SOCIAL POWER

www.socialpower.ch

Social Power Project:
Triggering **electricity-saving** through **smart metering feedback**, **playing**, **learning** and **interacting** using **gamification** and **social comparison**

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REM St. Gallen
May 12, 2017

Overview

- Intervention approach

  Two cities, two games

  Factors impacting behaviour change

- Results

  Quantitative – engagement, electricity savings, reported behaviour and socio-psychological factors

  Qualitative – interviews

- Lessons learned

APPROACH

Household engagement

Feedback+ (Sabadie, 2014)

Practices (Burchell, Roberta, & Rettie, 2013)

Group effects (Fischer, 2008)

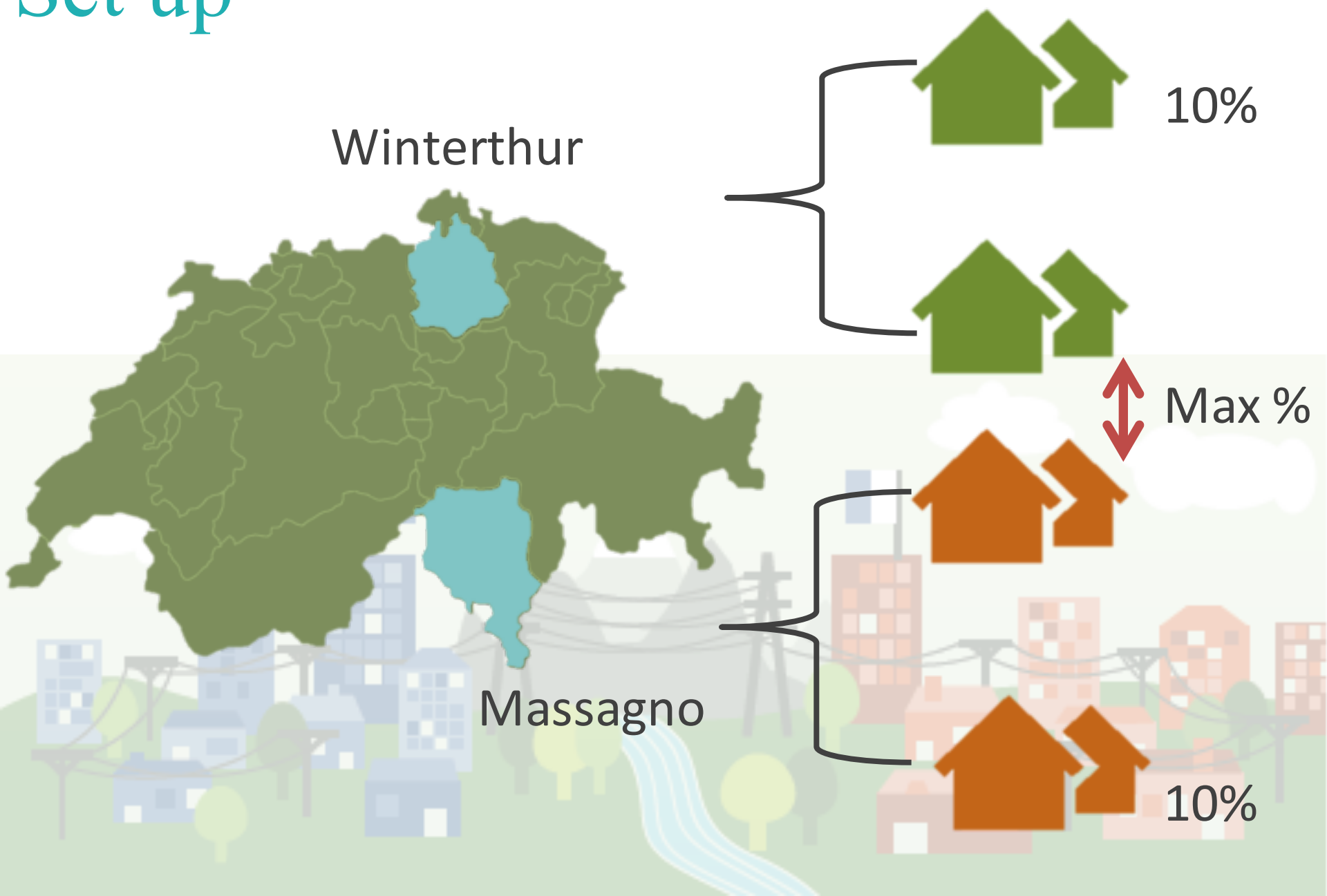Gamification (Deterding, Dixon, Khaled, & Nacke, 2011)

Competition (Scales et al., 2016)

Goal setting (Mcalley & Midden, 2002)

Interaction (Breukers et al., 2013)

Social setting (Kurz et al., 2015)

