

Evaluating Savings from Boiler Replacement

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Outline

1. Fuel & Cost Savings from Boiler Replacement
2. Consumer Advice as Data Source
(incl. Online Advice Tools & interactive Energy Savings Account (iESA))
3. Impact of Boiler Replacement on Heating Fuel Consumption
 - 2.000+ boiler replacements
 - 80 cases with 3 years fuel consumption data: before / replacement / after
 - wide range of savings results from success to failure
 - average savings close to zero ROI
4. Summary & Outlook

1. Fuel & Cost Savings from Boiler Replacement

- How much fuel & cost will I save if I replace my boiler now?
- How much did others save?
- How does that apply to my home?

2. Consumer Advice as Data Source

co2online gGmbH (non-profit), **Berlin, Germany**

www.co2online.com, www.co2online.de

Staff	30
Online Energy Savings Advice Tools	16
Available on outside websites	900+
Completed Advice Sessions per year	1,000,000+

(Project funding from federal government, EU, industry)

2. Consumer Advice as Data Source

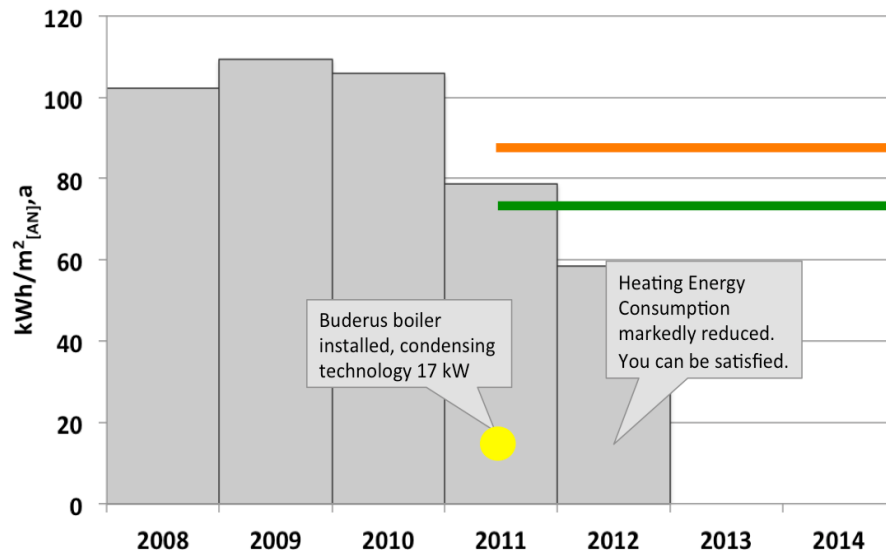
Interactive Energy Savings Account (iESA)

- stores consumption of electricity, heating fuel, water, car fuel
- Most data & events entered by hand by consumers
- connects to numerous advice tools,
- heating fuel consumption normalized by heating degree days

Registered users (most in Germany) 78,000
used in EU projects like ECCC, EECC, Enerplace etc.
in Ireland, UK, Latvia, Denmark, Malta, Greece,
Spain, Austria, Italy – and Germany

