

What about Everyone Else? Thinking Beyond the Customer: Market Barriers to Adoption of Efficient HVAC Technologies

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Study overview

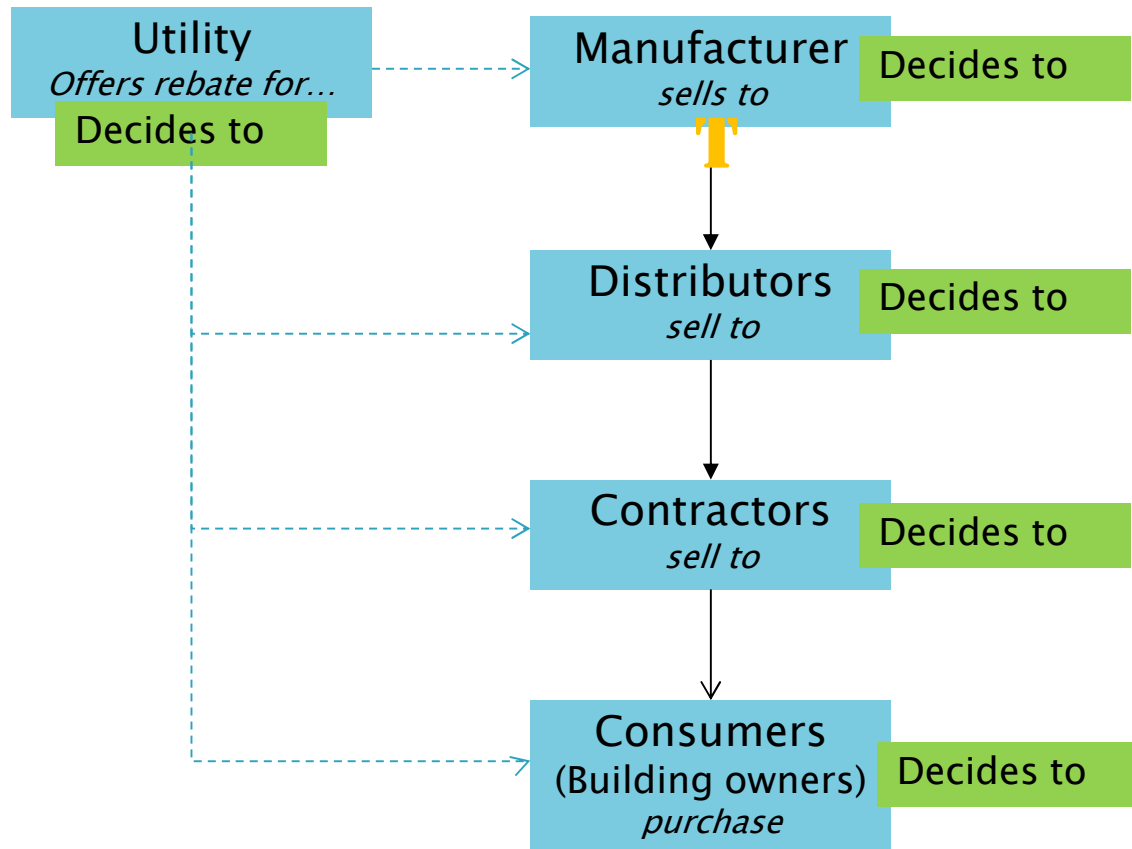
- **Problem:** Chicken and egg of stakeholder adoption
- **Objectives** - To identify:
 1. Market barriers to adoption
 2. Opportunities to increase adoption
- **Sponsor:** Southern California Edison
- **Technology:** retrofits (2) for commercial HVAC units
- **Geographic scope:** SMEs in SCE territory
- **Timeline:** November 2013 – February 2015

Research approach

- Exploratory research:
 - Who? What? Where? When? Why? How?
- Mixed methods for collecting data
 - Semi-structured interviews
 - Group discussions
 - Online surveys
- 76+ respondents representing key stakeholder groups:

Utilities	Design engineers
Manufacturers	Contractors
Distributors	Customers
- Analyzed content of transcriptions using successive pile sorting according to emergent themes