Set up

Winterthur

Massagno

10%

Max %

10%

Set up
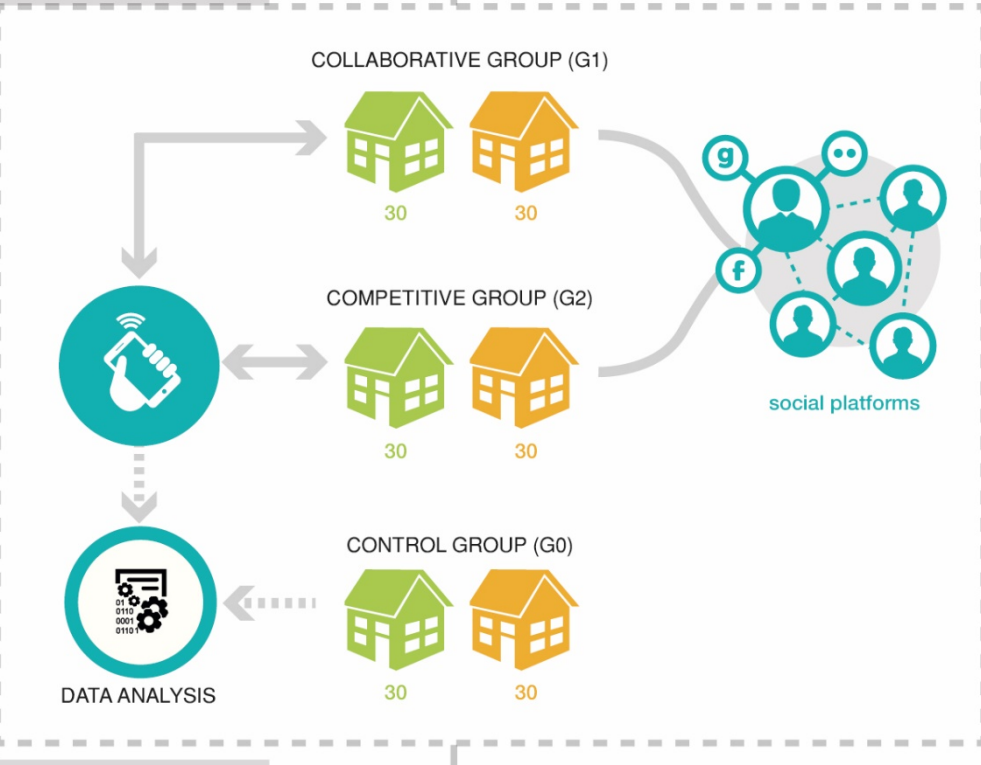
Historical Reference: Average weekly
consumption from Oct - Dec 2015

Set up

TRACKING PERIOD A

Historical Reference: Average weekly consumption from Oct - Dec 2015
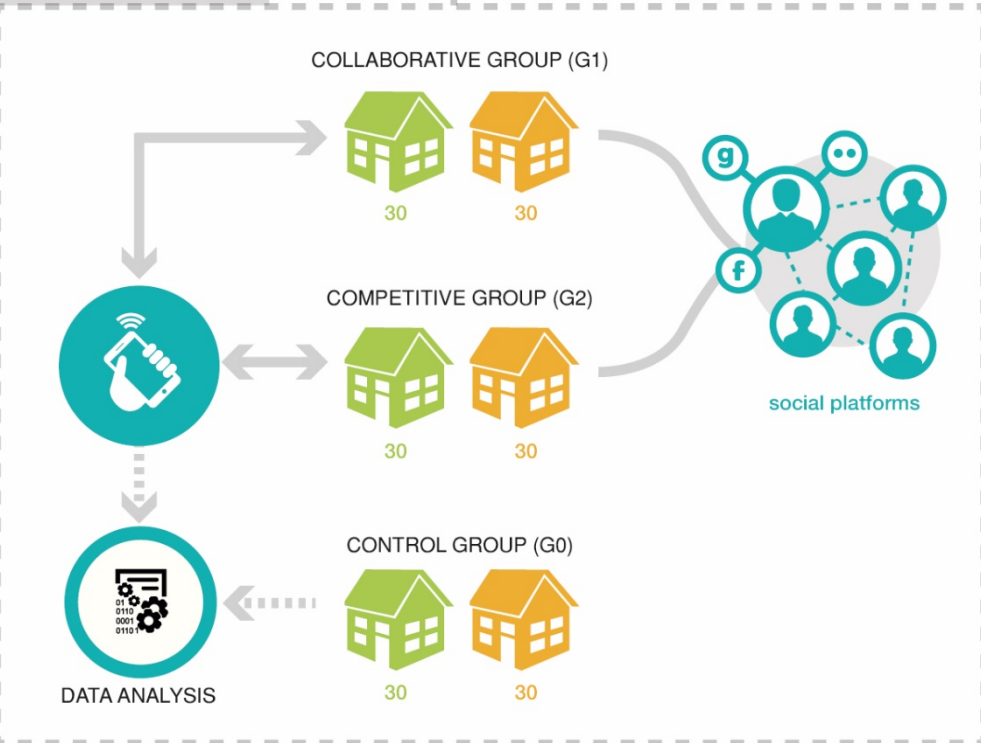
TRACKING PERIOD B

COLLABORATIVE GROUP (G1)

30   30

COMPETITIVE GROUP (G2)

30   30

social platforms

CONTROL GROUP (G0)