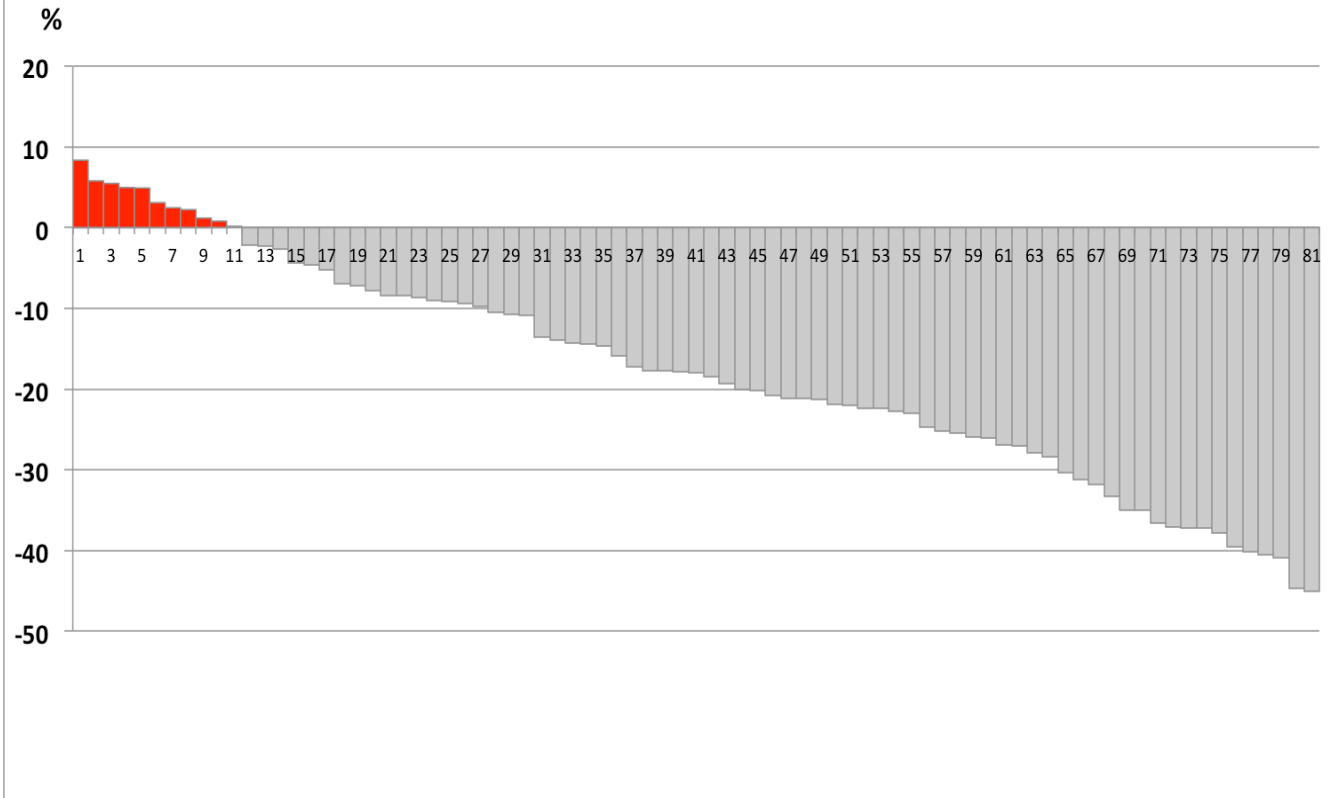
[Sample Account](#): Name = 411a-a5e4, password = 411a-a5e4

Boiler Replacement: Heating Energy Consumption 2008-2012
in kWh/m²_[AN]y, climate adjusted, User ID 23732