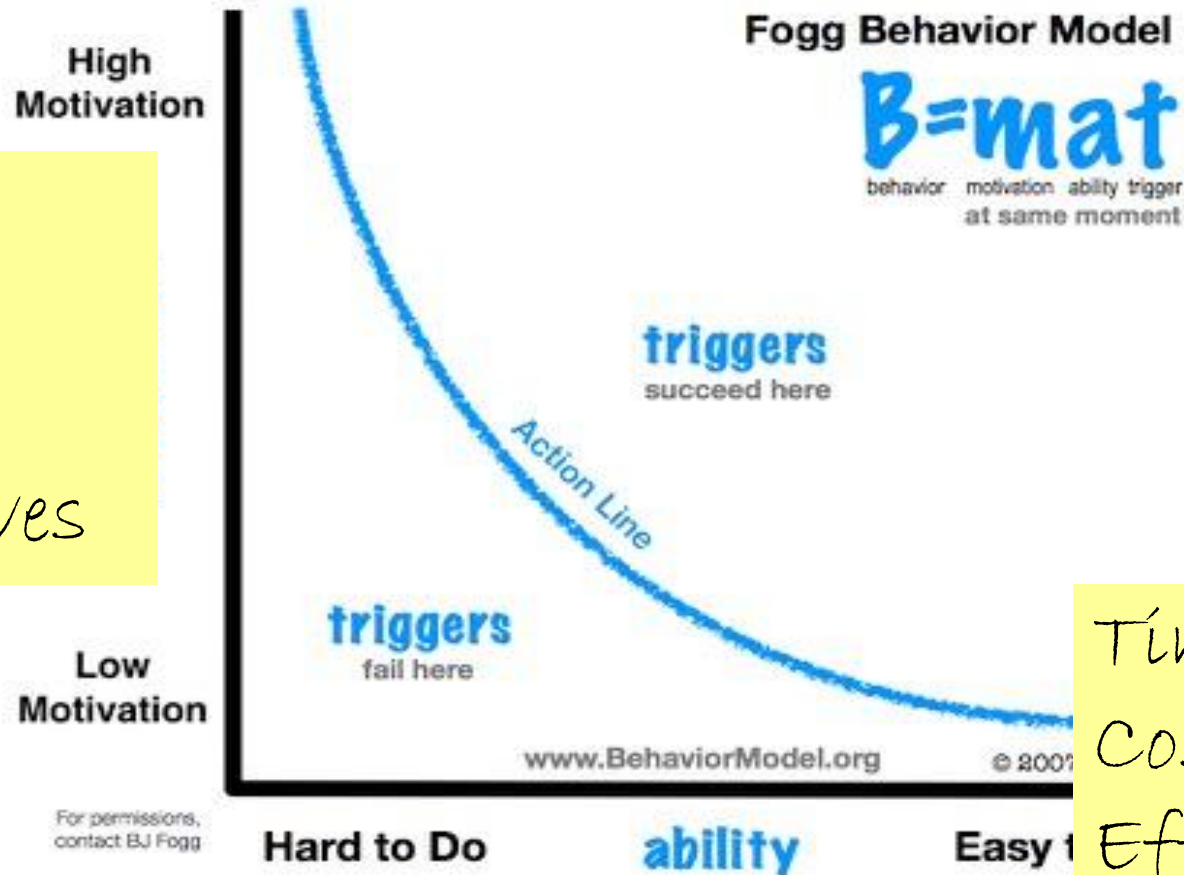
Who does what...



*Each action is preceded by the **decision** to take such action*

Why do stakeholders decide to buy/sell/adopt/promote?

Needs
Wants
Beliefs
Incentives



Time
Cost
Effort
Knowledge
Feasibility

Source: <http://www.behaviormodel.org/>

8 key factors affecting motivation to adopt/promote ET

1. **Technical requirements and performance**, including the human, material, and logistical resources
2. **Technology costs**, initial and ongoing uncertainty and diffused responsibility
 - Capital investment vs. operating costs
 - Transparency
 - Reliability
 - Air quality
 - Status
3. **Additional benefits** beyond energy savings
 - Who recommends it?
 - How much do I trust them?
4. **Access to information**
5. **Endorsements:** stakeholder recommendations and social norms
 - Who recommends it?
 - How much do I trust them?
6. **Status quo bias**
7. **Stakeholder coordination**
8. **Accountability and support**, especially if problems arise

6 key factors affecting ability to adopt/promote ET

1. **Technical feasibility**, given the climate, human resources required, building and HVAC characteristics
2. **Cost** (and uncertainty) of retrofits and utility incentives
3. **Effort**: selling, installing and maintaining, obtaining rebates
4. **Awareness, knowledge and communication**
5. **Access**: logistics of supply chain acquisition
6. **Empowerment**: can stakeholders adopt and/or promote retrofits
 - Are you pitching to the guy that can buy it?
 - Will he be the one that sells it?

