

# Plug-N-Harvest

WP1 – INCASOL engagement and Amendment

WP4 – Spanish Pilot site & ICT ecosystem

Pilot

ADBE Design

Monitoring

PRESENTER: Anna Mestre

7<sup>th</sup> Review Meeting: Brussels, 26-27 February 2020



## WP1 – Amendment

## Final proposed budget for AHC

### Initial budget for Agència de l'Habitatge de Catalunya

<b>A</b>	<b>Direct personnel costs</b>	<b>€ 56,000.00</b>
<i>B</i>	<i>Travel</i>	<i>€ 10,000.00</i>
<i>C</i>	<i>Equipment</i>	–
<i>D</i>	<i>Other</i>	<i>€ 220,000.00</i>
<b>E</b>	<b>Other direct costs (B+C+D)</b>	<b>€ 230,000.00</b>
<i>F</i>	Direct costs of subcontracting	–
<b>G</b>	<b>Indirect costs [0.25*(A+E)]</b>	<b>€ 71,500.00</b>
	<b>Total</b>	<b>€ 357,500.00</b>

Should be noted also that the AHC personnel costs that appear in PLUG-N-HARVEST official proposal (€ 2,000.00 per month) are not aligned with Spanish Standards for the Employee profile (€ 4,050.00 per month). This error has been formally claimed since April 2017.

### Transfer Budget from 'Other Direct costs' to 'Direct costs of subcontracting'

Previously demanded and again at this Stage, AHC is asking to move to Subcontracting all the remaining budget of 'other direct costs' except €11,900.00 -from travel and Audits-, and the related indirect costs.

To sum up, AHC budget will be increased from the initial Budget in € 27,125.00 (= €37,250.00 (test) - €10,125.00 (project to Pich) that will be added to "Direct cost of subcontracting".

<b>A</b>	<b>Direct personnel costs</b>	<b>€ 129,600.00</b>	One person fulltime/dedicated to the PLUG-N-HARVEST project during 36 months
<i>B</i>	<i>Travel</i>	<i>€ 6,900.00</i>	
<i>C</i>	<i>Equipment</i>		
<i>D</i>	<i>Other</i>	<i>€ 5,000.00</i>	<i>Audit</i>
<b>E</b>	<b>Other direct costs (B+C+D)</b>	<b>€ 11,900.00</b>	
<i>F1</i>	Direct costs of subcontracting mapped until 1 <sup>st</sup> Review Meeting	€ 7,865.00	Specific Regulation Survey + +
<i>F2</i>	Direct cost of subcontracting for Monitoring Service	38,279.45 €	Monitoring the demo-building before and after the renovation
<i>F3</i>	Direct cost of subcontracting for PnH facade	161,605.50	It is preview to subcontract manufacturing and installation of the PnH façade, as well as, some Prototype Verification Tests 37,250.00
<b>F</b>	<b>Direct Cost of subcontracting</b>	<b>207,750.00</b>	
<b>G</b>	<b>Indirect costs [0.25*(A+E)]</b>	<b>€ 35,375.00</b>	
	<b>Total</b>	<b>384,625.00</b>	



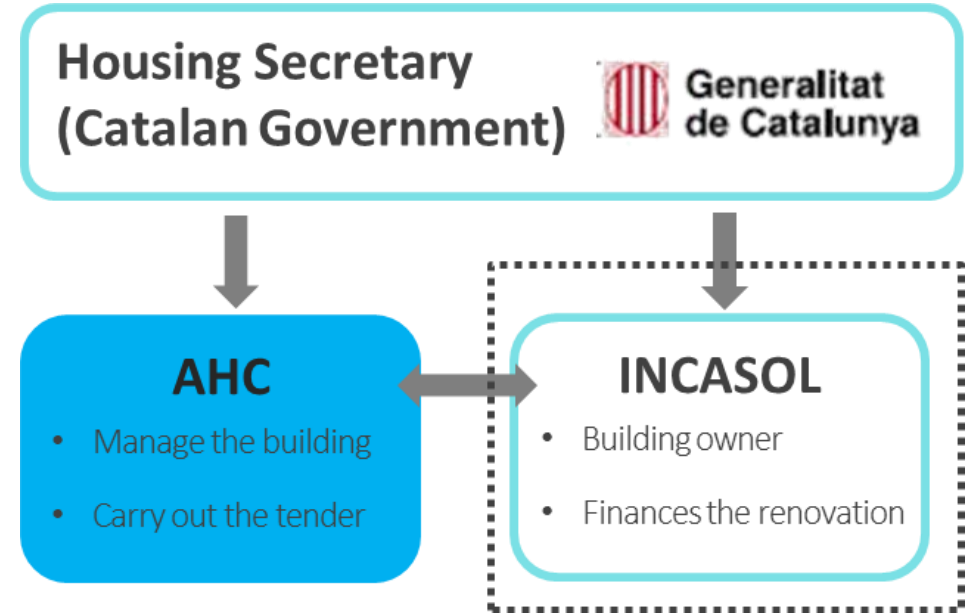
## WP1 – INCASOL engagement and Amendment

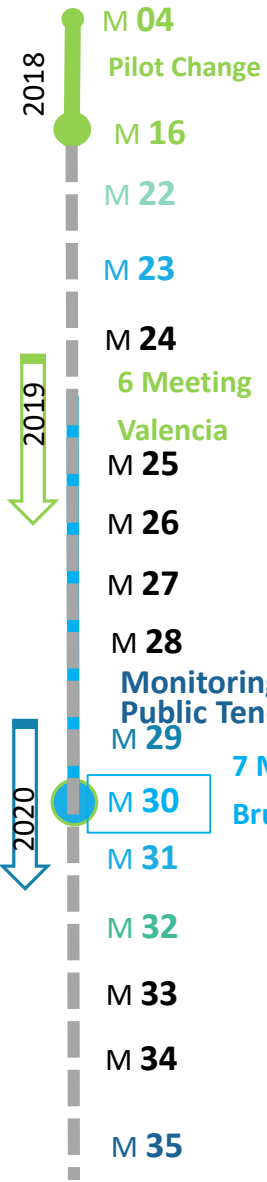
### Adding INCASOL as third party

INCASOL (a Public entity from the Catalan Government) is the owner of Sant Quirze del Vallès (Spanish pilot building). There will be an in-kind contribution, as they will finance the renovation works. AHC will be the manager and supervisor of the works subcontracting. The works that will be done in DEMO Sant Quirze del Vallès are renovation works to manufacture and integrate the ADBE façade. All subcontracting activities are foreseen within WP2, WP4 and WP5

- To add INCASOL as 3<sup>rd</sup> Part to make eligible the cost of the ABDE Tender

