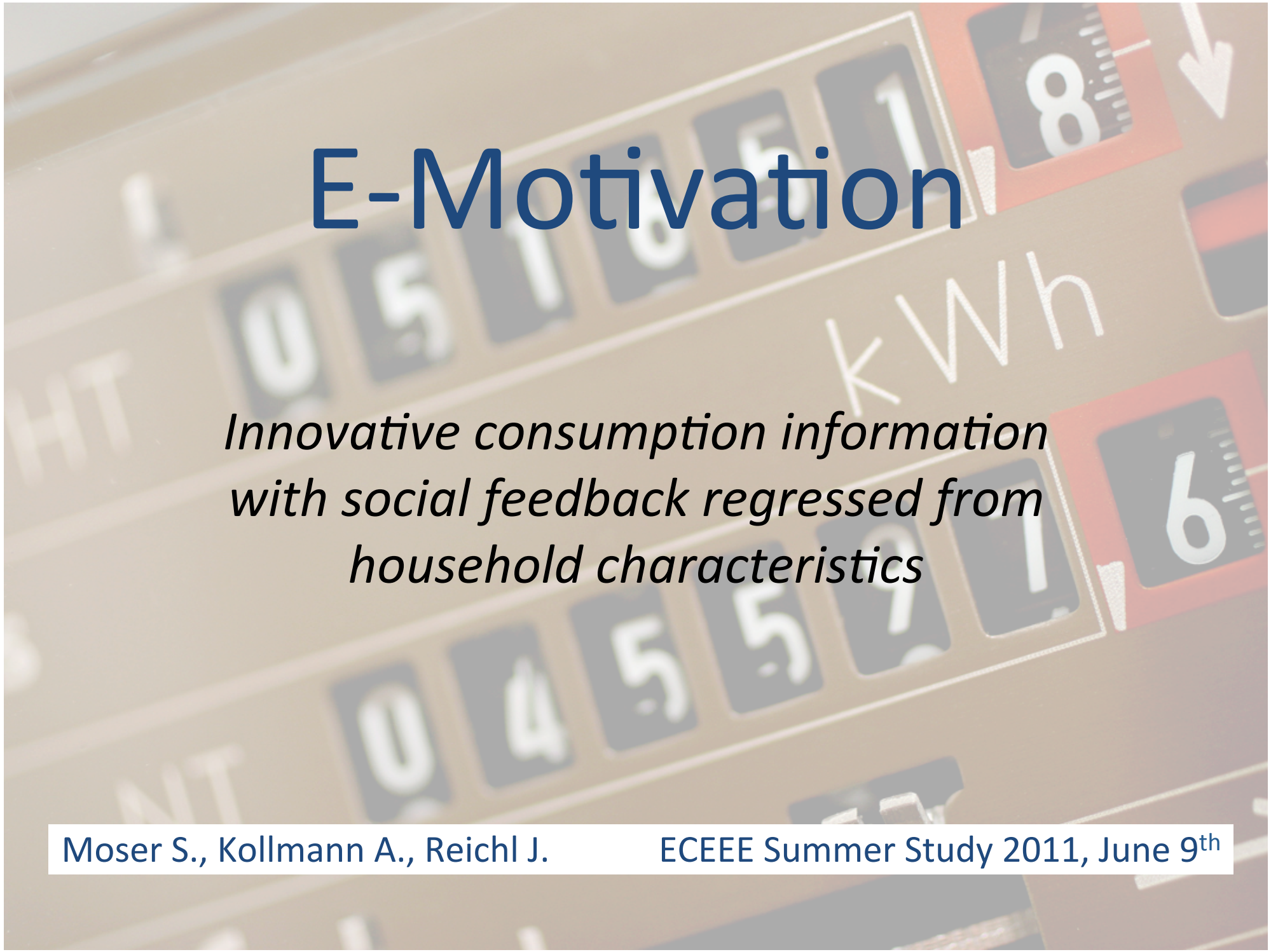


E-Motivation

Innovative consumption information with social feedback regressed from household characteristics

Moser S., Kollmann A., Reichl J.

ECEEE Summer Study 2011, June 9th

Energy Institute
Johannes Kepler University of Linz, Austria



Interdisciplinary approach - scientific analysis in three departments:

Economics:

- Willingness to pay for avoiding blackouts (FP7)
- Smart Cities demonstration projects

Law:

- Smart Grids - adoptions of law necessary in Austria
- Smart Metering and Data Protection

Technology:

- Green Bio Refinery
- Life Cycle Analysis

… and many more projects …

www.energieinstitut-linz.at

www.energyefficiency.at

E-Motivation

- Field test
- Consumption information
- Results questionnaire
- Results consumption data