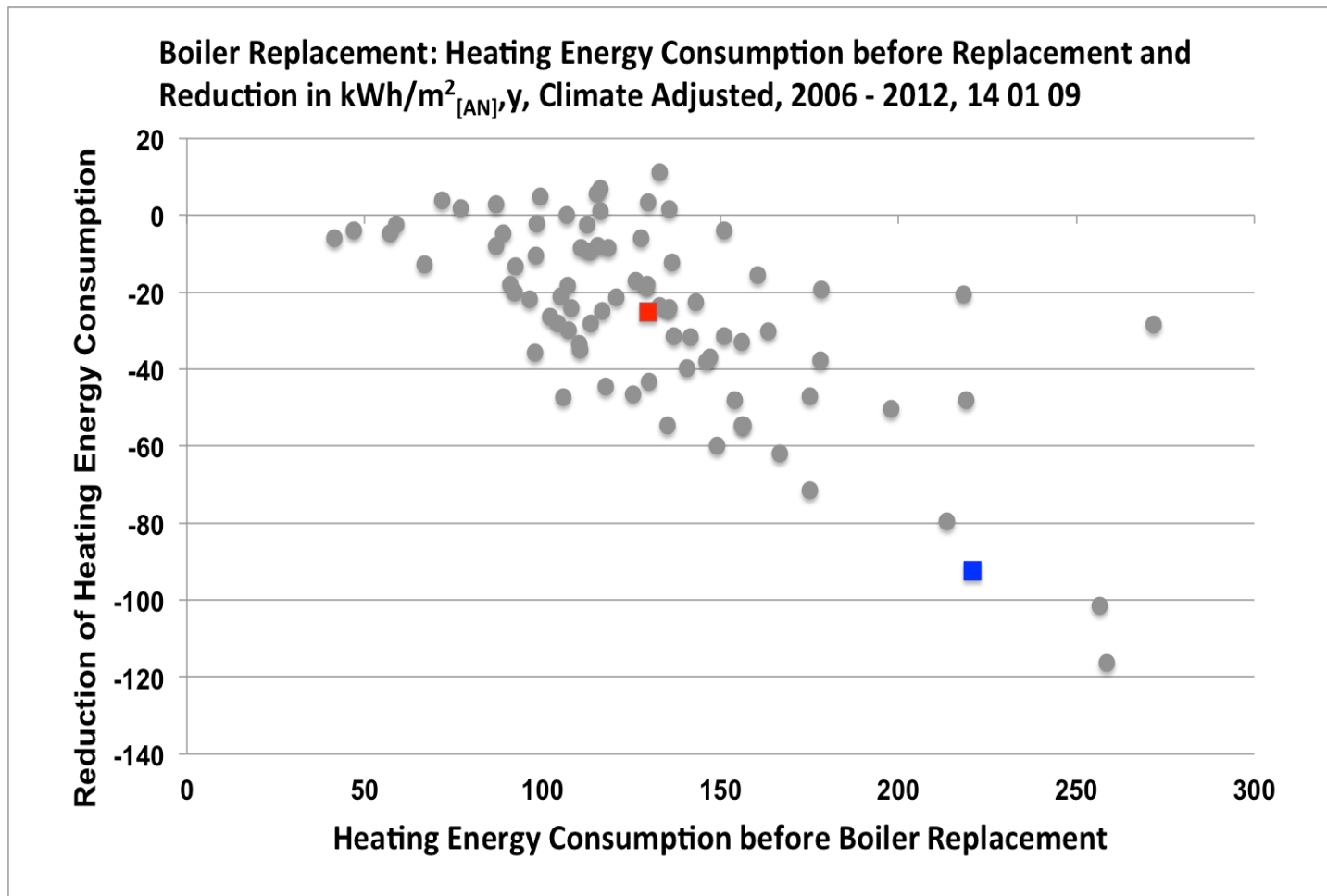


Any consumption after replacement below the green bar is “best practice” compared to the sample, while between orange and green re-checking is justified – and above orange strongly recommended (from iESA user account)