OPEN AN AMENDMENT





# AHC Pilot : Sant Quirze in Barcelona

## Data collection

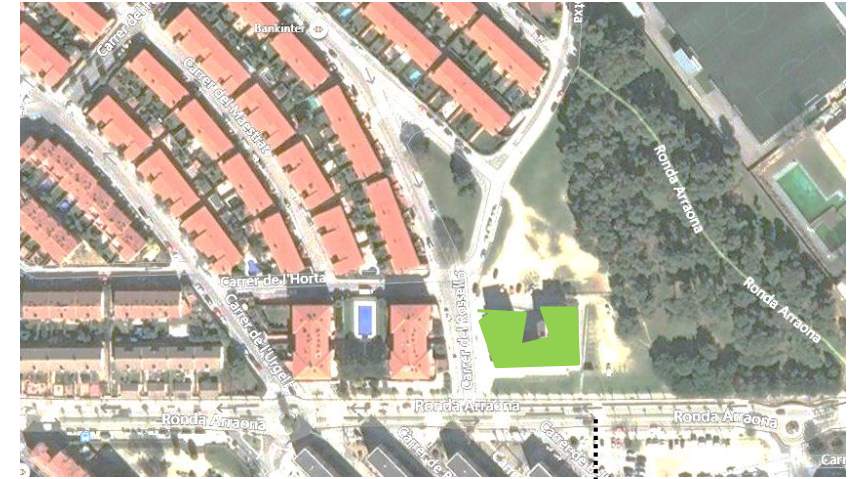
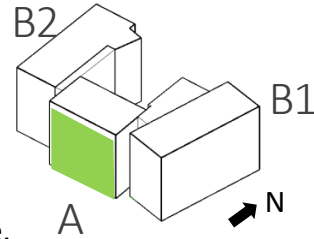
Pilot Proposal

ADBE Design

Next Steps

### Building Characteristics:

- Public Social Housing
- 2002 Construction year
- 3 Blocks (GF + 3 Floors)
- Total → 30 apartments
- Structure Concrete Reinforced and Pillar-Frame.
- Electric Energy (including heating)
- Bloc A: 6 apartments (45m2)



Good Access for big trucks

### Facade Pathologies:

- Thermal Bridges
- Facade Board Pieces Broken

Solar collectors surface: 18.6 m2  
Hot water solar thermal Panels .....

Electric transformer

Windows Thermal Bridges

136 m2 South Flat Facade

Grid 3.30 x 1.60m average



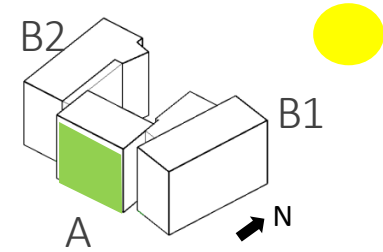
# AHC Pilot : Sant Quirze in Barcelona Data Collection

Pilot Proposal

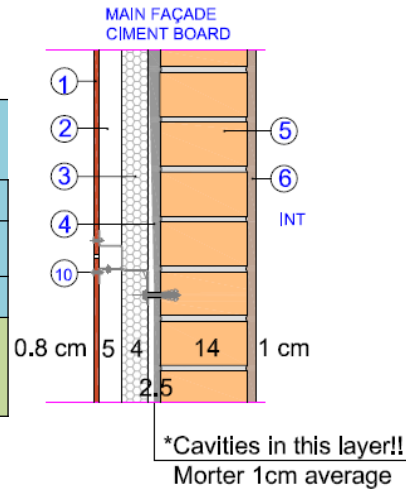
ADBE Design

Diagnosis

- U Values: built before CTE 2006



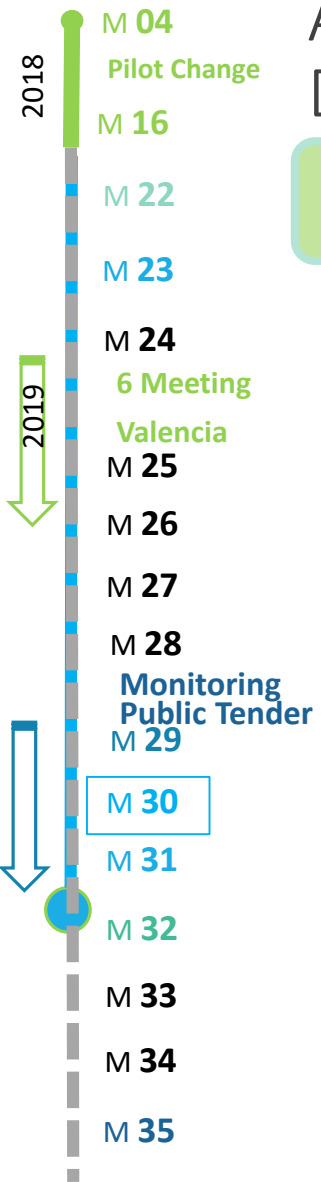
SOUTH FACADE (MAIN FACADE) BLOCK A Façana sud (façana principal)			
MATERIAL	m	e*r	1/R
		m <sup>2</sup> K/W	W/m <sup>2</sup> K
	e	R	U
Outside (Aire Exterior)	-	0,040	<b>0,49</b>
Ciment Board (Plaques Naturvex)	0,080	0,348	
Ventilated cavity (cambra d'aire ventil·lada*)	0,050	0,090	
XPS_Extruded Polystyrene Foam (poliestirè extruït)	0,040	1,000	
Cement Plaster Layer (Capa de morter)*	0,025	0,019	
Clay Masonery (Maó de Gero)	0,140	0,400	
Plaster Layer (Capa de Guix)	0,010	0,033	
Inside (Aire interior)	-	0,130	
	0,345	2,060	



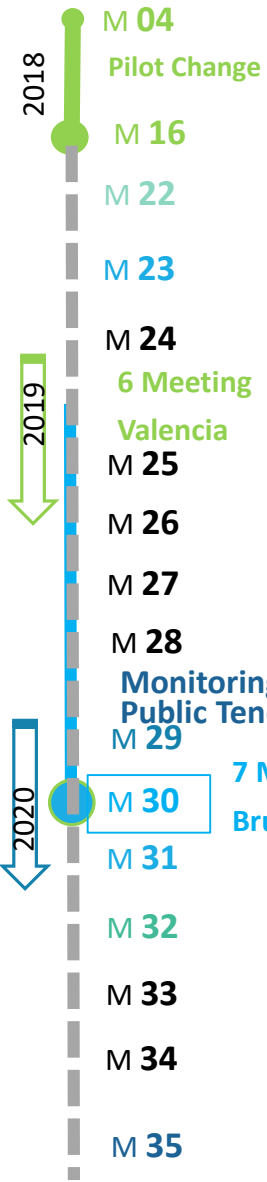
Outside (Aire Exterior)  
 1 Ciment Board (Naturvex) 0,8cm  
 2 Ventil·lada cavity (cambra d'aire ventil·lada\*) 5cm  
 3 XPS\_Extruded Polystyrene Foam (poliestirè extruït) 4 cm  
 4 Cement Plaster Layer (Capa de morter) ?\*  
 5 Clay Masonery (Maó de Gero) 14 cm  
 6 Plaster Layer (Capa de Guix) 1, cm  
 Inside (Aire interior)