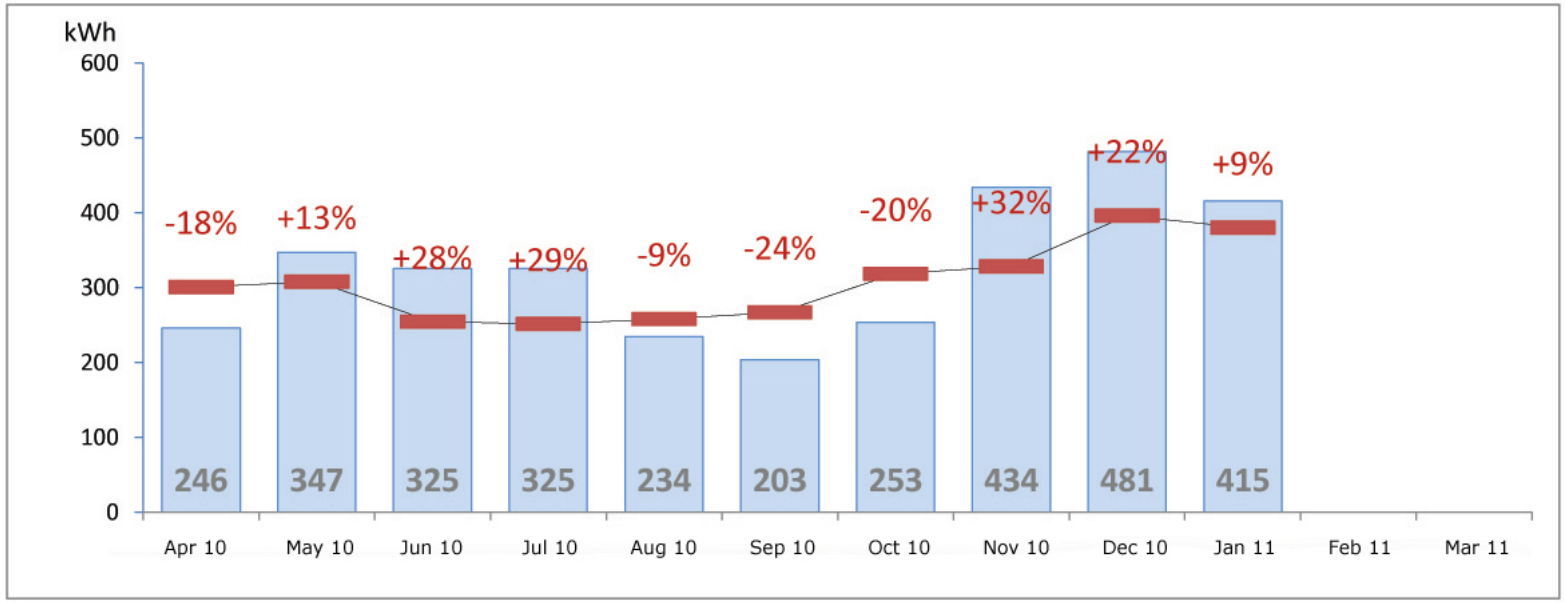
Field test

- Consortium:
  - DNO and supplier (DNOs read the meter in Austria)
  - Energy Institute Linz and EnCT GmbH
- Households need to have a remotely readable meter.
  - 657 households in experimental group
  - 211 households in control group
- Data protection: signature necessary.
  - Chance to collect household-related data:
    - Persons in household
    - Square meters of living space
    - Primary heating system
    - Primary hot water generation system
    - Type of building: 1/2-familiy house, row house, apartment building
    - Size of municipality
    - Unorthodox energy consumers: pool, aquarium, water bed, sauna or infra-red, solarium, home cinema

Consumption information – p.1

Your consumption in January:
415 kWh

Total consumption in the period under observation:
3265 kWh



Your electricity consumption in kWh

% Deviation of your household's electricity consumption compared to the average consumption of similar households also participating in the field test.

Your household's electricity consumption in January is 34 kWh or 9% higher than the average consumption of households with similar size and equipment. With this amount of electricity a refrigerator classified A++ could be operated for three months.

