Energy Audit Impacts

Delivering Sustained Savings

ECEEE Industrial Summer Study

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Energy Audits in US EE Programs

- **35 years ago :** ***Efficiency as an objective***
  - Stop wasting energy
  - Educate and inform
  - Energy audit a "free" educational tool

- **25 years ago :** ***Efficiency as a resource***
  - KW and KWh impact
  - ESCOs & Utilities make a profit on efficiency
  - Energy audit is part of the process

Energy Audits in US EE Programs

- **15 years ago : *Efficiency as a public good***
  - System Benefit Charges, Efficiency Trusts
  - "Prescriptive" measures and deemed savings
  - Audits are a targeted offering

- **Today : *Efficiency as a part of sustainability***
  - Market transformation, GHG reduction
  - Net zero, deep retrofit, whole building
  - Audits… a strategic planning tool?

THE BAD IMAGE OF ENERGY AUDITS

Measure Implementation

*"Nevertheless, the **implementation** rate for energy saving programs **based on** energy **audits** remains **discouragingly low**.*

*While the **very best** programs **may achieve 50%** implementation, rates in the **20%–30%** range are **more typical**." **

**Promotional material for AEE-sponsored seminar at aeeprograms.com/realtime/EABP/.*

US Data Support This View

Audit Program Type		Measure Adoption Rate
Small business	WI	12% to 39%
Nonresidential	CA	14% to 30%
Small business	CO	15%
Large commercial and industrial	NH	25% through programs 40% overall estimated
Agricultural energy management	CA	±30% approximate
Industrial steam traps	ON	42%
Small-medium industrial		53%

Sources cited in paper.

WHAT WE FOUND

Energy audit program evaluation:

- Audit measure adoption rates > 60%
- Audit utilized 6 years after completion

PROGRAM PROFILE

The program: NYSERDA FlexTech

Funding: Cost shared, typically 50/50

Recipients: Large commercial and industrial

Scope: Fuel-blind. Generation is eligible.