## Real poor insulation level

SOUTH FACADE (MAIN FACADE) BLOCK A Façana sud (façana principal)			
MATERIAL	m	e*r	1/R
		m <sup>2</sup> K/W	W/m <sup>2</sup> K
	e	R	U
<del>Outside (Aire Exterior)</del>	-	<del>0,040</del>	<b>1,72</b>
<del>Ciment Board (Plaques Naturvex)</del>	<del>0,080</del>	<del>0,348</del>	
<del>Ventilated cavity (cambra d'aire ventil·lada*)</del>	<del>0,050</del>	<del>0,090</del>	
<del>XPS_Extruded Polystyrene Foam (poliestirè extruït)</del>	<del>0,040</del>	<del>1,000</del>	
Cement Plaster Layer (Capa de morter)*	0,025	0,019	
Clay Masonery (Maó de Gero)	0,140	0,400	
Plaster Layer (Capa de Guix)	0,010	0,033	
Inside (Aire interior)	-	0,130	
	0,345	0,583	





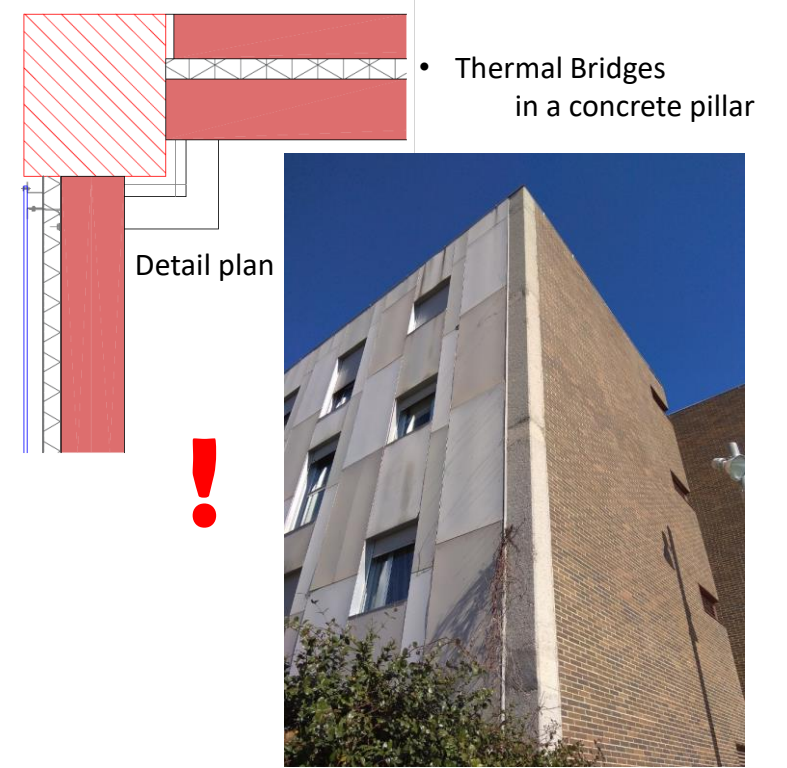
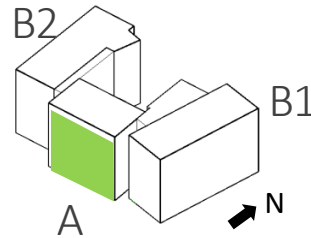


# AHC Pilot : Sant Quirze in Barcelona Data collection



## Diagnosis process to study facade Pathologies:

- Thermal Bridges
- Facade Board Pieces Broken



Need to solve the thermal bridge with the new ADBE system solution

- Others pathologies



humidity in aluminium carpentry

- 2018
- M 04 Pilot Change
- M 16
- M 22
- M 23
- M 24
- 2019
- 6 Meeting Valencia
- M 25
- M 26
- M 27
- M 28
- Monitoring Public Tender
- M 29
- 7 Meeting Brussels
- M 30
- M 31
- M 32
- M 33
- M 34
- M 35

# AHC Pilot : Sant Quirze in Barcelona

## ADBE Design

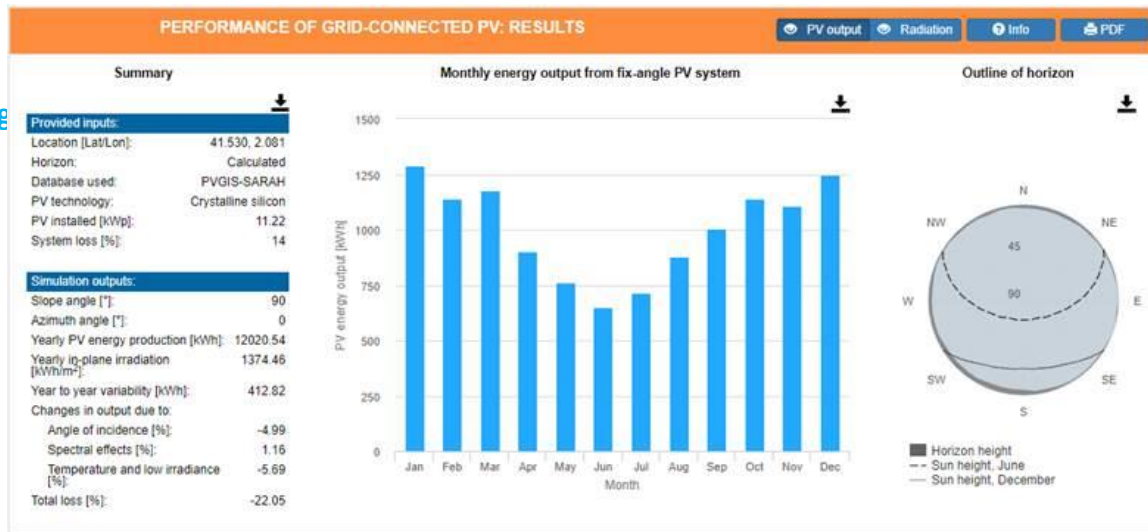
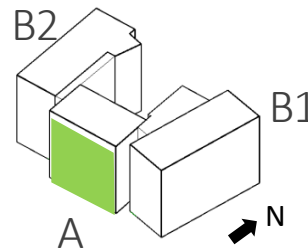
Pilot Proposal