Consumption information

Benchmark: OLS, dependent variable: HH consumption

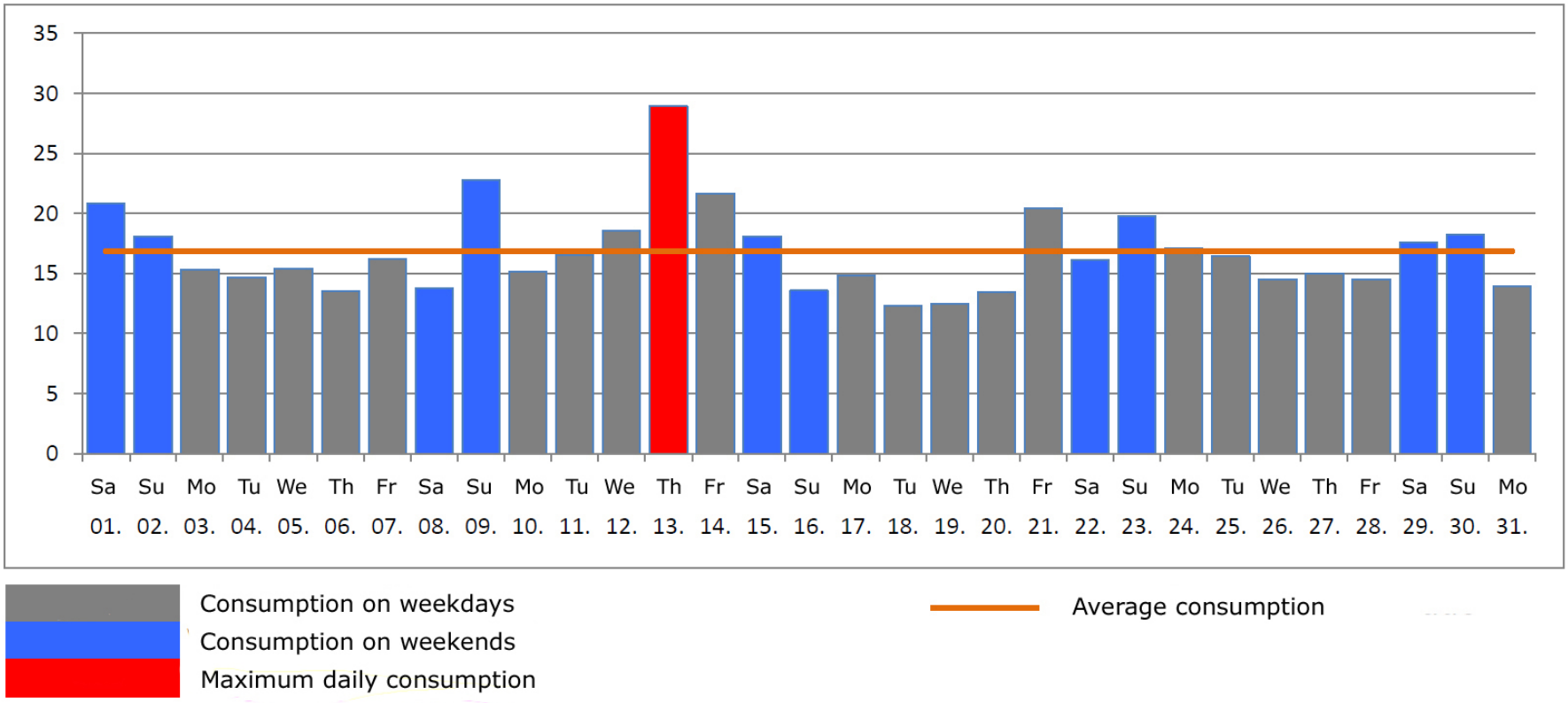
	April	May	June	July	August	September	October	November
Consumption of main meter								
Constant	-32.8	-32.2	-15.7	6.4	4.7	-22.0	-64.9	-81.4
							**	**
Living space in # of m²	1.4	1.4	1.0	0.9	0.9	0.9	1.7	1.9
	**	**	**	**	**	**	**	**
Swimming pool dummy	102.5	150.0	181.6	202.6	192.3	142.4	100.1	92.1
	**	**	**	**	**	**	**	**
Waterbed dummy	60.9	50.6	61.7	57.2	48.8	38.6	13.7	74.2
			**		*			
Home cinema dummy	38.3	35.0	22.6	27.2	32.4	21.5	57.4	-7.8
				*	*			
Size of municipality < 5.000 dummy	21.8	30.6	19.5	14.1	13.6	19.4	20.7	23.4
Persons in household in # of persons	45.7	44.7	46.8	39.5	43.1	54.9	50.9	48.6
	**	**	**	**	**	**	**	**
Electric heating dummy	112.3	63.2	57.2	16.1	14.0	98.7	302.2	422.0
	**	**	**			**	**	**
Electric hot water dummy	44.6	49.3	93.1	78.6	82.7	95.1	122.4	128.3
	**	**	**	**	**	**	**	**
Consumption of second and third meter								
Electric heating x square meters	2.6	1.2	0.4	0.0	0.1	0.7	2.6	3.7
	**	**	**			**	**	**
Electric hot water x persons in household	47.3	44.2	38.7	35.3	36.7	41.9	44.7	39.5
	**	**	**	**	**	**	**	**

Consumption information – p.2

YOUR DAILY ELECTRICITY CONSUMPTION IN JANUARY

Your average consumption per day:

