Examining community-level collaborative and competitive game mechanics to enhance household electricity-saving behaviour

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## 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 (McCalley & Midden, 2002)
- Interaction (Breukers et al., 2013)
- Social setting (Kurz et al., 2015)

## LIVING LAB







TRACKING PERIOD A

Historical Reference: Average weekly consumption from Oct - Dec 2015





#### TRACKING PERIOD A

Historical Reference: Average weekly consumption from Oct - Dec 2015

#### TRACKING PERIOD B











#### TRACKING PERIOD A

Historical Reference: Average weekly consumption from Oct - Dec 2015

#### TRACKING PERIOD B



Long term consumption: up until May 2017



















•			•	•
●●●●○ Carrier	•	•	●○ Carrier 🗢	12:34 AM
Energy Thys ENERGY CHECK-UP 5 tips	●●●●○ Carrier 令	12:34 AM	emperatura sof	tto controllo
FRIDGE & FREEZER		ENERGY STATS		
WASHING MACHINE & TUMBLER 11 tips			wer the temperatur low 7 ° Celsius. Adji ily by one stage, bec an one stage require side the refrigerator.	e when your refrigerator is usting the controller initially ause it is probably not more ed to change the temperature Wait at least 24 hours. Rad
DISHWASHER 12 tips	HOURLY STATS 16.00 34,8 kWh	11 12 13 14 15 16 17 18 19 20 21 22 23 24	WARDS	e and repeat the steps until it
OVEN 22 tips	15.00      34,8 kWh        14.00      45,8 kWh	•	254 SAVING 1254 LOAD SHIFTING CIAL BONUS	<b>7</b> 953EFFICIENCY <b>7</b> 1004AWARENESS
COOKING 11 tips	13.00 48 kWh 12.00 68 kWh	() () ()	2/61	23 3x 4x THIS ACTIVITY START
	11.00 68,3 kWh 10.00 68 kWh			
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## RESULTS



# Savings (directly after)

### Consumption change

Teams		n	(%)	
Competitive	Massagno	13	13 - 8.5% *	
	Winterthur	11	- 9.0%	
Collaborative	Massagno	10	- 15.0%	
	Winterthur	12	- 2.3%	
Control	Massagno	23	-3.6%	
	Winterthur	23	+ 6.1%	

Publication: Wemyss, D., Castri, R., Cellina, F., De Luca, V., Lobsiger-Kägi, E., & Carabias, V. (2018). **Examining community-level collaborative vs.** competitive approaches to enhance household electricity-saving behavior. *Energy Efficiency*, *11*(8), 2057-2075.

# Savings (1 year later)

### Consumption

	change		
Teams	n	(%)	
Competitive	21	- 5.4%	
Collaborative	21	- 4.7%	
Control	40	- 0.6%	



Publication: Wemyss, D., Cellina, F., Lobsiger-Kägi, E., de Luca, V. & Castri, R. Does it last? Long-term impacts of an app-based behavior change intervention on household electricity savings in Switzerland. *Energy Res. Soc. Sci.* 47, 16–27 (2019).

## IMPACT



## "Hard-to-Reach" Participants

• How to get not just the interested users?

- Can we assume all participants are similar?
  Ask ourselces:
  - What do we want to change?
  - Who do we actually want to reach and why?
  - Use self-selection bias to:
    - Recruit better
    - Compare better
    - Communicate results better

## "Hard-to-hold" participants



## Very different participants



## But if they stay in...







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### **THANK YOU**

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