ADBE Design

PV Estimation

### Selected technologies (type and size)

- **Total Modules: 27 units. Profiles Version from WP2 and Solution Optimized with New Partner**  
1.60 x3.30 Average
- **BIPV System Cadmium Free 3+4 mm. Possible supplier Onyx: 15 units.** 1.60 x3.30 + Inverters  
CC/AC+Wiring CC +Protections CC +Protections AC + Grounding + Legislation



## New dimensions and characteristics of the PV system:

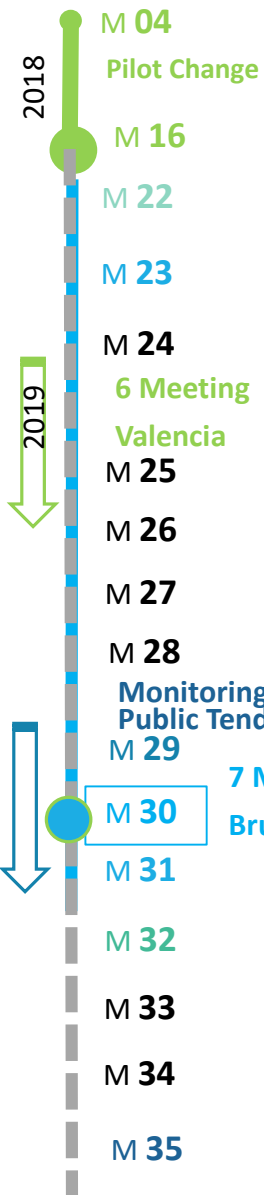
PHOTOVOLTAIC FACADE PRODUCTION **11,22kWp**  
 POWER pic\_YEAR GENERATION ESTIMATION :  
**12.020kWh.** CONSUMPTION ESTIMATION 6 AP:  
 21.000 KWh (77kWh/m2 Year)

SURFACE PV panels **66m2**



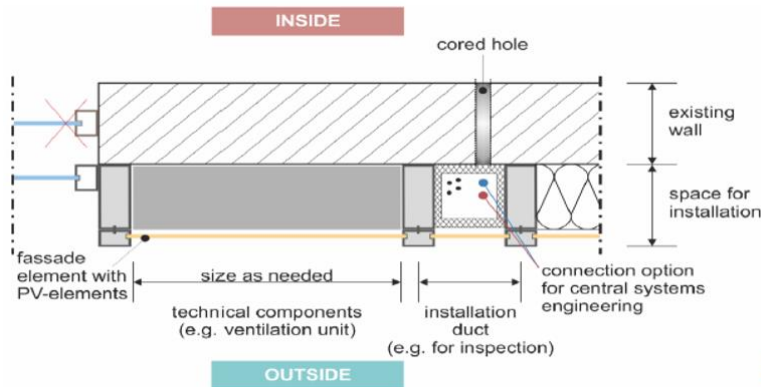
\*Design under study with WP2 parameters and architectural project. The PnH budget for the 27 units is 124.355,50€. Aprox 924€/m2





# AHC Pilot : Sant Quirze in Barcelona

## ADBE Design



\*Horizontal section from WP2

INCASOL budget for the south façade Bloc A its approx. 40.000,00€

Budget of the subcontracting is 123.355,50€

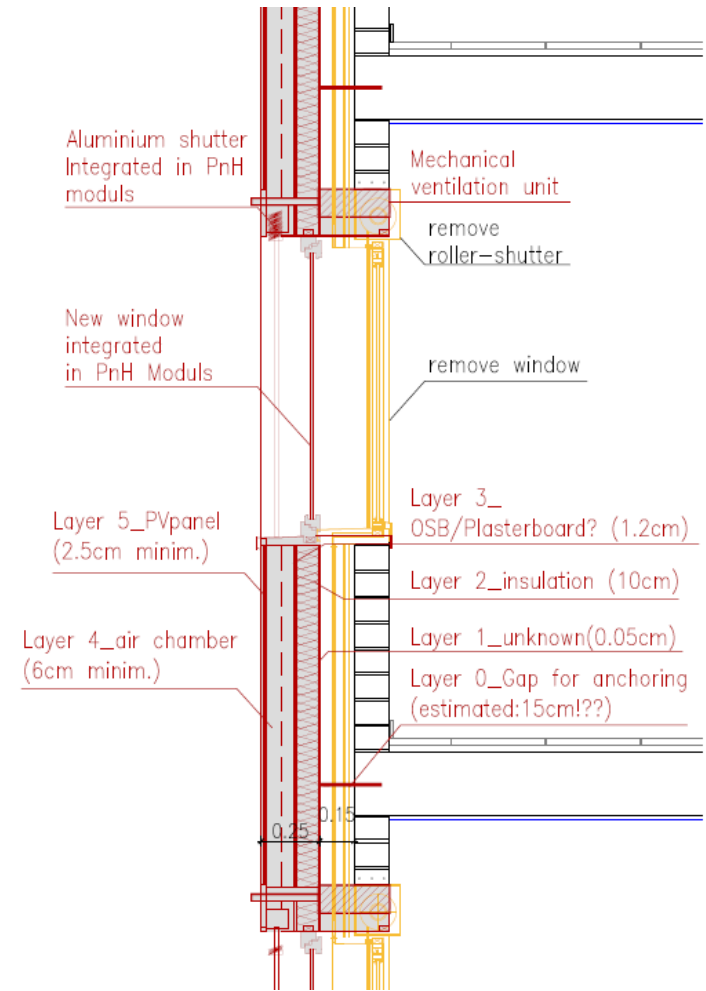
Total budget availability: 163.355,50€

Budget per m2 of façade:  
Total Current budget → 1.201 €/m2

( G.A. Estimated Cost → 1.100 €/m2 )



## TW MODULE



\*Vertical Section Scheme AHC Pilot



# AHC Pilot : Sant Quirze in Barcelona

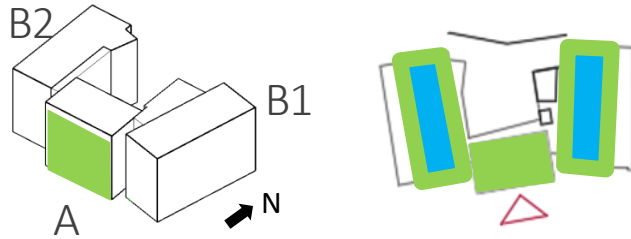
## ADBE Design

Synergies with HOUSEFUL: The demo change amendment is approved in January 2020.