16,86 kWh



Results - questionnaire

Questionnaire was sent out with 11th consumption information

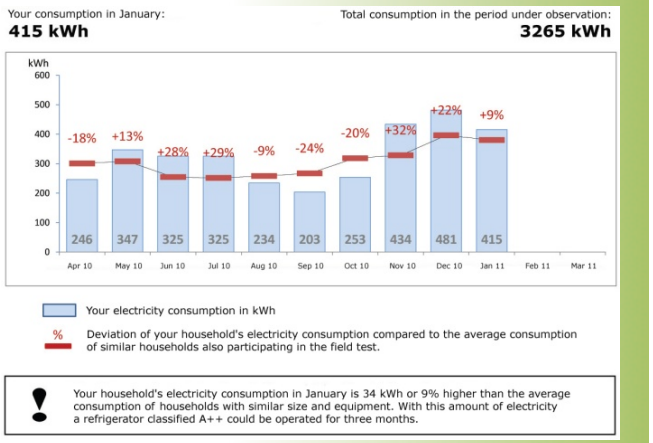
→ 269 responses

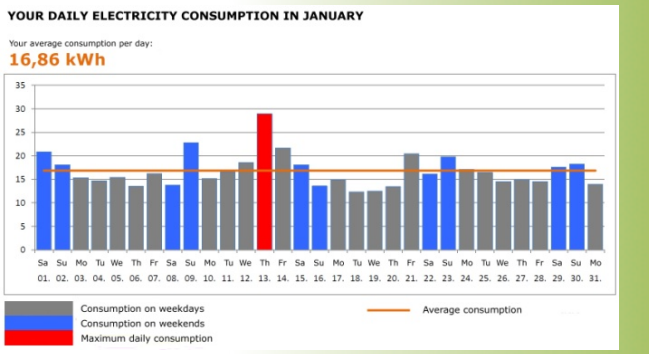
Which items did you find particularly interesting?

- Comparison to recent months 67%
- Highest daily consumption 63%
- Daily consumption values 58%
- Comparison to other HH 38%
- Illustration with a fridge‘s consumption 17%

Did you ask yourself …?

- What happened the day with the highest consumption? 65%
- Why did I consume more/less than the month before? 34%
- Why did I consume more/less than a similar HH? 27%
- What happened the day with the lowest consumption? 26%





Results - questionnaire

Accordance with:

- „Consumption information is highly informative.“ 72%
- „I used the info intensively“ or „occasionally“. 97%

Willingness to pay:

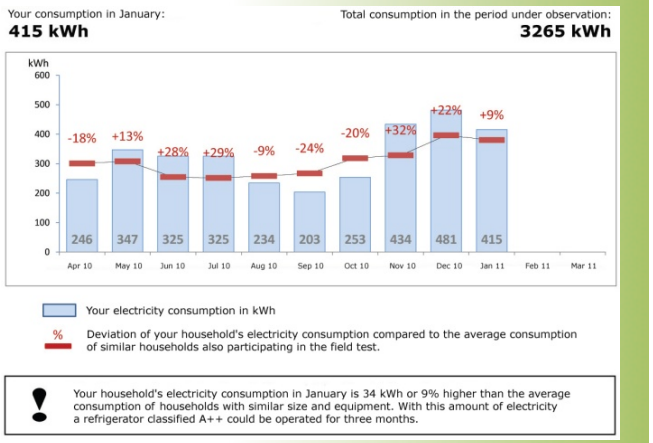
- 25% would pay 2 Euro per month on average – after the 11th info!

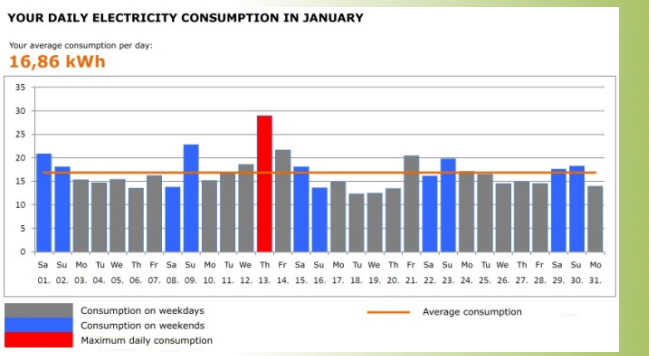
Layout:

- 97% agree or show a tendency to agree that the info is not too short/long, easily comprehensible and has a good layout.
- *Cumulated* 13% claim more explanations or changes in colour and length.

Postal information:

- 20% of the respondents would prefer other media, especially via E-Mail (13%). The rest prefers online information, SMS, mobile apps or home displays.





Summary

- The consumption information developed is accepted by and interesting to the participants.
- Postal information is the media preferred.
- Layout and content is generally supported.
- Consumers would pay for this information.

- Problem: Energy suppliers / DSO need information going beyond the meter (→ household data) to provide social feedback

- Significancy of energy savings: not ascertained yet.

Contact

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