

Energy Consumption in Buildings

Experience from use of national database of energy consumption in buildings

by

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Energy Consumption in Buildings – the project

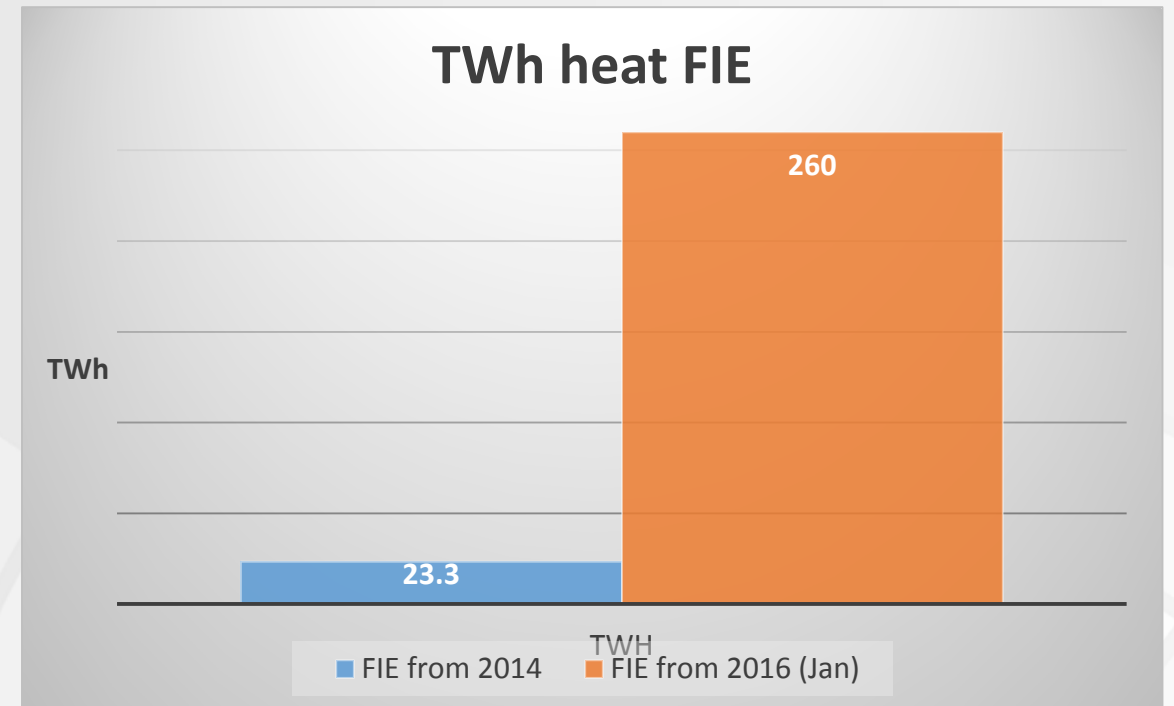
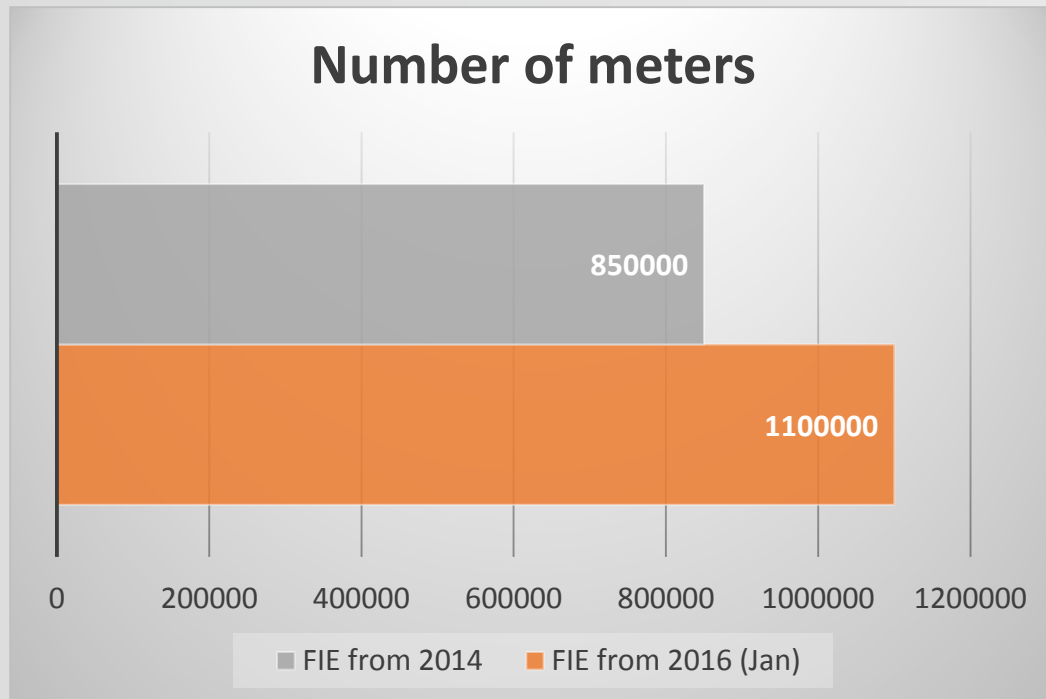
- R & D project funded by the F & U at DDHA
- Project partners:
 - Grøn Energi
 - Aalborg University
 - 10 members of DDHA
- Purpose: To analyze and map future conversion to DH
- Project period: Ultimo 2014 – ultimo 2016