Pilot Proposal

ADBE Design

Synergies HOUSEFUL

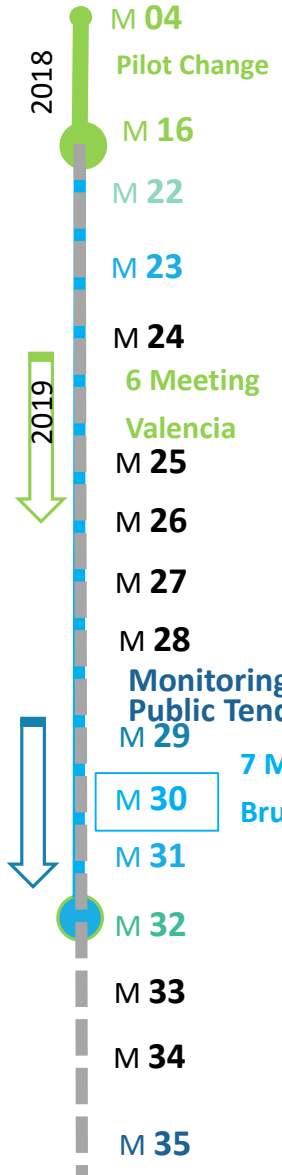
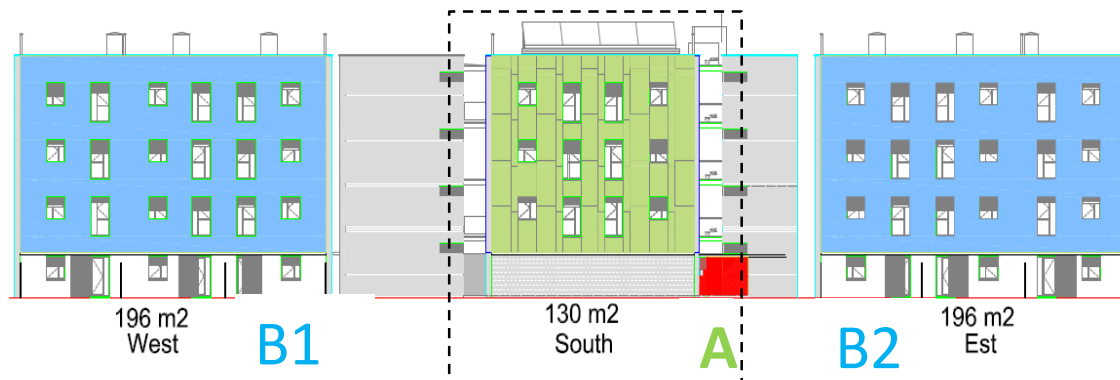


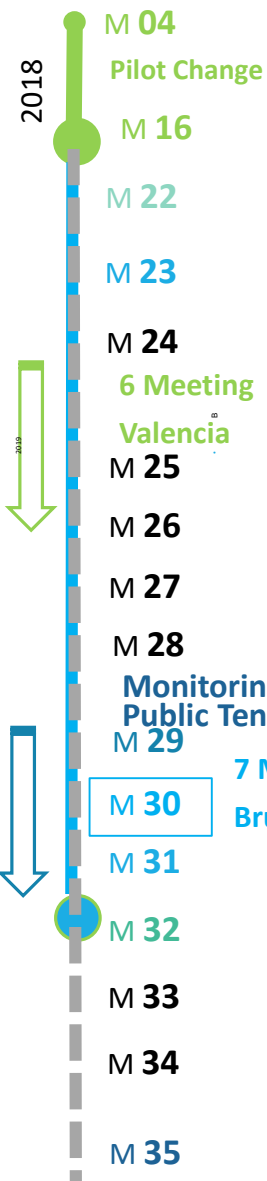
HOUSEFUL Contributions: Grant for Thermal Envelope Renovation Works under Circular Economy Principles.

January 2020 creation of the INCASOL-AHC team for a comprehensive pathology rehabilitation project.

### HOUSEFUL timeline

	2020												2021																
	YEAR 2				YEAR 3								YEAR 4																
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
"SANT QUIRZE" (Sant Quirze City - Spain) - NEW SCHEDULE																													
Planificació inicial projecte St. Quirze																													
Preparation of the refurbishment project by AHC																													
AHC Tender process																													
Contract Awarded																													
Refurbishment																													
Occupation by tenants																													
Planificació actual projecte St. Quirze																													
Preparation of the refurbishment project by AHC																													
AHC Tender process. New schedule																													
Contract Awarded. New schedule																													
Refurbishment New schedule																													





# AHC Pilot : Sant Quirze in Barcelona

## ADBE Tender Procedure



### AHC Innovation Contract

#### Background

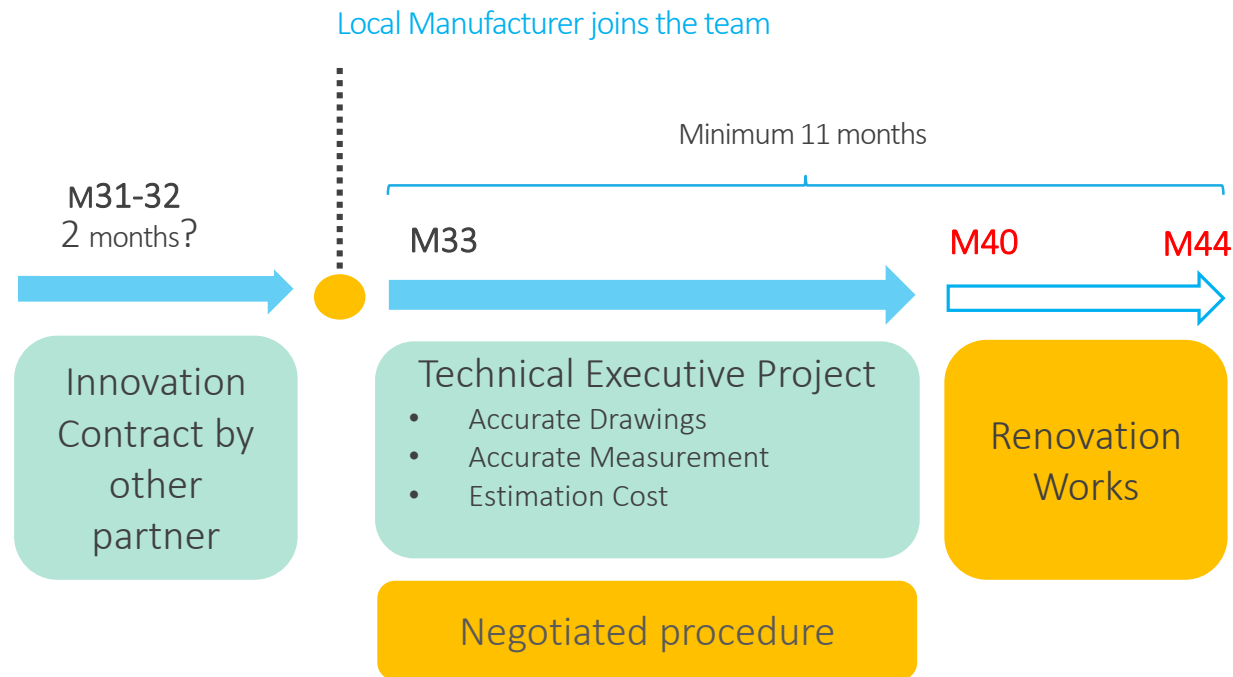
- Internal Resolution in AHC in June 19. Option Considered in the EU GUIDANCE ON PUBLIC PROCUREMENT OF INNOVATION and adapted in the Spanish Regulation (BOE Article167)
- Internal meeting in AHC in January 20. The option described above is too long and slows down the demonstrations. **This is a significant risk.**