Providers: List of approved audit firms

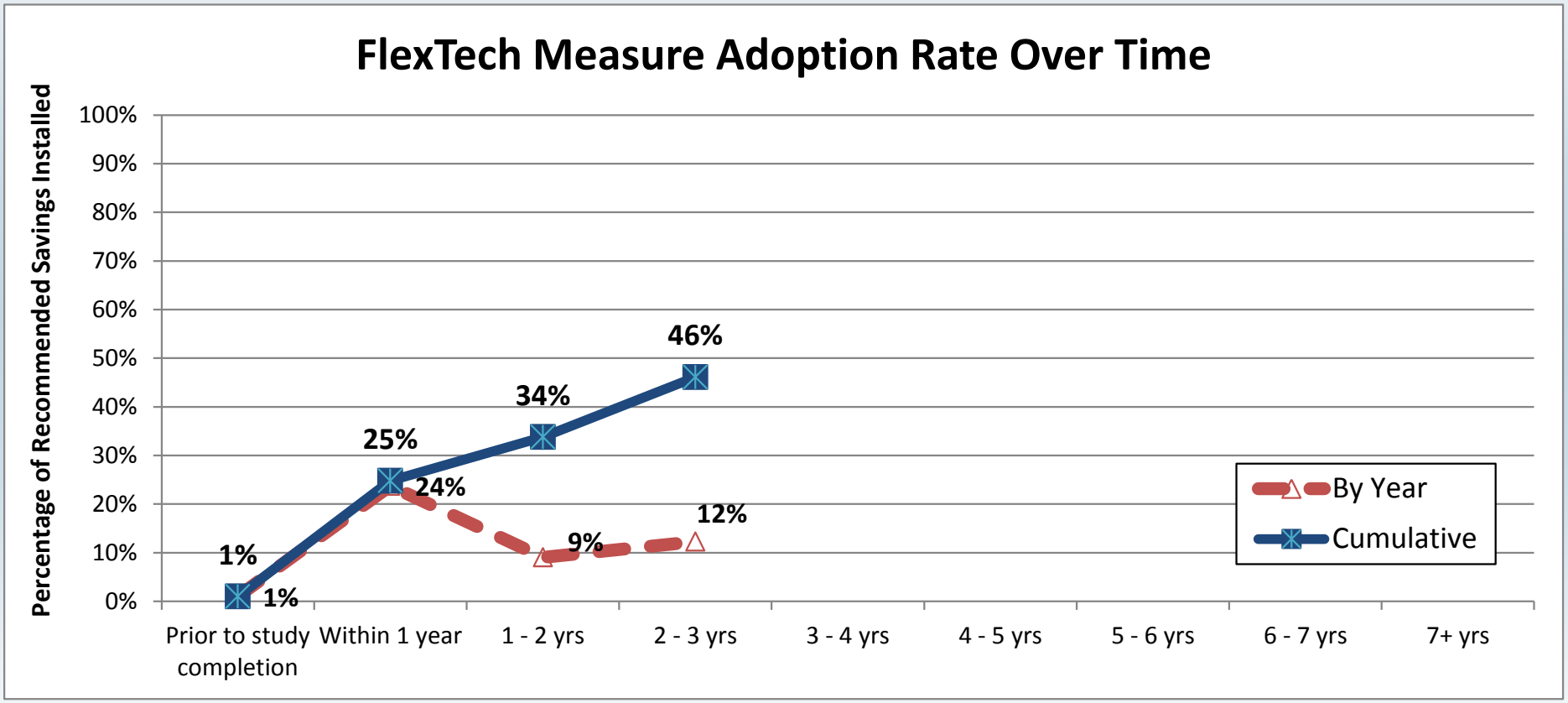
Volume: Typically 100 studies per year

Evaluation Approach

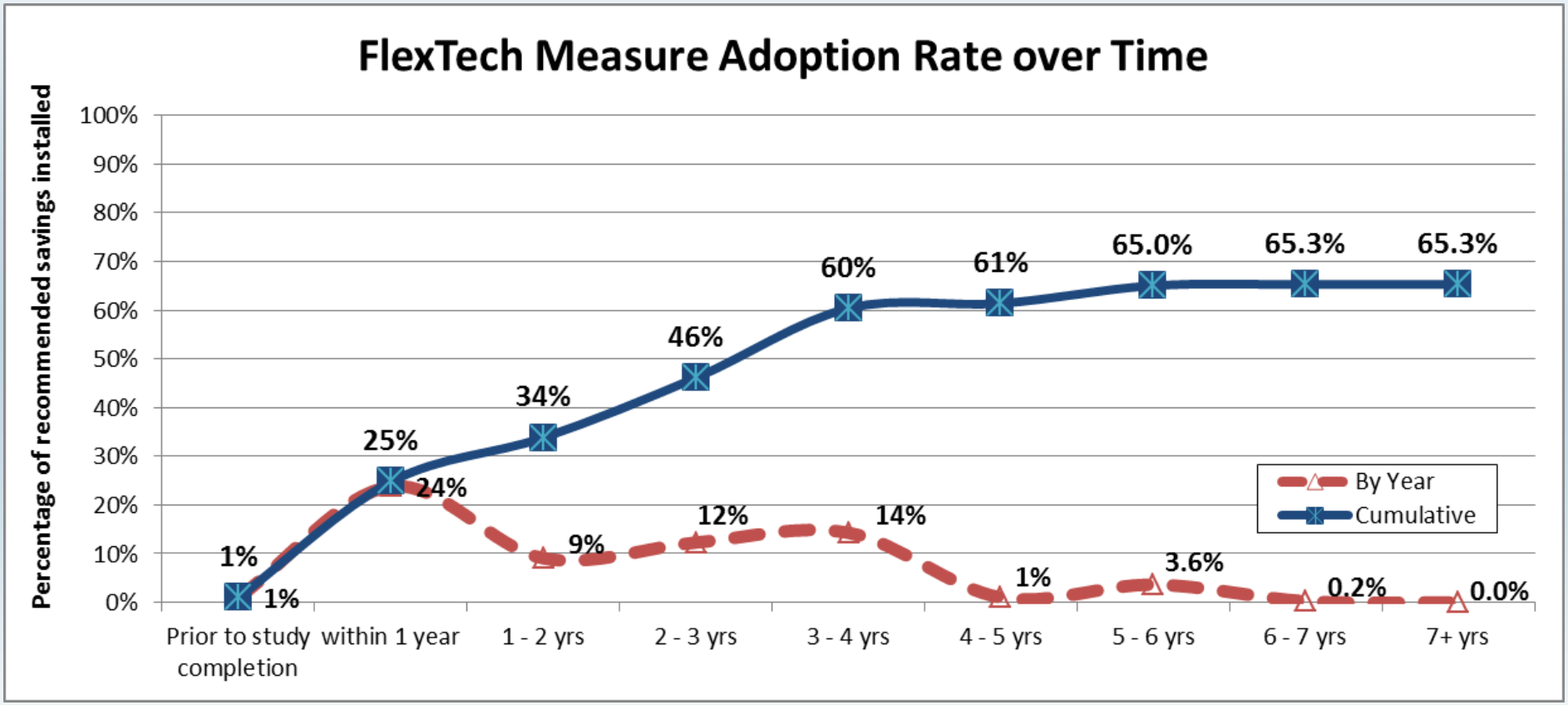
- 2010 Measure Adoption Rate (MAR) Survey
  - For 2003 – 2009 program period
  - Telephone survey
  - 432 eligible population, 411 attempted, 303 completed, 2,452 unique measure outcomes
  - Design stratified by size, completion year
  - Engineers conducted interviews
  - Site visits to adjust for response error
  - Analysis by study age, measure fuel source, region
  - Repeated one year later for unresolved measures

OVERALL MAR

FIRST THREE YEARS



OVERALL MAR


FlexTech Measure Adoption Rate over Time
Percentage of recommended savings installed
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1%
25%
34%
46%
60%
61%
65.0%
65.3%
65.3%
1%
24%
9%
12%
14%
1%
3.6%
0.2%
0.0%
By Year
Cumulative
Prior to study completion
within 1 year
1 - 2 yrs
2 - 3 yrs
3 - 4 yrs
4 - 5 yrs
5 - 6 yrs
6 - 7 yrs
7+ yrs

WHY THE DIFFERENCE?