Data

- Collected from the utility companies since 2010
- Mandatory since 2012
- Entered in BBR by SKAT (before MBBL)

Data

- 2 deliveries of data in the project period
 - 2 types of data



Date examples - Egtved

- Egtved School

Example 1	DFF-EDB_2013	DFF-EDB_2014	FIE 2013	FIE 2014	Heat Atlas
Number of meters	3	3	3	3	7
BBR	-	-	410, 420, 530	410, 420, 530	410, 420, 420, 420, 420, 420, 530
Consumption, MWh	607,3	649	4042,8	5836,3	734

- Overgårdsvej 80

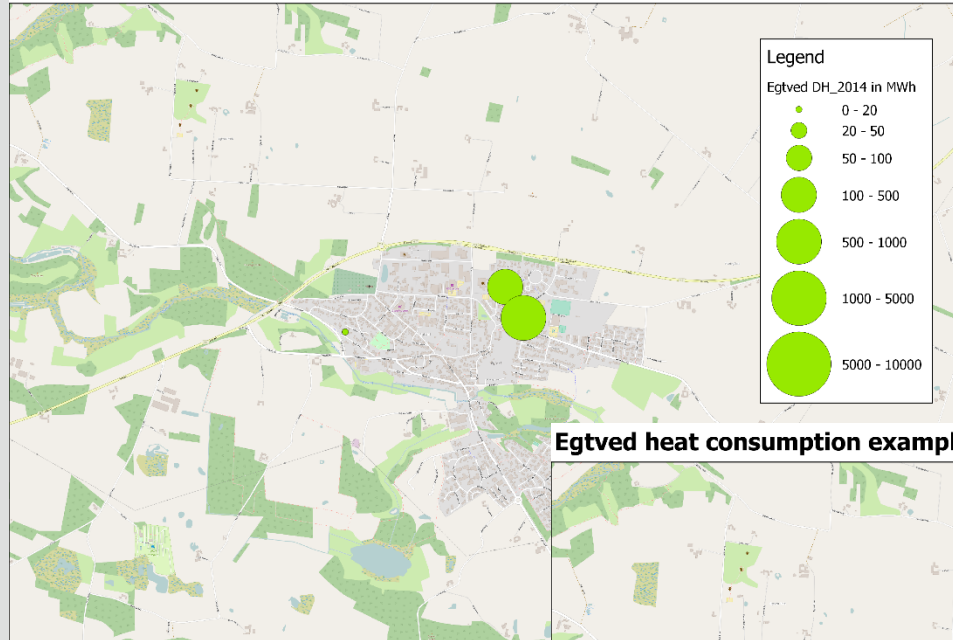
Example 2	DFF-EDB_2013	DFF-EDB_2014	FIE 2013	FIE 2014	Heat Atlas
Number of meters	20	20	2	2	5
BBR	-	-	130, 440	130, 440	130, 440, 440, 440, 440
Consumption, MWh	143,2	142,6	738,7	1070,5	24