#### The current situation is:

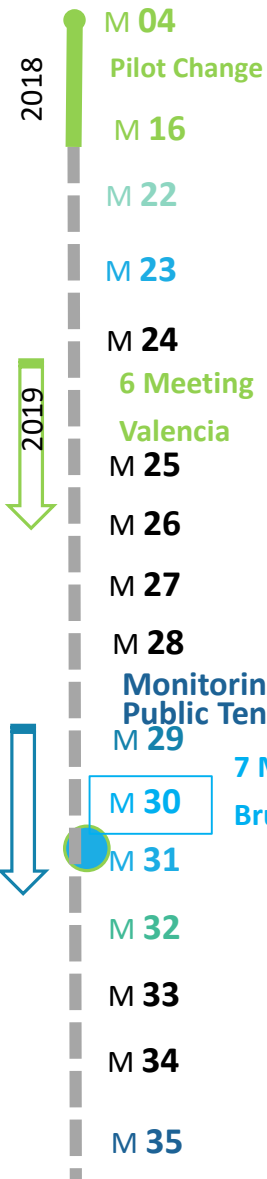
- The 22 of January the AHC proposes to the consortium that one of the private partners of WP4 undertakes the innovative contract.
- This partner will solve the innovation contract with a company available in the market.
- For the execution of the renovation works, the AHC will be able to bid on a negotiated procedure addressed to the specific company that has solved the innovation.

### Proposed Schedule



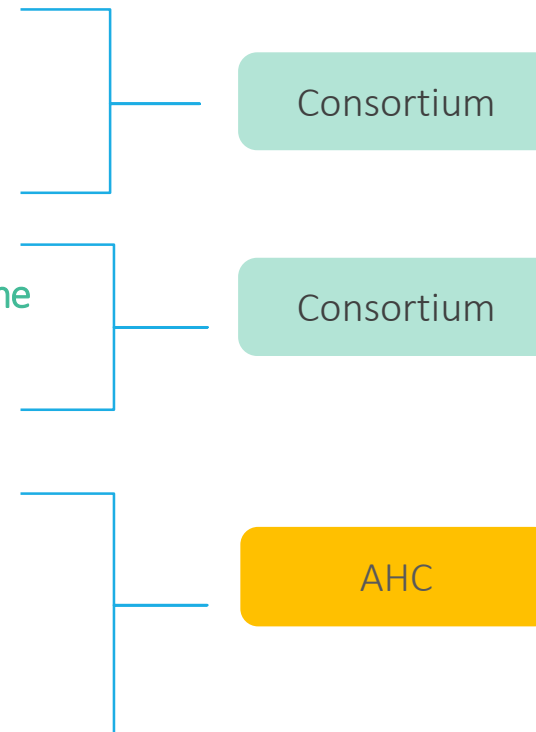
# AHC Pilot : Sant Quirze in Barcelona

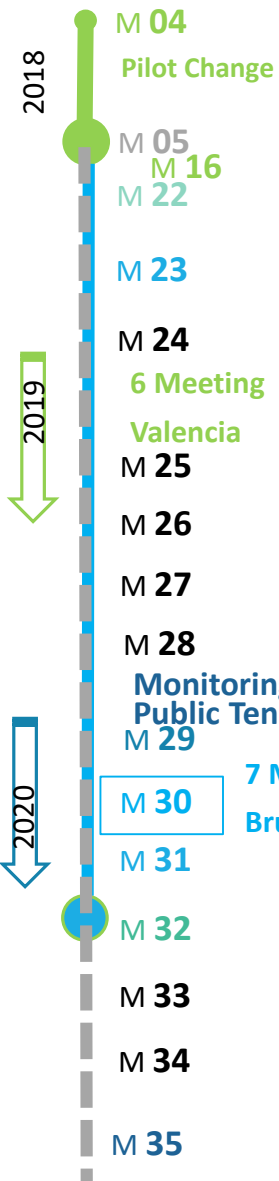
## Next Steps



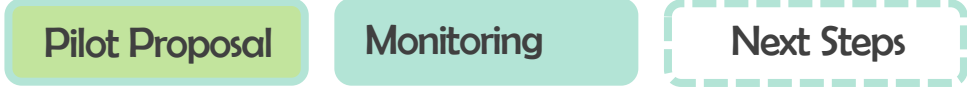
### Main actions

- Task of Research with manufacturer that remains for WP2
- Business model Studies and Circularity assessments collaboration for WP5
- Development of the Technical Executive Project for the Pilot for WP4
- Provide the Information for LCI
- Profile Test
- Manufacturing + Installation of the ADBE for WP4
- Provide the Information for LCI





