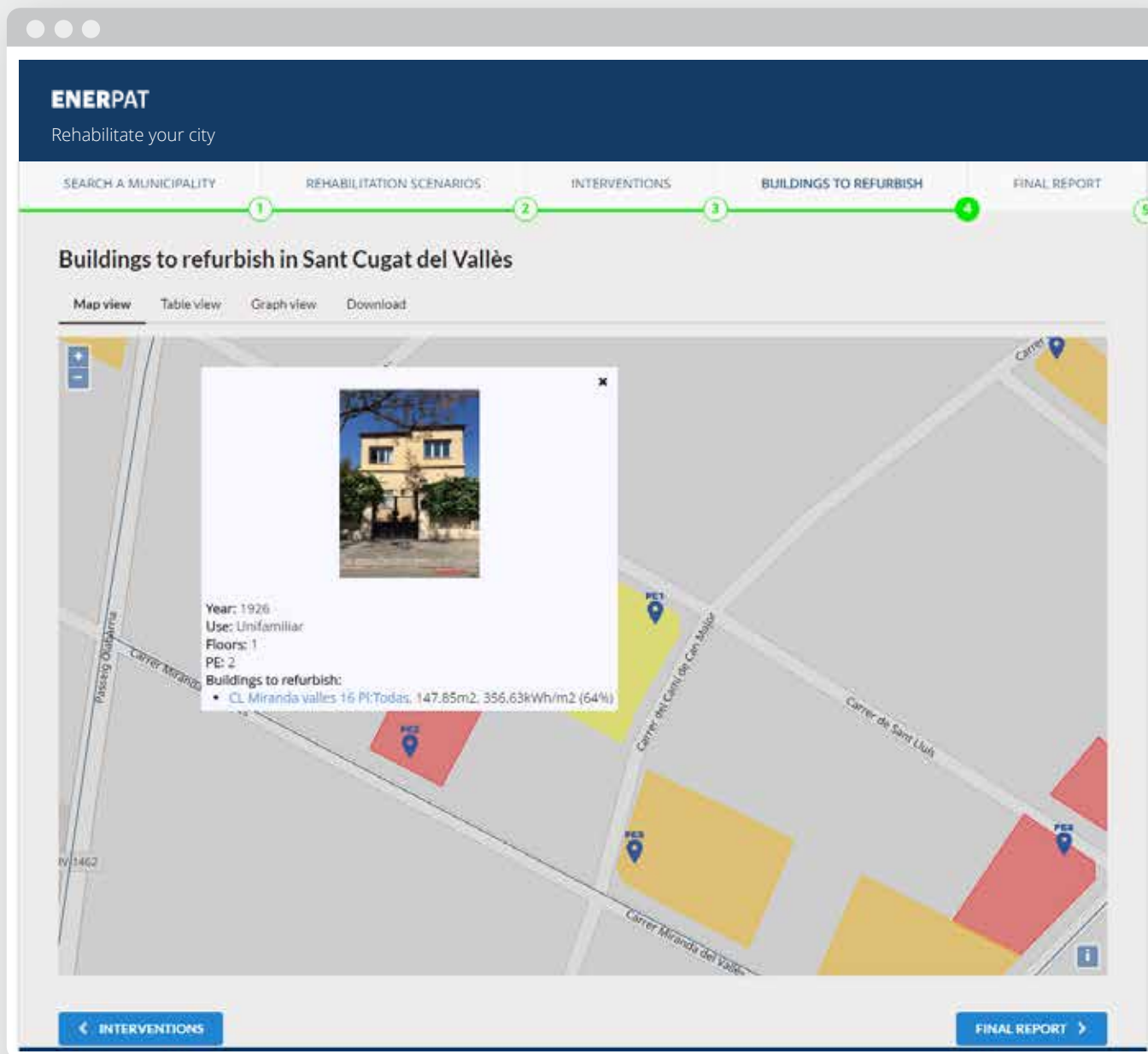
**User says:**

I change the percentages again



**User says:**

Now, the building that I am interested in appears as one of the buildings to be rehabilitated



**Enerpat says:**

No problem, you can change the percentages of buildings to be rehabilitated in each group