- Bakkevej 1

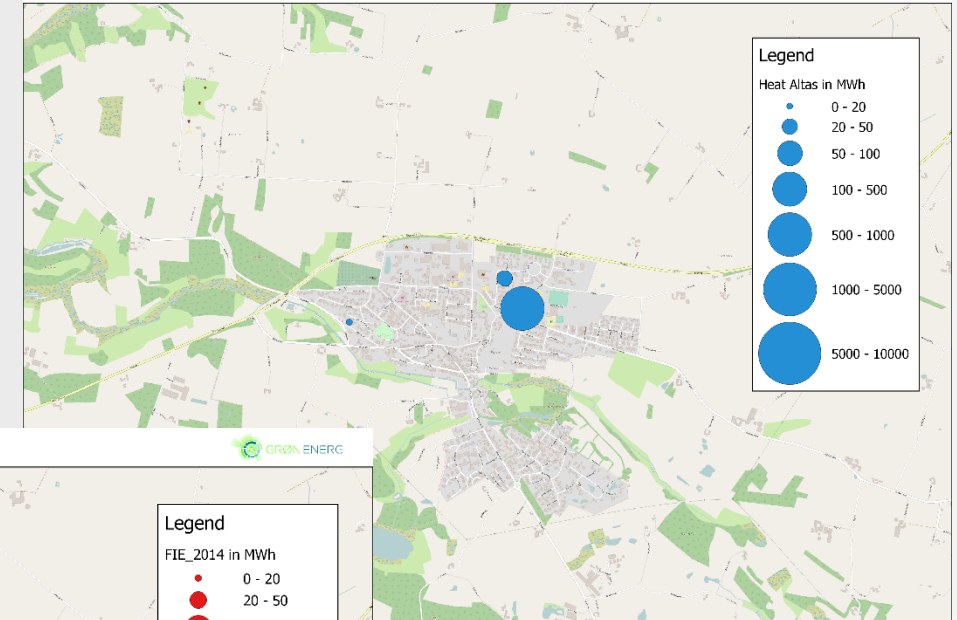
Example 3	DFF-EDB_2013	DFF-EDB_2014	FIE 2013	FIE 2014	Heat Atlas
Number of meters	1	1	2	2	2
BBR	-	-	120, 120	120, 120	120, 120
Consumption, MWh	17,8	16,5	19,2 (DH), 15 (natg)	26 (DH), 4,9 (natg)	17 (DH)