DATA ANALYSIS

30   30

Set up

TRACKING PERIOD A

Historical Reference: Average weekly consumption from Oct - Dec 2015

TRACKING PERIOD B

COLLABORATIVE GROUP (G1)
30   30

COMPETITIVE GROUP (G2)
30   30

social platforms

CONTROL GROUP (G0)
30   30

DATA ANALYSIS

TRACKING PERIOD C

Long term consumption: up until May 2017

Activities and points

⚡ 34545	ENERGY SAVING	⚡ 32345	EFFICIENCY
⚡ 36545	LOAD SHIFTING	⚡ 12345	AWARENESS
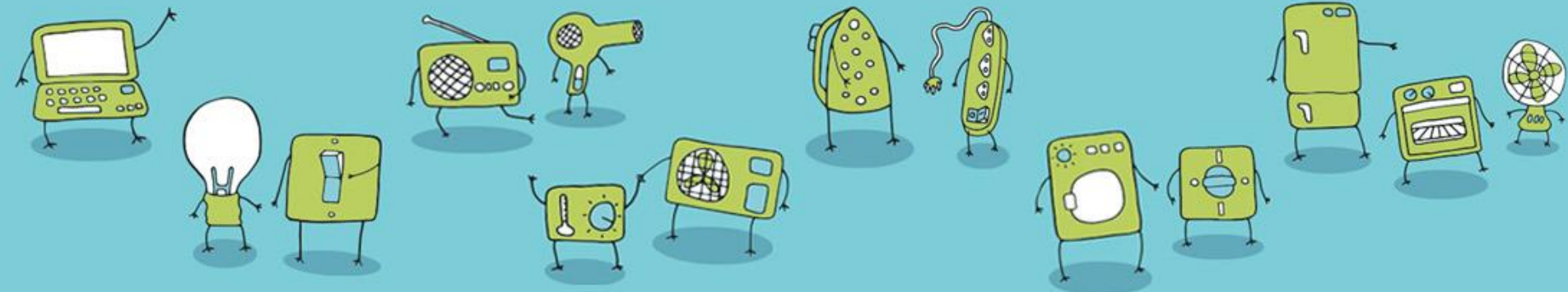
APP
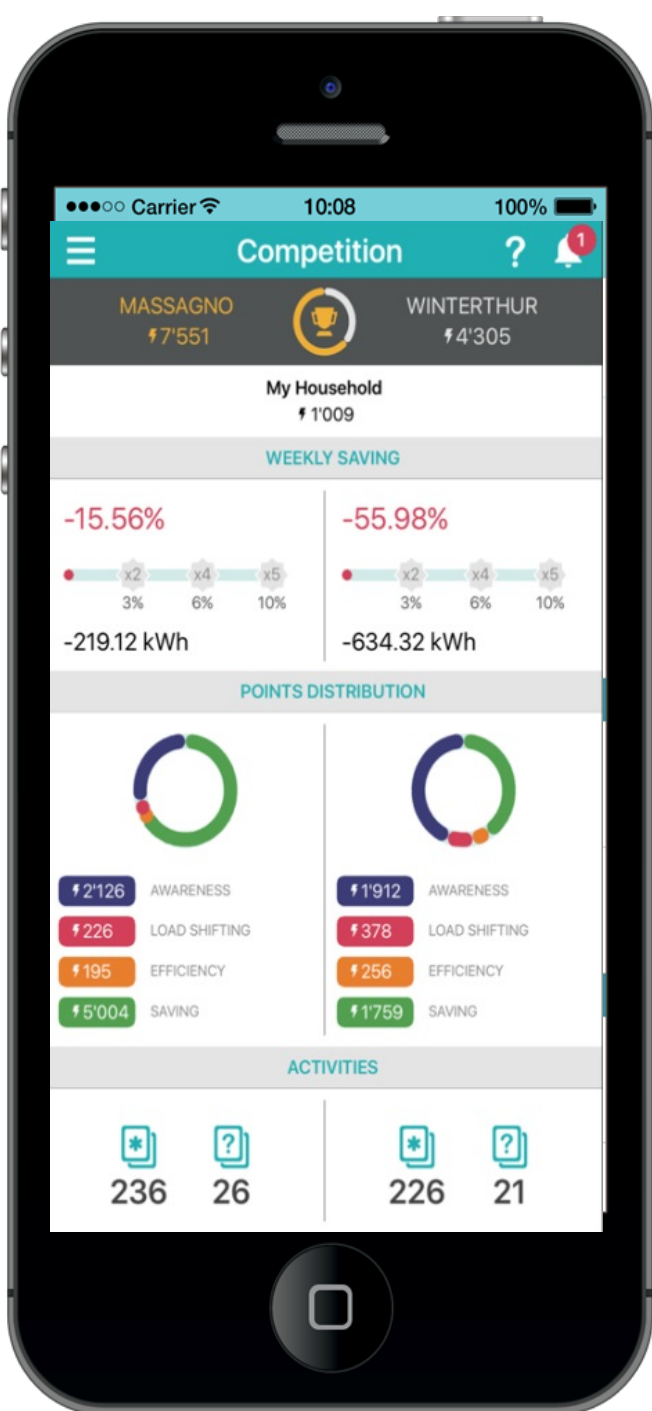
Game

Progress

Points and completed activities

Screen 1 — Energy Tips

●●●●○ Carrier 🛜 12:34 AM 🔵 ❚❚❚❚

☰ Energy Tips

ENERGY CHECK-UP
5 tips

FRIDGE & FREEZER
17 tips

WASHING MACHINE &
TUMBLER
11 tips

DISHWASHER
12 tips

OVEN
22 tips

COOKING
11 tips

Screen 2 — Energy diary

●●●●○ Carrier 🛜 12:34 AM 🔵 100% ❚❚❚❚

☰ Energy diary ?