# AHC Pilot : Sant Quirze in Barcelona Monitoring Validated

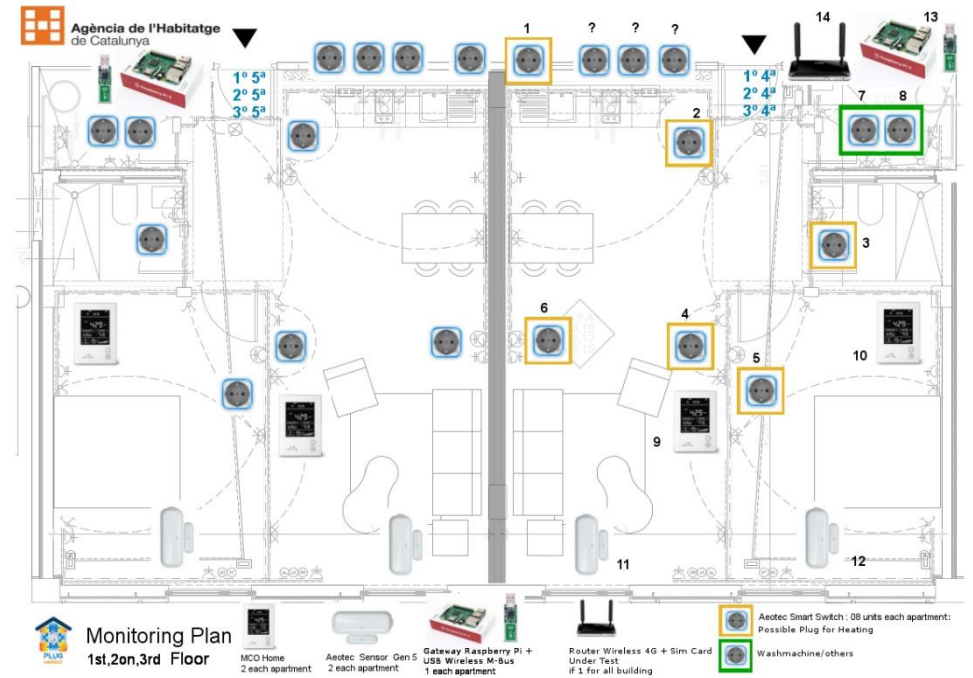


## PUBLIC SUBCONTRACTING for supply & Services.

Result of OPEN Simplified Abbreviated TENDER and dates and new invitation			
OPEN Simplified Abbreviated	The tender has been deserted.	Direct invitation to companies	resolution bidder
03/02/20 14:00 h	17/02/2020	??	12 days

Open Simplified Abbreviated Tender

COST > 15.000€  
Duration > 12 months



[https://contractaciopublica.gencat.cat/ecofin\\_pscp/AppJava/nofice.pscp?reqCode=viewCn&idDoc=58639582&lawType=](https://contractaciopublica.gencat.cat/ecofin_pscp/AppJava/nofice.pscp?reqCode=viewCn&idDoc=58639582&lawType=)



26-27/02/20



Agència de l'Habitatge de Catalunya

PLUG-N-HARVEST  
ID: 768735 - H2020-EU.2.1.5.2.



# AHC Pilot : Sant Quirze in Barcelona

## Next Steps

Pilot Proposal

Monitoring

Next Step

TOTAL ESTIMATED COST 38.279,45 €

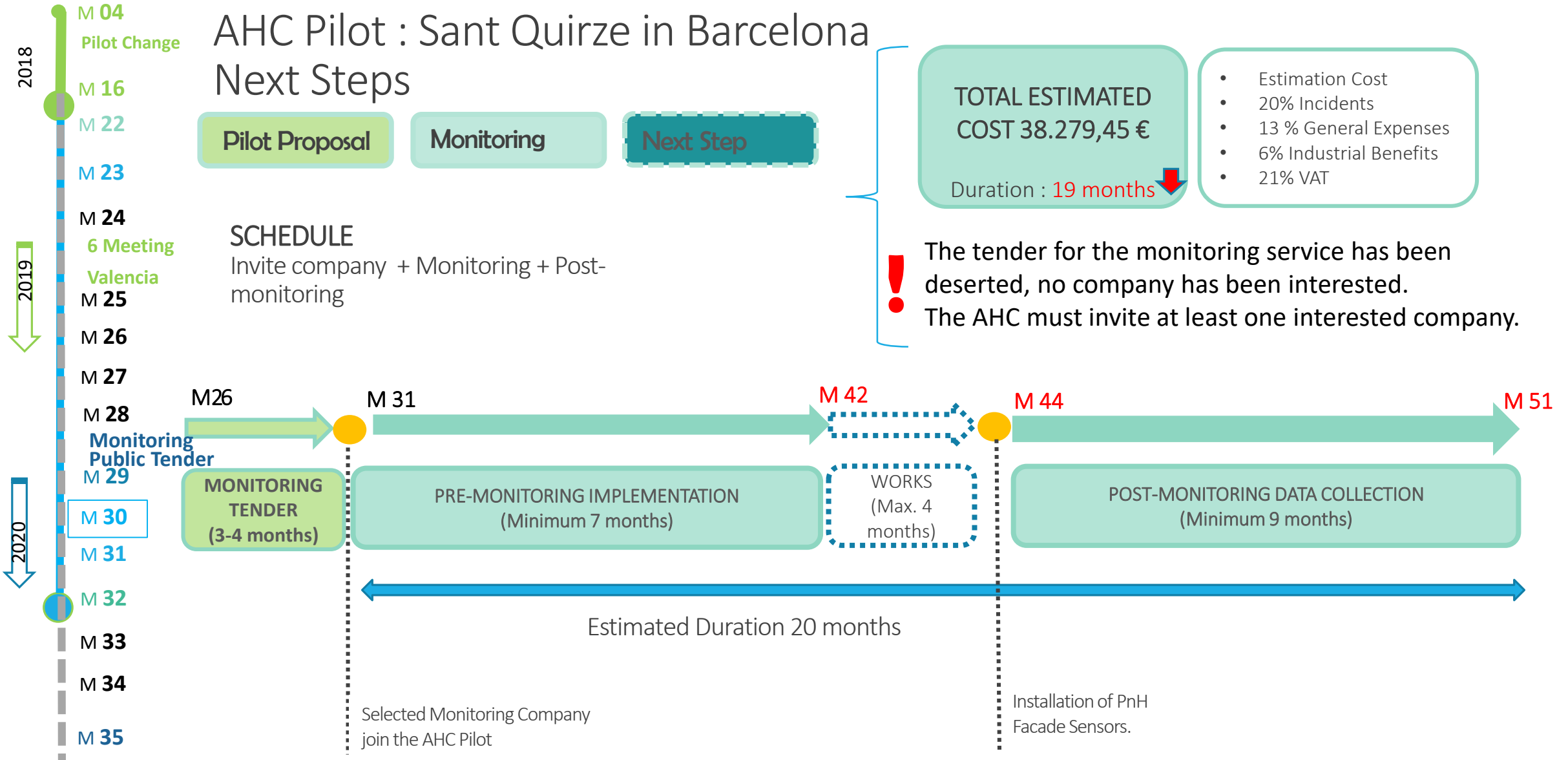
Duration : 19 months

- Estimation Cost
- 20% Incidents
- 13 % General Expenses
- 6% Industrial Benefits
- 21% VAT

**!** The tender for the monitoring service has been deserted, no company has been interested. The AHC must invite at least one interested company.