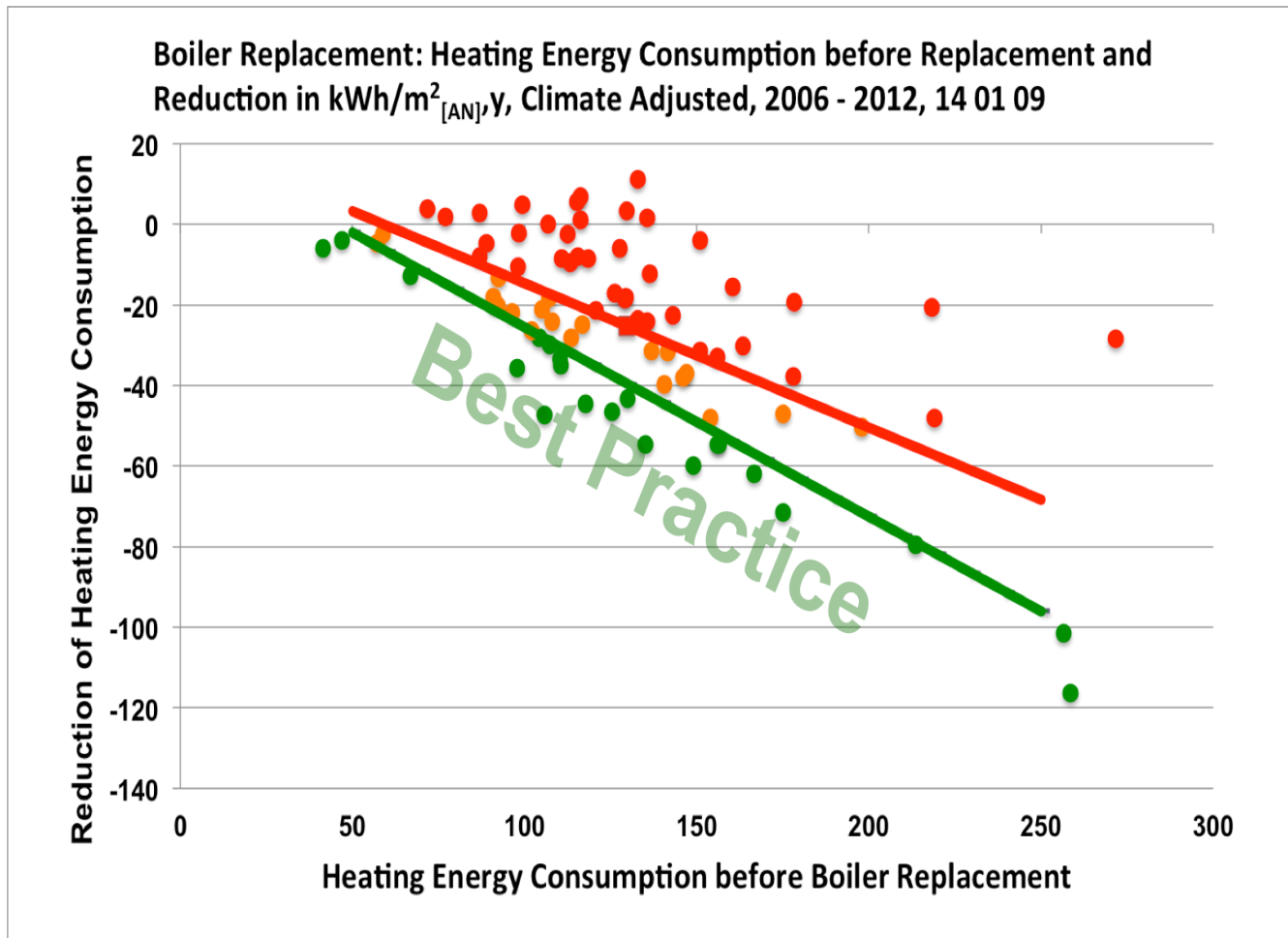
Boiler Replacement: Percentage of Heating Energy Consumption Reduction after Boiler Replacement, Climate Adjusted, 2006 - 2012, 14 01 09