CURRENT | ENERGY STATS

‹ TODAY ›
30.11.2015

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

HOURLY STATS

16.00 | 34,8 kWh
15.00 | 34,8 kWh
14.00 | 45,8 kWh
13.00 | 48 kWh
12.00 | 68 kWh
11.00 | 68,3 kWh ❗
10.00 | 68 kWh

Screen 3 — temperatura sotto controllo

○ Carrier 🛜 12:34 AM 🔵 100% ❚❚❚❚

1/5 ✕

temperatura sotto controllo

...wer the temperature when your refrigerator is
...low 7 ° Celsius. Adjusting the controller initially
...y by one stage, because it is probably not more
...an one stage required to change the temperature
...side the refrigerator. Wait at least 24 hours. Rad
...ain the temperature and repeat the steps until it

...WARDS

...ENERGY POINTS ⚡ 3455

254 SAVING | 953 EFFICIENCY
1254 LOAD SHIFTING | 1004 AWARENESS

...CIAL BONUS
.../61 2x 3x 4x
...AM MEMBERS COMPLETED THIS ACTIVITY

START

RESULTS

Enagagement

Teams	Competitive	Collaborative
Massagno	13 / 26	10 / 27
Winterthur	11 / 28	12 / 27
Total	24 / 54	22 / 54

Sustainable behaviour

Social support

Electricity literacy

Savings

Teams		n	Consumption change (%)
Competitive	Massagno	13	- 8.54%
	Winterthur	11	- 8.96%
Collaborative	Massagno	10	- 15.00%
	Winterthur	12	- 2.29%
Control	Massagno	23	-3.64%
	Winterthur	22	+6.13%