- Evaluation method?
- Program design?
- What about points on a curve?

Points on a Curve?

- Not aware of other MAR studies in the US that cover such a long span (8 years), BUT
- The MAR we found at 2 – 3 years is in the same range as that found elsewhere in the US.
- The highest MAR from other US studies (53%) indicates that some of the audits were > 6 years old.
- What about elsewhere?

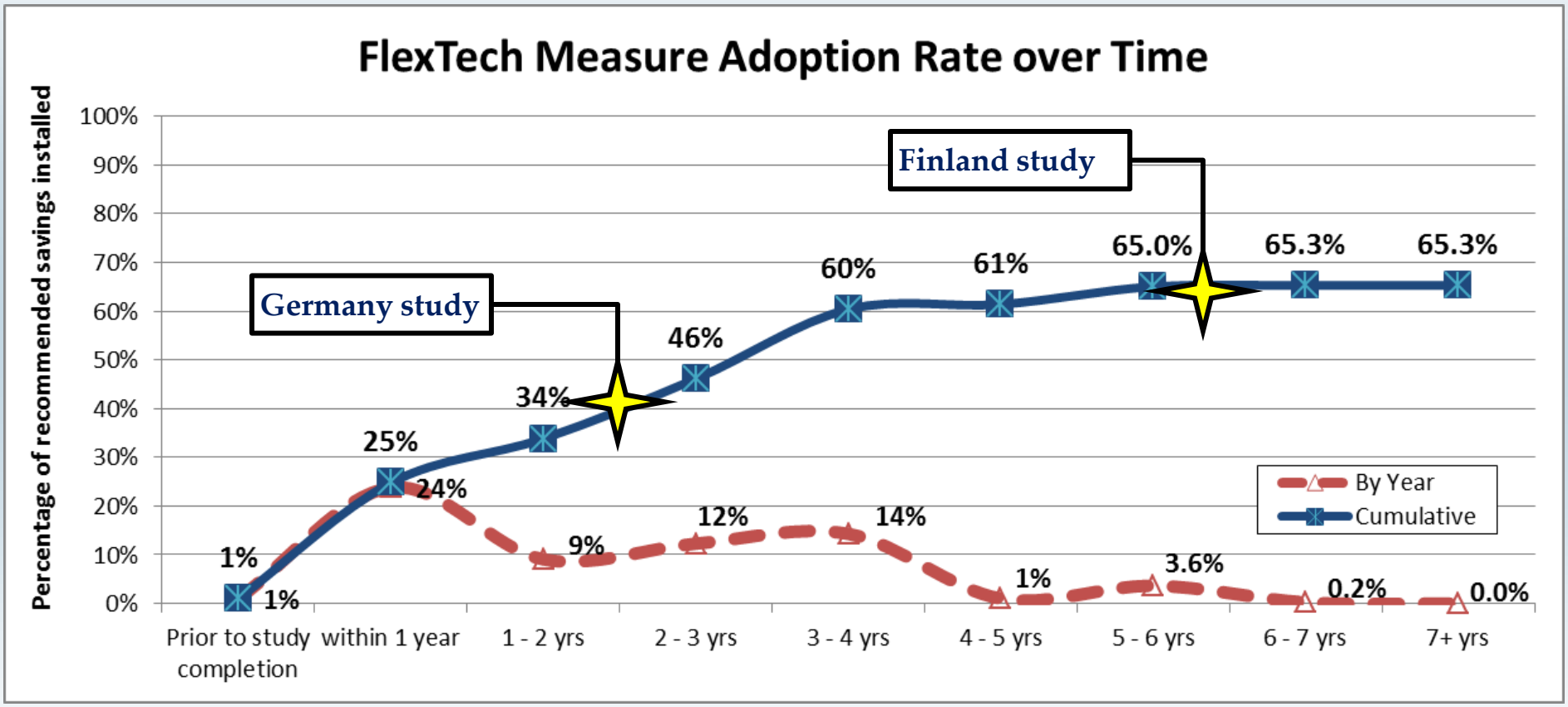
Finding Other Results

Country of Audit Program	Measure Adoption Rate
Finland	60% to 70%
Germany	40%
Sweden	40%
Australia	81%

- Time span not always indicated, but
  - Germany 2 years after the audit program had begun.
  - Finland up to 6 years after audits had been conducted.

Sources cited in paper.

POINTS ON THE CURVE



CONCLUSIONS

- Evaluate MAR over a long period, at least those that feature large customers with significant EEM's.
  - Analysis of elapsed time between study and installation for a long-term MAR curve
- The MAR curve highlights places where programs could/should re-engage with the customer.
- Reconsider energy audits as a planning document that can guide customer engagement and yield direct savings.
  - FlexTech program design likely enhances the MAR

THANK-YOU!

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