Data examples - Egtved

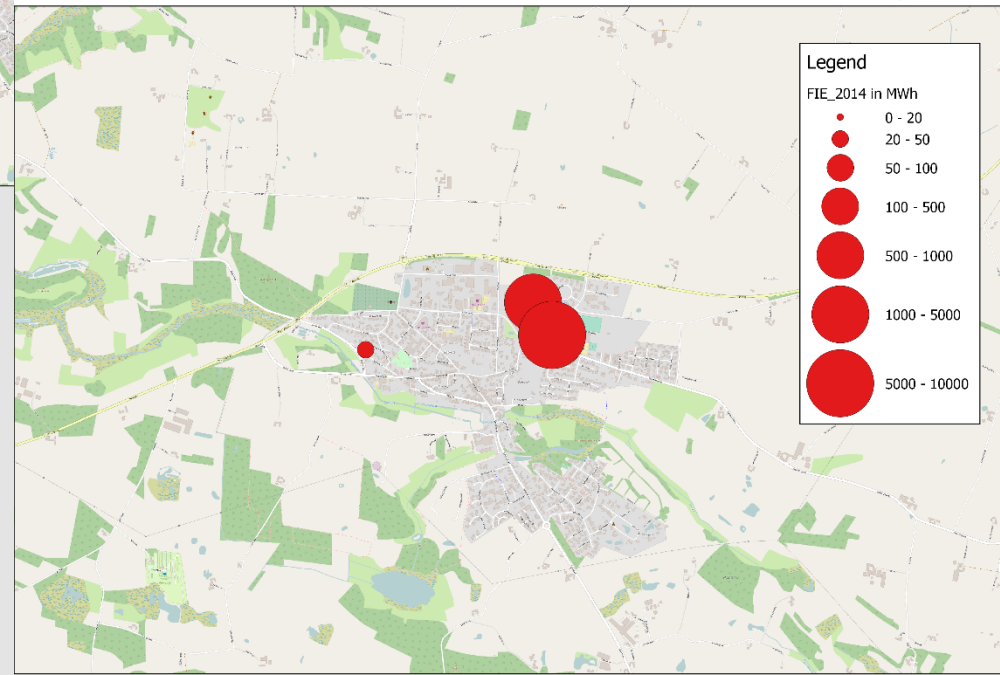
Egtved heat consumption examples



Egtved heat consumption examples

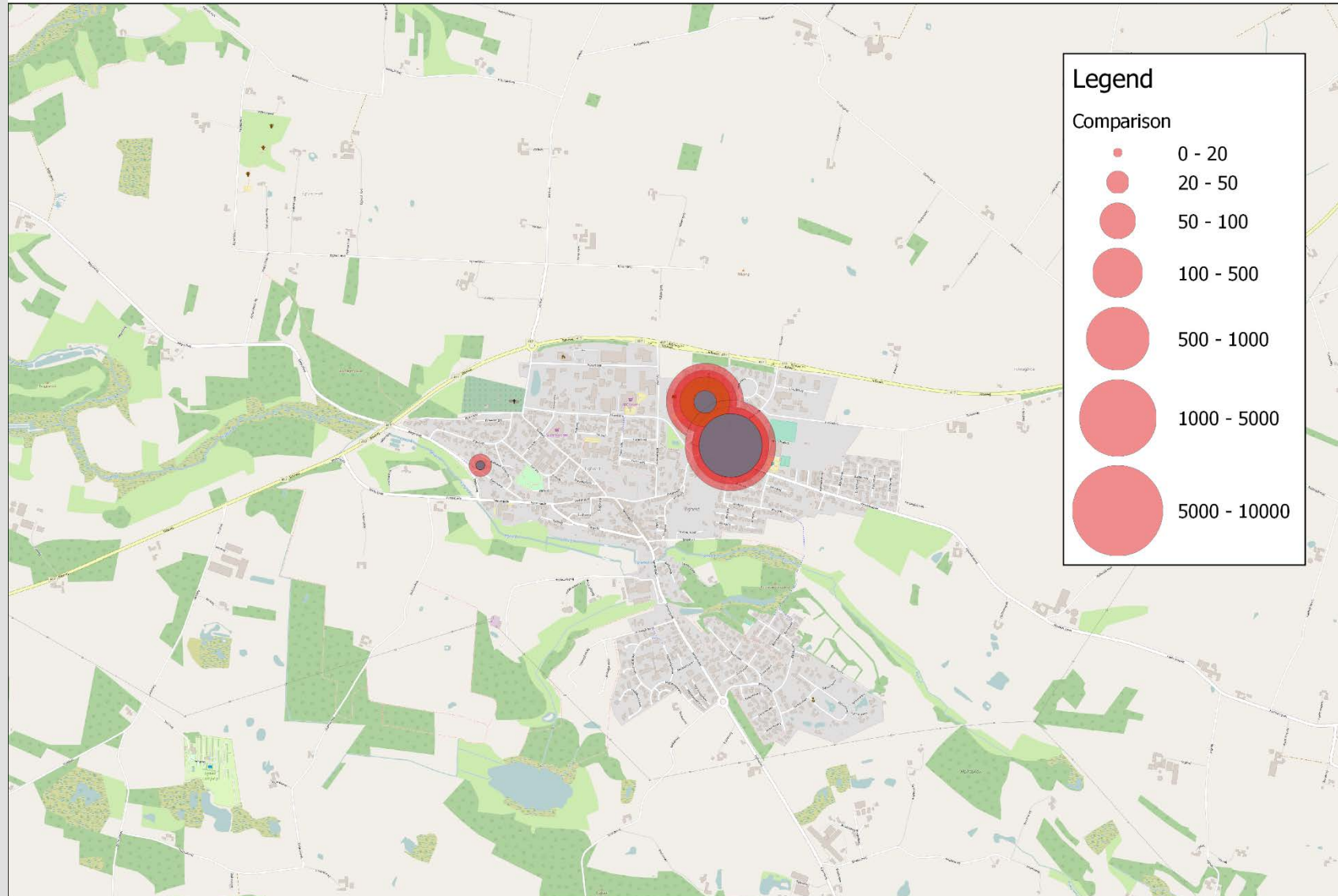


Egtved heat consumption examples



Data examples - Egtved

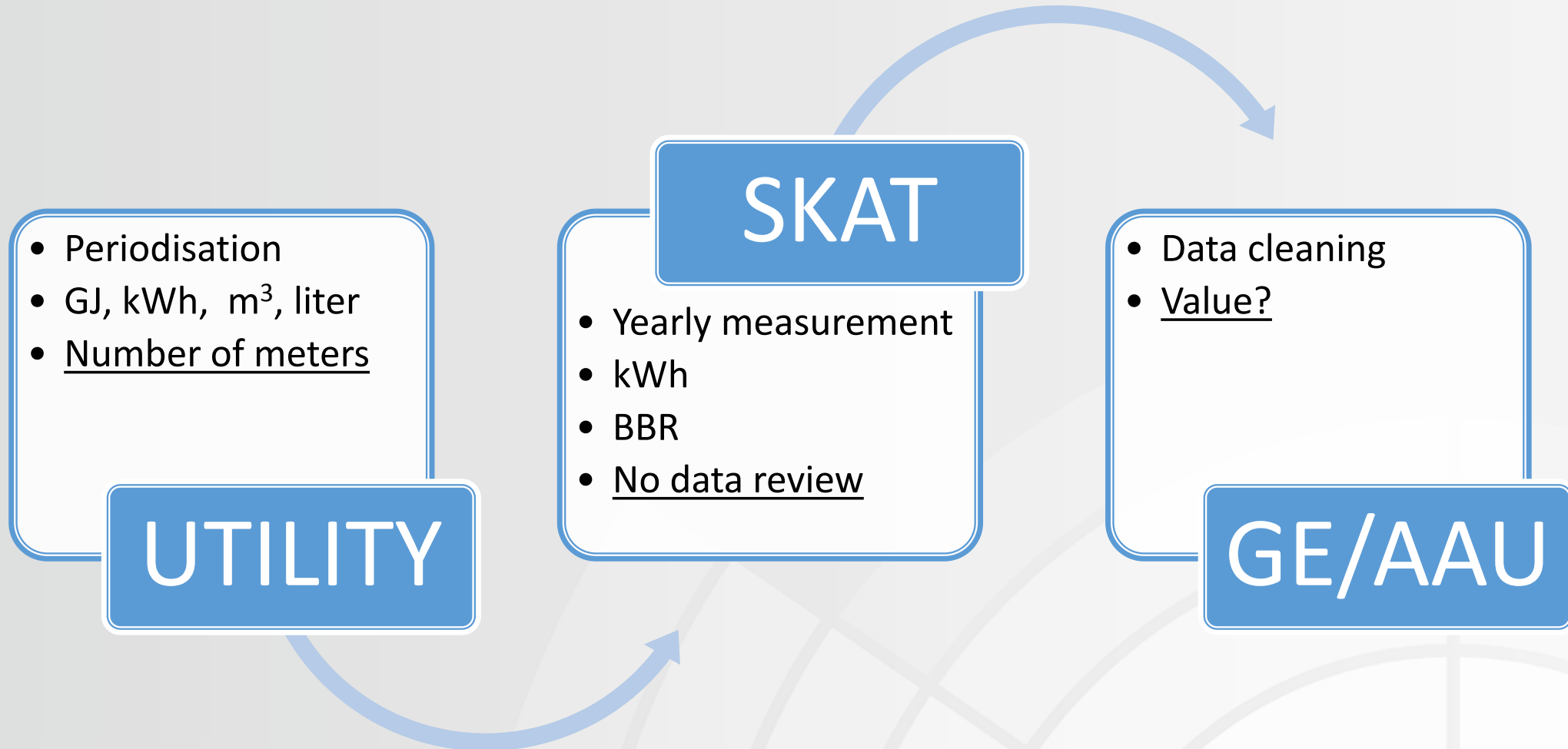
Egtved heat consumption examples



What can go wrong



What can go wrong



What can go wrong - example

- Farmhouse + 3 livestock buildings



- 1 meter, heat demand of 100 MWh/y measured.
- At SKAT this will transform into:
 - 100 MWh/y;
 - 400 MWh/y; or
 - 1600 MWh/y.

Data clean up - AAU

- 8 steps to reduce mistakes

Step	2011	2012	2013	2014
1	1,182,894	1,165,145	1,140,116	911,191
2	1,045,884	1,030,759	1,022,203	839,531
3	1,182,894	1,165,145	1,140,116	911,191
4	1,023,687	1,009,086	1,009,789	842,186
5	1,009,692	995,335	997,209	833,503
6	942,402	937,545	934,772	774,224
7	935,580	930,896	929,013	770,695
8	916,451	911,949	910,024	752,644