Savings
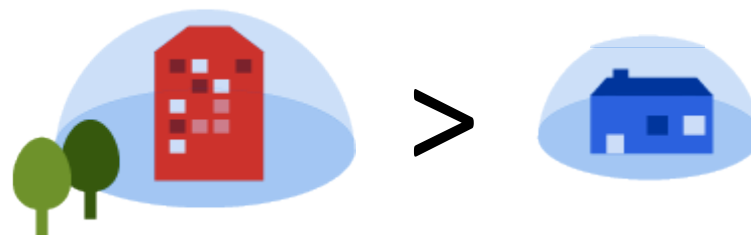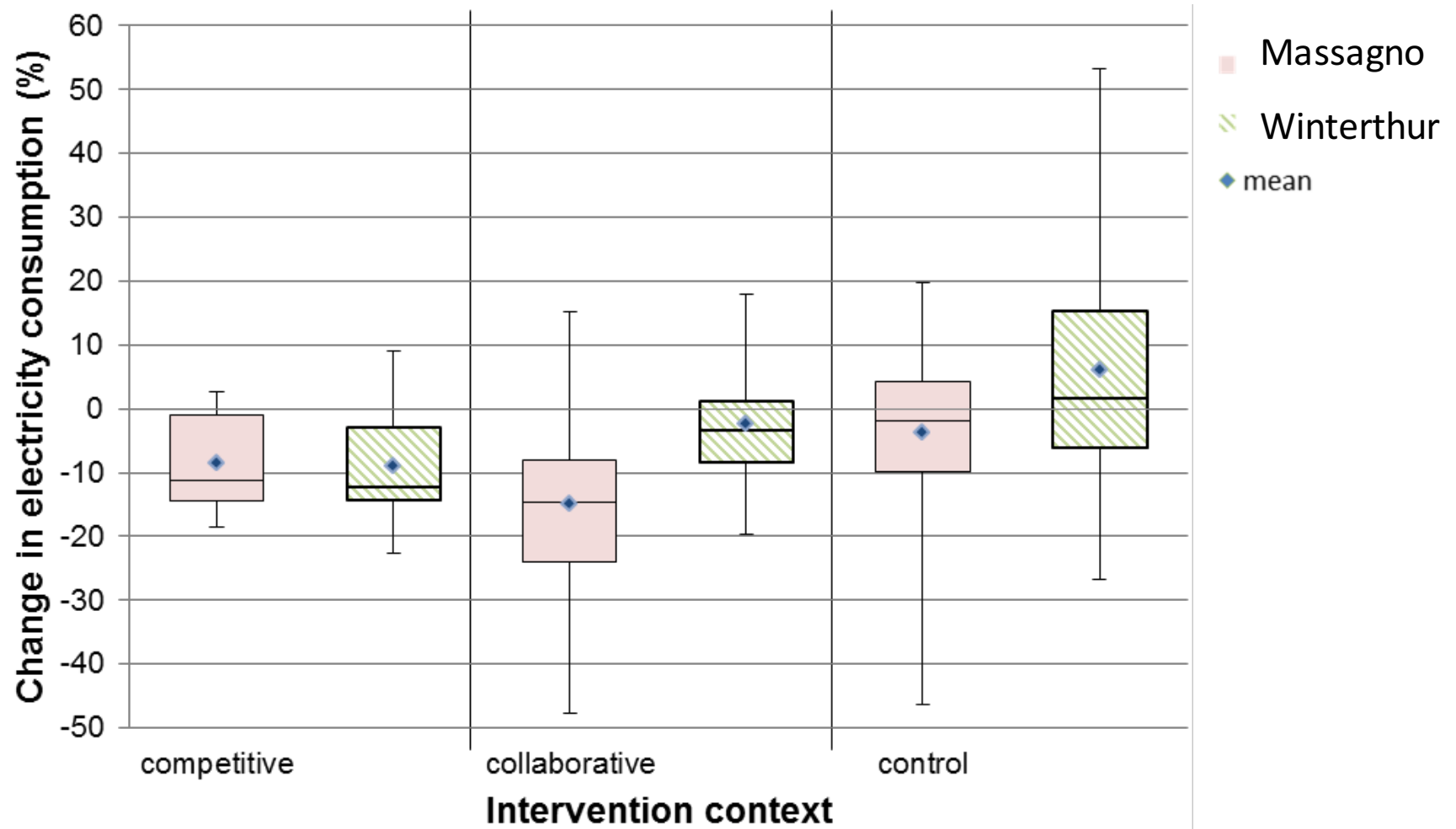
Savings
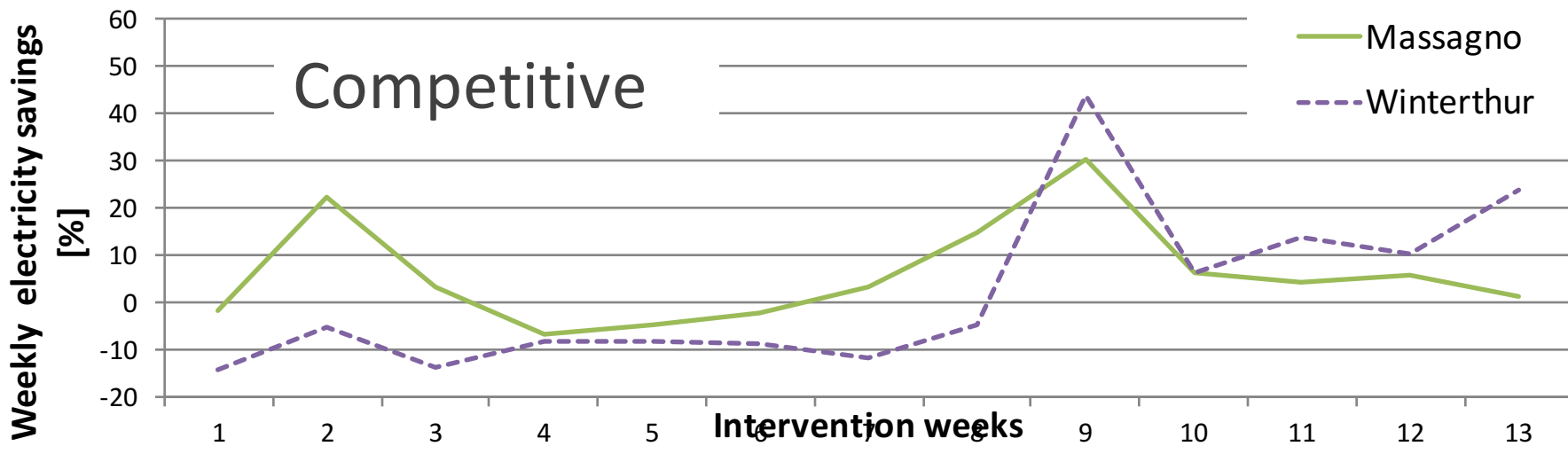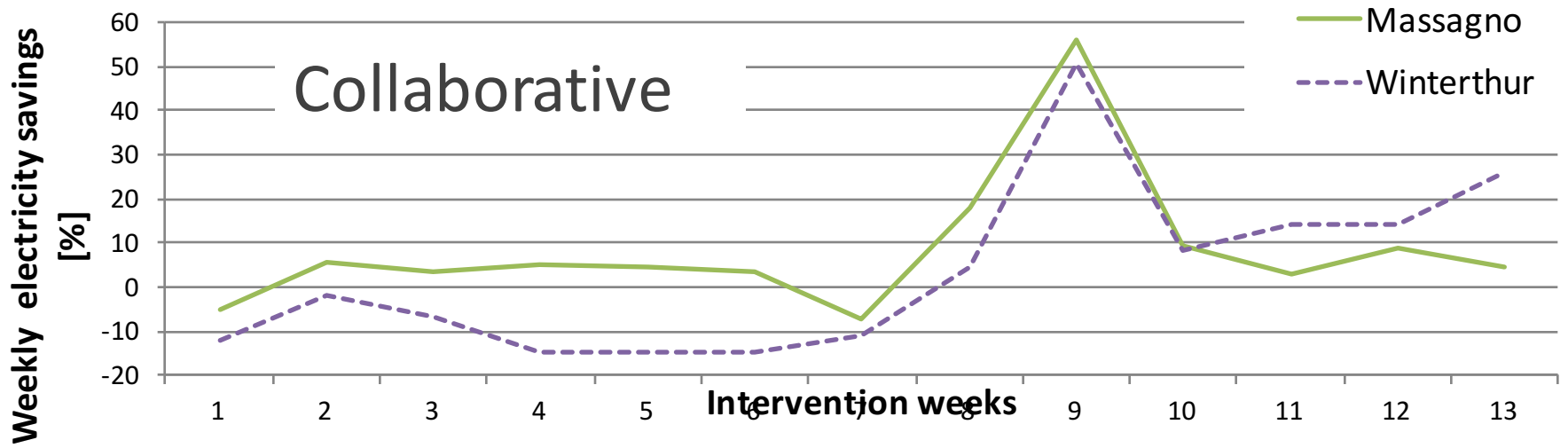
Pre and post survey