**User says:**

I change the percentages again



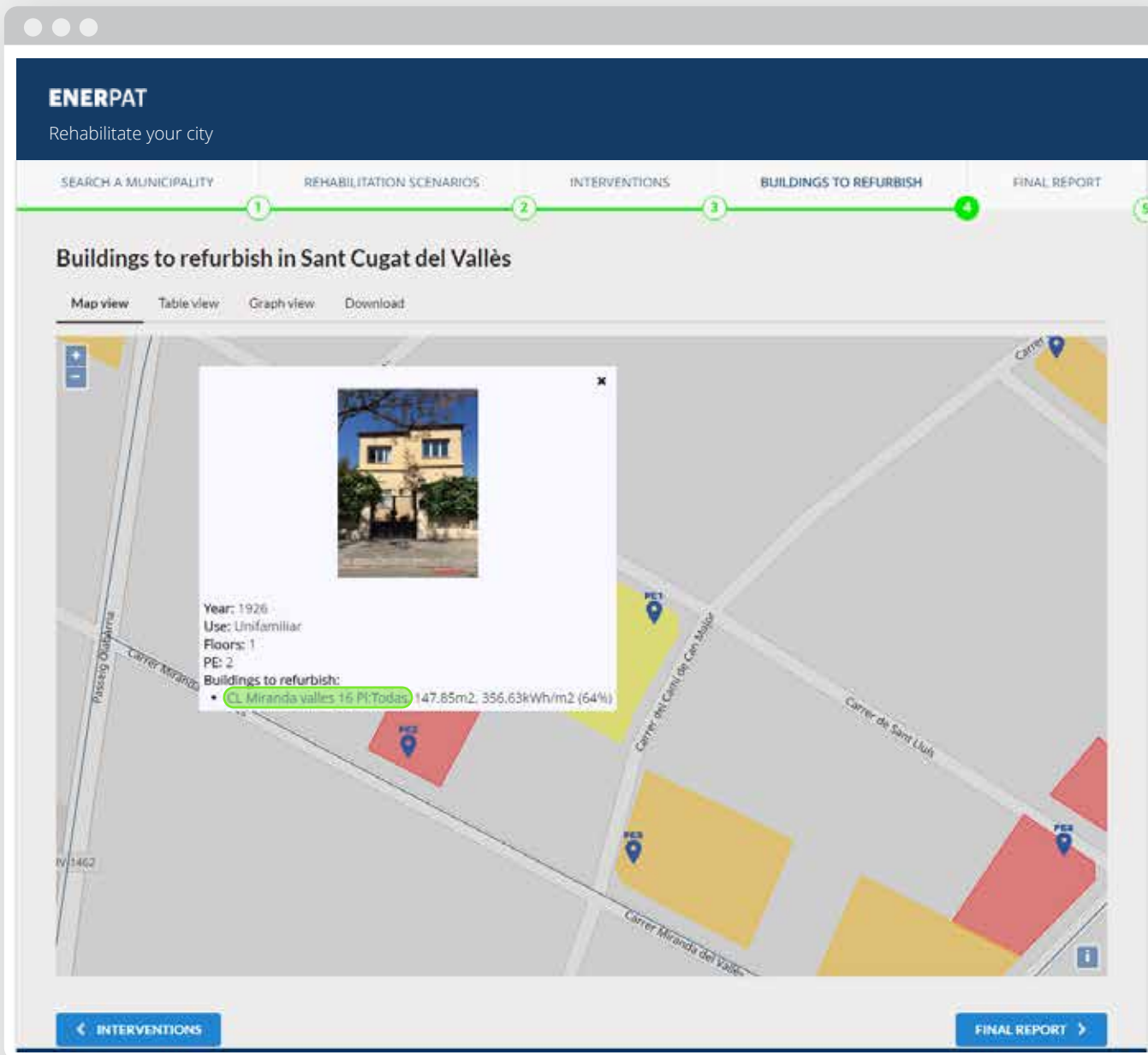
**User says:**

Now, the building that I am interested in appears as one of the buildings to be rehabilitated



**Enerpat says:**

After selecting a building on the map, its characteristics are displayed in a window



**User says:**

I change the percentages again



**User says:**

Now, the building that I am interested in appears as one of the buildings to be rehabilitated



**Enerpat says:**

After selecting a building on the map, its characteristics are displayed in a window

**Enerpat says:**

In this link, detailed information about the building to be rehabilitated can be obtained from the ENERPAT application




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### Buildings to refurbish in Sant Cugat del Vallès

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Now, the building that I am interested in appears as one of the buildings to be rehabilitated



**Enerpat says:**

After selecting a building on the map, its characteristics are displayed in a window

**Enerpat says:**

In this link, detailed information about the building to be rehabilitated can be obtained from the ENERHAT application

**Enerpat says:**

To finish, you can generate a report with the information about the buildings to be rehabilitated and the measures to be applied



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Print report  
New window

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### Clusters in Sant Cugat del Vallès

ENERSI has grouped the buildings of the municipality with similar characteristics into nine clusters (CL). This table contains information about the energy efficiency of the buildings included in each cluster

	Total	CL 1	CL 2	CL 3	CL 4	CL 5	CL 6	CL 7	CL 8	CL 9
Number of certified dwellings	2028	160	138	59	192	124	287	1101	680	2227
Number of dwellings to rehabilitate	2028	160	138	59	192	124	287	1101	680	2227
% dwellings to rehabilitate	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Energy consumption and CO2 emissions

Non-renewable primary energy (tpe)



**Enerpat says:**

Here you can print or save a document that contains all the information generated in the previous steps





**Enerpat says:**

We hope we have answered your questions. If you need more information, please write to [arc@salle.url.edu](mailto:arc@salle.url.edu)







**Enerpat says:**

We hope we have answered your questions. If you need more information, please write to [arc@salle.url.edu](mailto:arc@salle.url.edu)

**User says:**

Thanks, and see you soon



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