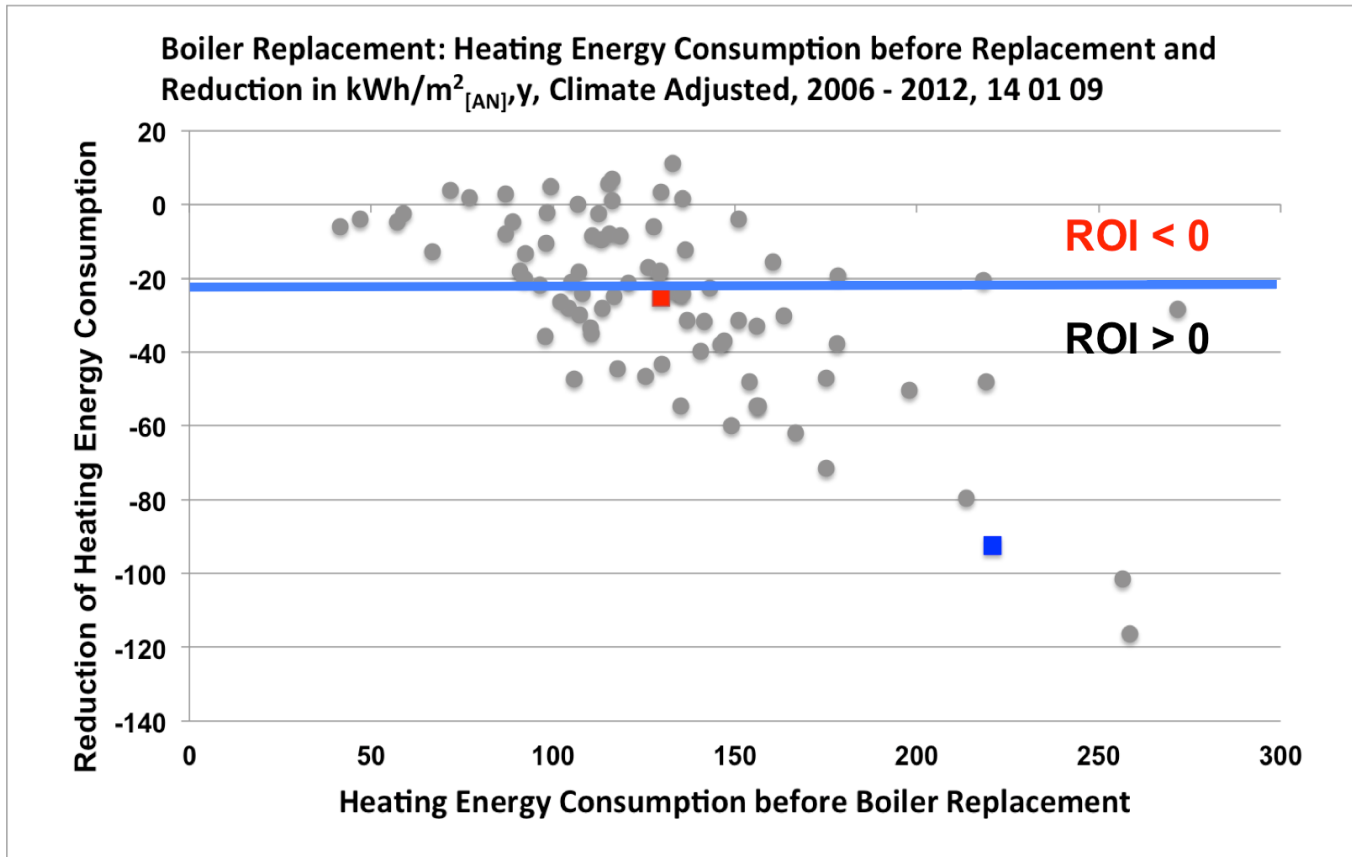
Percentage Change of Heating Energy Consumption after Boiler Replacement



Red dot marks sample average, blue dot marks the average reduction claimed by the boiler manufacturers association (BDH) from the German average heating fuel consumption before boiler replacement



Scatter Cloud of Heating Energy Consumption before Boiler Replacement and the Reduction after Replacement – divided into three parts: Winners & Mainstream & Losers



Assuming a) initial heating energy price 0.08 €/kWh; b) annual fuel price increase 5%; c) specific investment costs of 45 €/m², a zero return on investment (ROI) requires heating energy savings of about 22 kWh/m²_[AN]y, just a few kWh below the average 25 kWh/m²_[AN]y (median is 18 kWh).

8. Summary & Outlook

a) Summary

- Early replacement of boilers may or may not be economical.
- Economic success of boiler replacement depends on:
 - efficiency of the old boiler (if still good, not much to be gained)
 - quality of planning, especially sizing
 - quality of installation, including hydraulic balancing
- Giving energy savings advice is an alternative way for data acquisition
- Installing a heat meter first insures against too early replacement
- Better quality more cost-effective than higher replacement rate

























b) Outlook

- Validation of results by on-site inspections is under way, ready in 2015.
- Heating Energy Monitor (www.HEMON.de) for immediate evaluation

3. The online Energy Savings Advisers

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 HeizCheck	 HitzeCheck	 KonsumCheck	 KühlCheck	 Modernisierungs Check	 ÖkostromCheck	 Rat und Tat
 StandbyCheck	 StromCheck	 ThermostatCheck	 VerkehrsmittelCheck	 WasserCheck	 HeizanlagenCheck	 NeubauCheck
 PumpenCheck	 SolardachCheck	 WärmeCheck				

16 online advisers: If you select the role „tenant“ (Mieter), those not applicable to you will fade out. This toolbox is accessible on 900+ websites, most in Germany

www.klima-sucht-schutz.de/energiesparen/energiespar-ratgeber.html