Significant changes during intervention:

Sustainable behaviour

Electricity literacy

Social support

But no changes in: consumption (load use) awareness, sense of community

Did not change participation: prior technical affinity, motivation, prior consumption awareness

Interview feedback

Category	Feedback
User behaviour	only one user in household; not using the app anymore
App interface	user-friendly app; difficulties at the beginning
App content	challenges easy and interesting; a few challenges too demanding; energy tips mostly new and interesting
Game mechanics	no peer pressure was felt; knowing the team members would lead to more interaction; real-life meetings in teams would be desirable
Learning effects	positive and useful experience; importance of load-shifting with regard to washing machine and dishwasher; importance of cooking
Playing the game	duration of 3 months adequate; very interested at the beginning, then the interest declined; data problems were demotivating
Social media	neither blog nor facebook user; anonymity not perceived as critical; integration of chat and notification systems
Service for utilities	positively perceived

Lessons learned

- Collaborative approach = competitive approach in effect, but need participants to stay in the game

- Use existing social networks – go to the people, as opposed to bringing them to you

- More social embedding helps reduce frustration and invokes personalization

- Some goals have unanticipated results – realtime electricity feedback (2 seconds) is a lot of data to manage
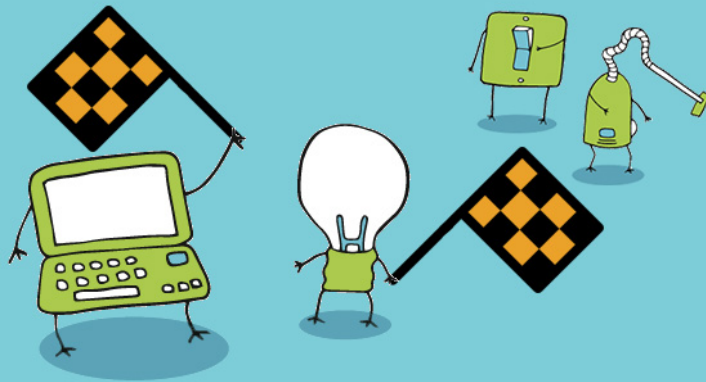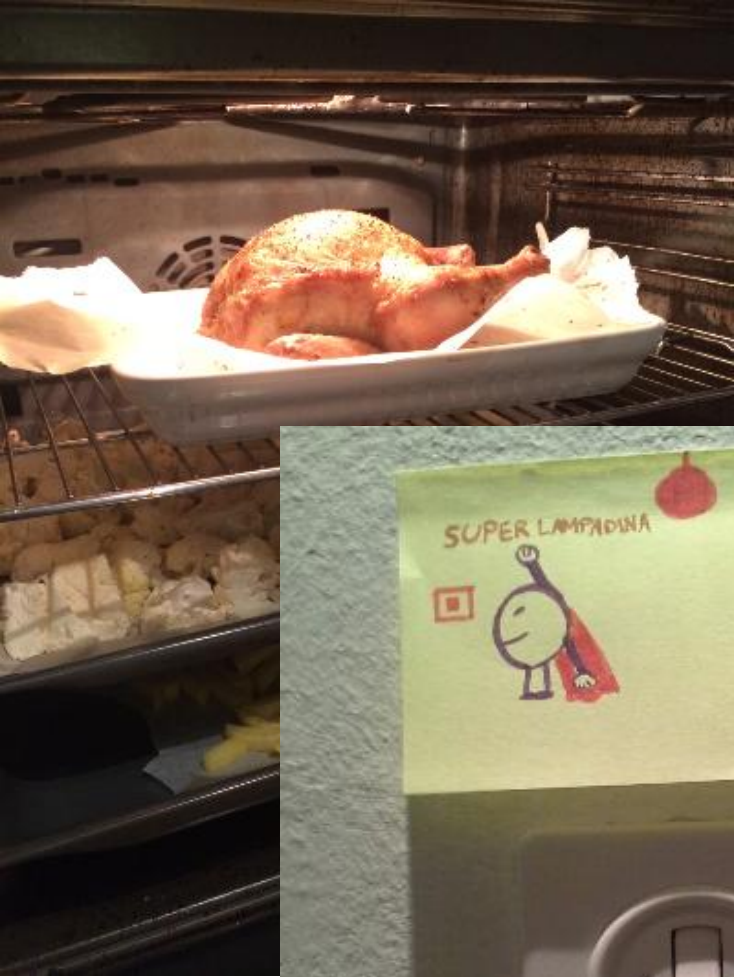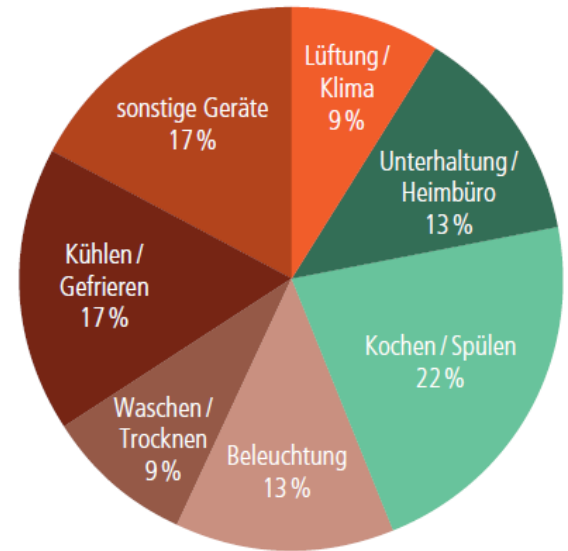
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GOAL