### SCHEDULE

Invite company + Monitoring + Post-monitoring





# AHC Pilot : Sant Quirze in Barcelona Monitoring Goals + Phases

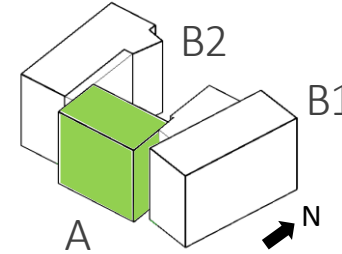
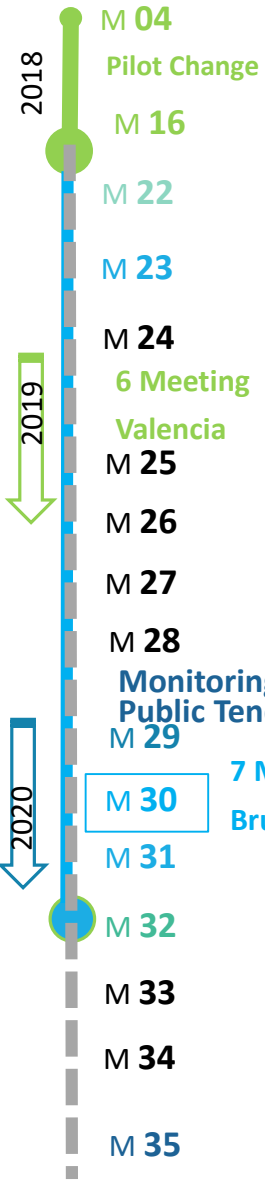
Pilot Proposal

Monitoring

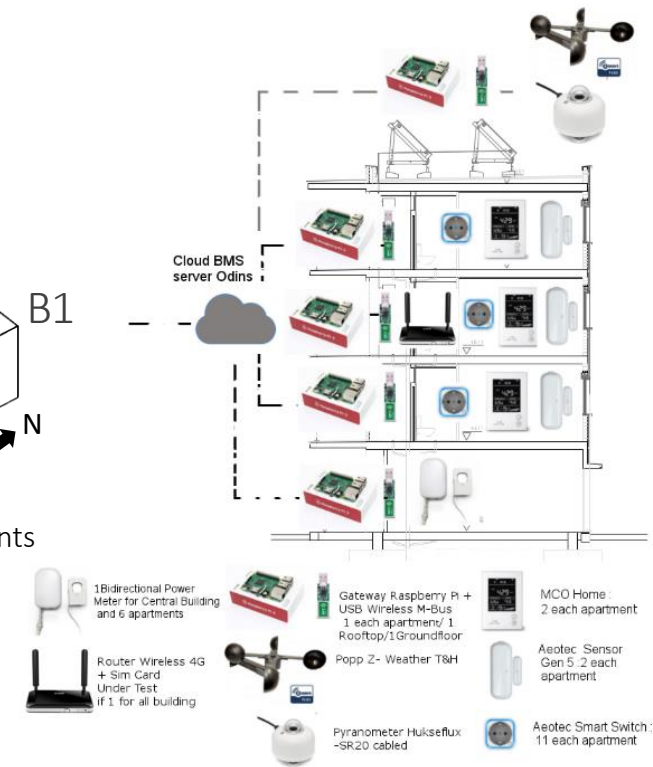
Next Steps

## Goals

- To evaluate the current building's energy performance
- To evaluate the results of the technology implemented
- To establish good health practices in homes
- To reduce the maintenance costs of the building



- Bloc A: 6 apartments
- Each Apt : 45m2



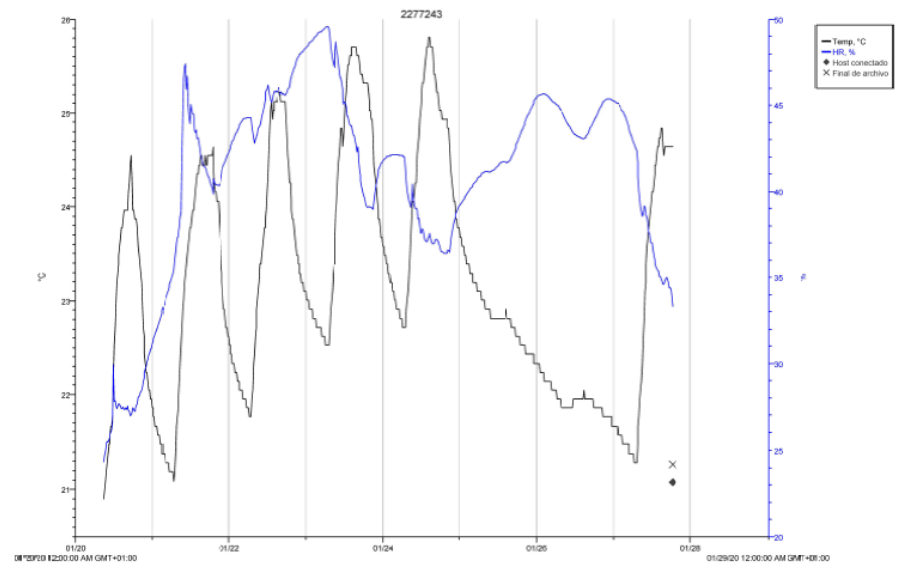
Installation of PnH Facade.

# AHC Pilot : Sant Quirze in Barcelona Monitoring Estimation Cost



Monitoring Current situation

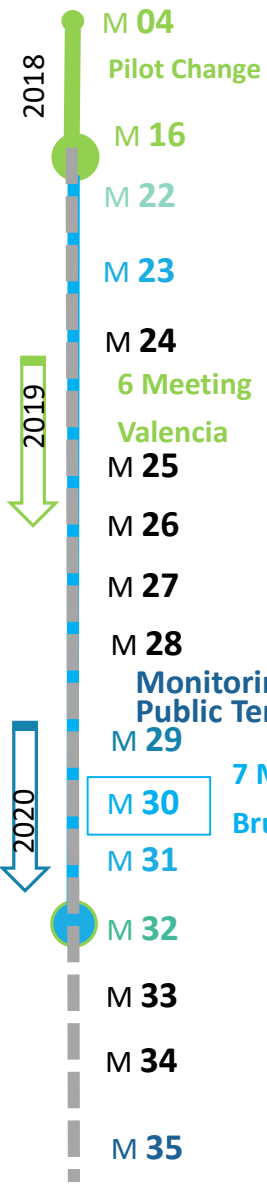
HOBO data logger temp/RH  
Tinytag CO2



Actual Measurement:  
data measurement from 28  
of January 2020  
Aiguasol Equipment  
2 dwellings : 1-5 and 3-5

- °C
- % Humidity
- CO2





# Conclusions:

## INCASOL and Amendment

- It is key to prioritise the amendment due to: (1) economical matters, (2) to welcome on board the new partner PICH and (3) Authorize Incasol as a third party.

## Pilot demonstration

- The CCC and AHC demonstrations provide a social component and are implemented to be permanent in the building (they are not a “test in a lab”). As such, there is a need to have a TRL level 8 or 9. The diagnosis and project phases are very relevant.
- The installer phase process is relatively short but the design phase is longer and complex compared to the usual retrofitting process.
- It is very important to involve the inhabitants to let them know how the ABDE system works.

## Monitoring

- Since the monitoring tendering failed, in order to get the data, we started to monitor two flats with data loggers provided by Aiguasol.