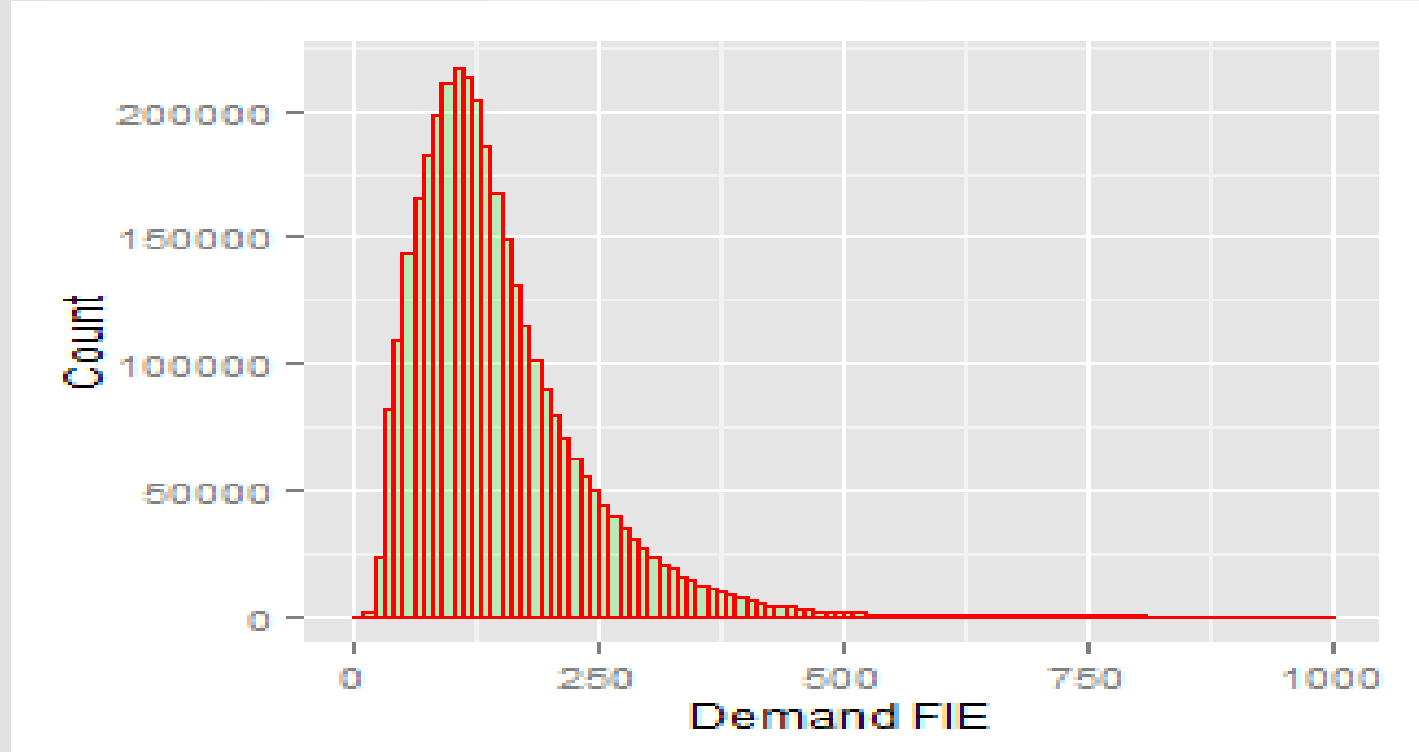
Data clean up - AAU

- Comparison of Heat Atlas and FIE-data

Building Category	Heat Atlas		Measured	
	Number	Demand [GWh]	Number	Demand [GWh]
Farmhouse	118,147	2,666	32,186	750
Single-family	1,133,608	20,170	810,274	13,756
Terrace-house	257,189	3,972	122,571	1,602
Multi-storey	93,465	10,375	51,242	4,295
Other residential	12,978	1,096	1,962	319
Commercial and Trade	690,455	17,225	40,519	4,558
Other buildings	336,968	8,989	18,388	1,780
Sum	2,642,810	64,493	1,077,142	27,060

Data clean up - AAU

- Histogram with single-family houses and their heat demand in kWh/m²



Website

- A tool for DH companies for better planning when expanding existing supply area or finding new areas.
- Energymaps.eu

Where is the value?

- Due to lack of “good” data from SKAT → No value
- Other examples of FIE-data usage:
 - [Parcelhusatlas](#) based on parish
 - [Sparenergi.dk](#) CO₂-accounting

Thank you for your attention

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