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CHALLENGES

IMPACT

SUPER LAMPADINA

SEI IN
ARRESTO
NON HAI SPENTO
LA LUCE!

POLEZIA

Focus on energy saving in the household

Many activities with big potential

Why only electricity use?

Lüftung / Klima 9 %
Unterhaltung / Heimbüro 13 %
Kochen / Spülen 22 %
Beleuchtung 13 %
Waschen / Trocknen 9 %
Kühlen / Gefrieren 17 %
sonstige Geräte 17 %

- Easy to measure:
  – tracking by smart meters
- Easy to access behaviour:
  – Easier to change vs. nutrition, travelling or mobility
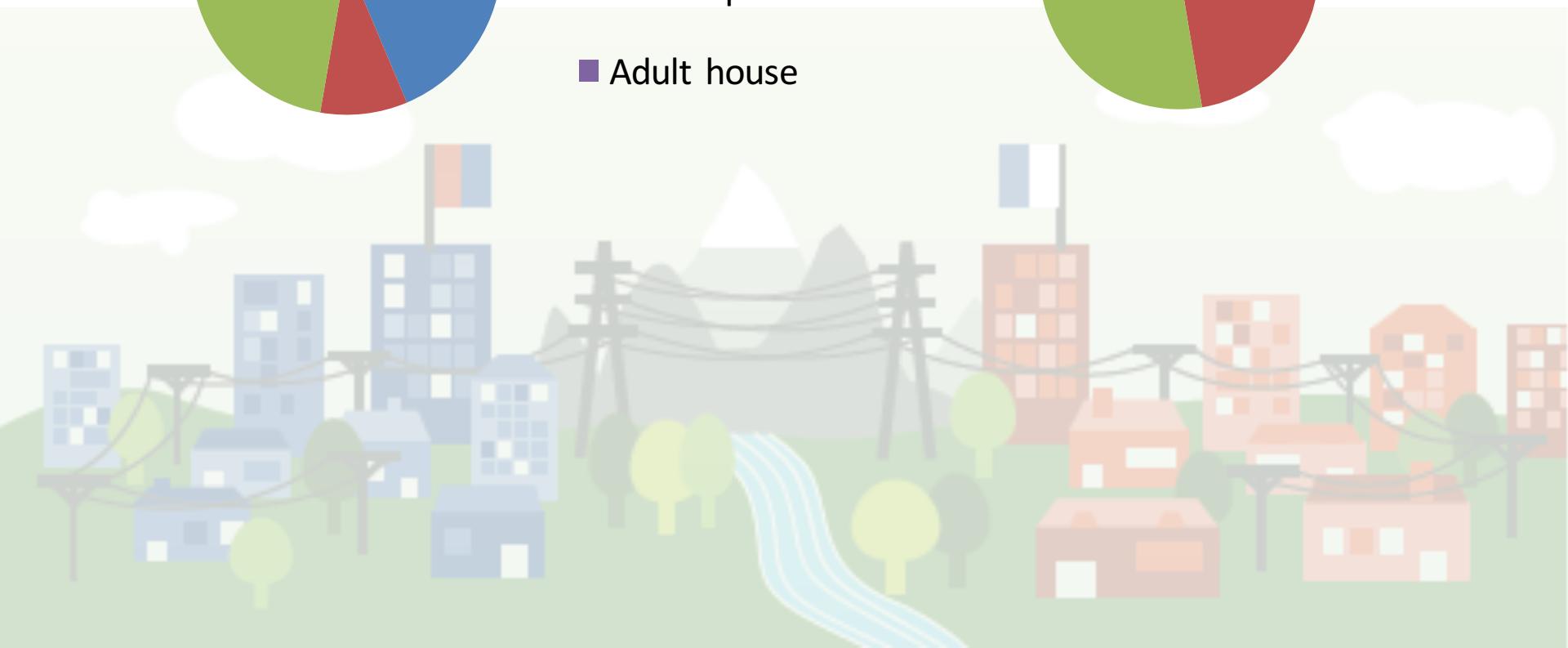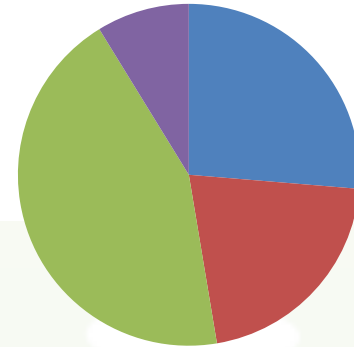 – not too invasive

Set up

Massagno
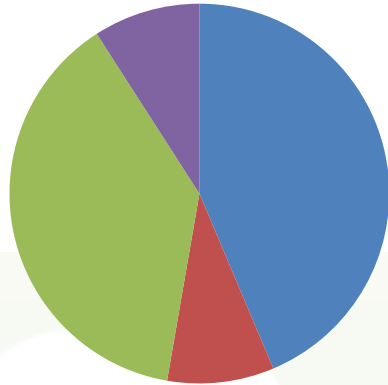
Winterthur

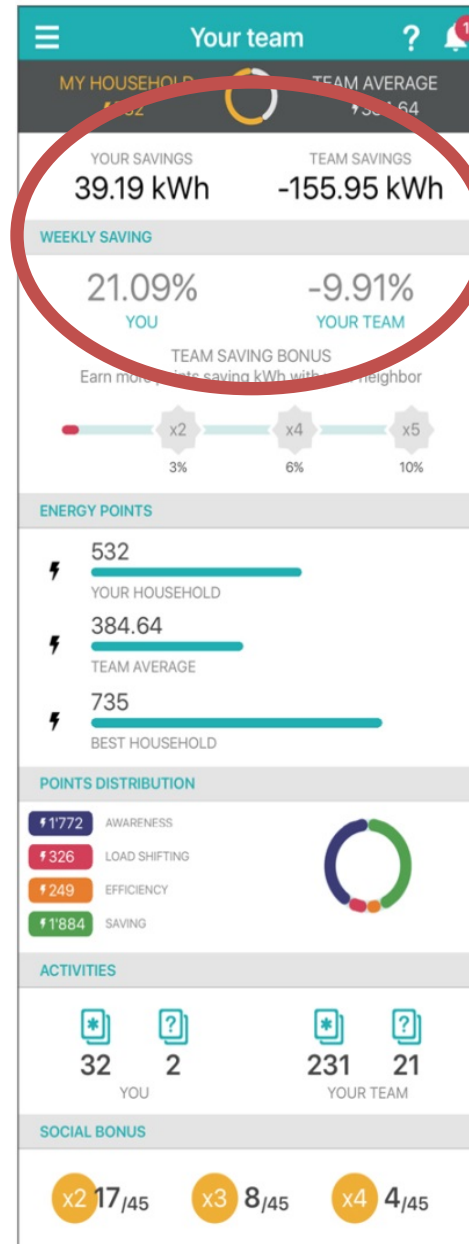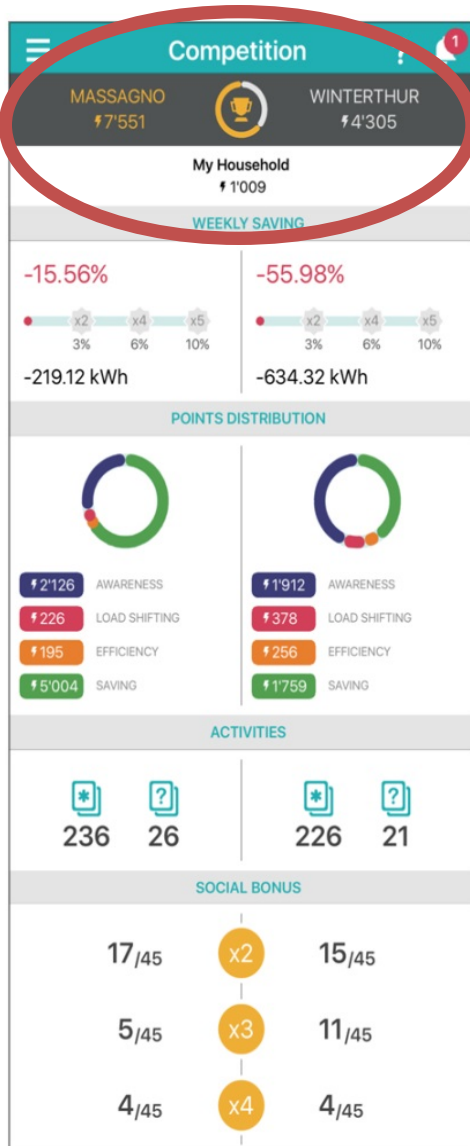- ■ Family apartment
- ■ Family house
- ■ Adult apartment
- ■ Adult house

Competitive vs. Collaborative

Activities completed