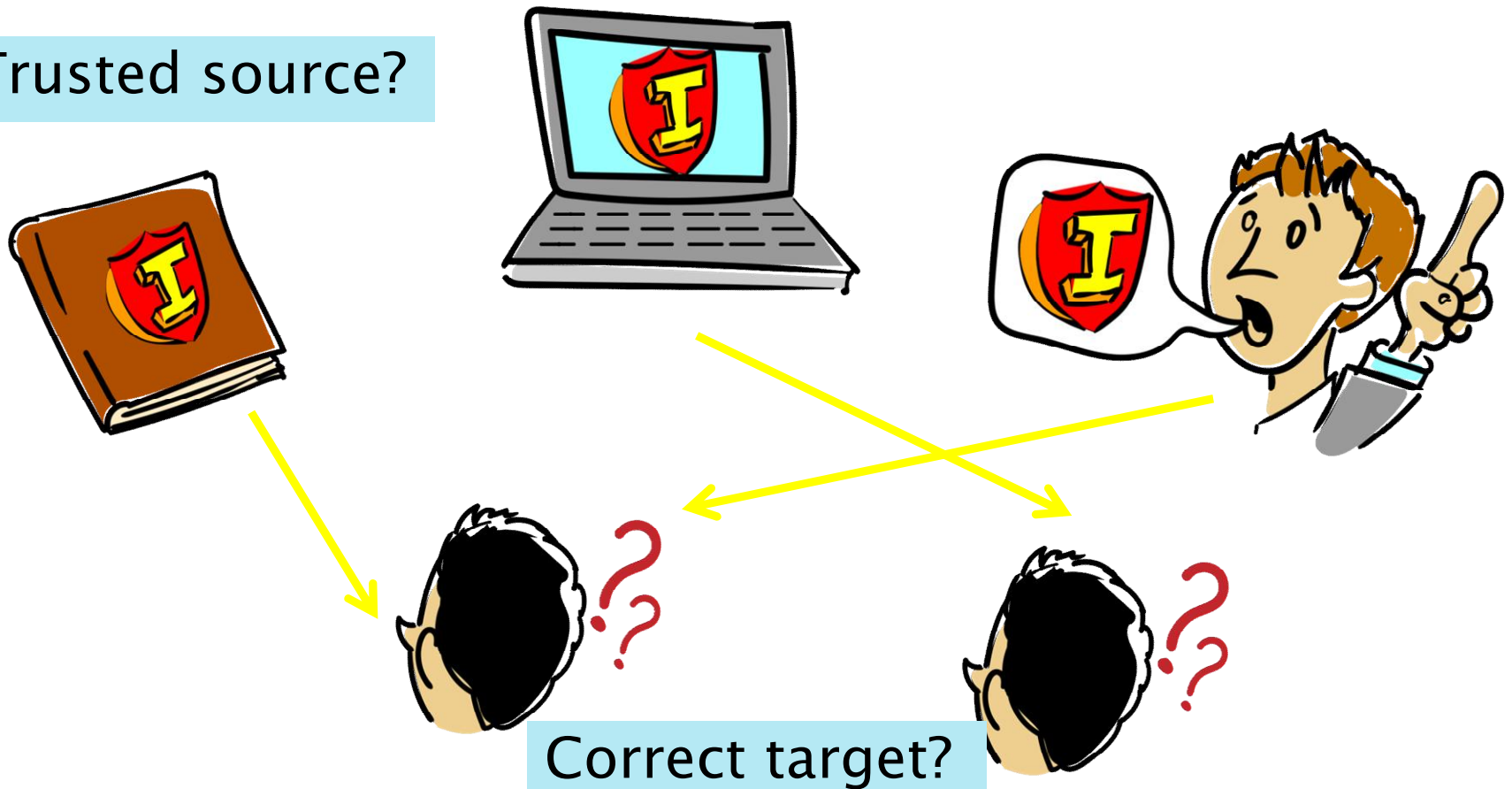
5 cross-cutting themes

Motivation								Ability					
Technical requirements & performance	Technology costs	Additional benefits	Access to information	Endorsements	Status quo bias	Stakeholder coordination	Accountability & support	Technical feasibility	Cost	Effort	Awareness, knowledge, communication	Access	Empowerment
Dependency													
Risk													
Opacity													
Accountability													
Trust													

Three Conclusions - #1

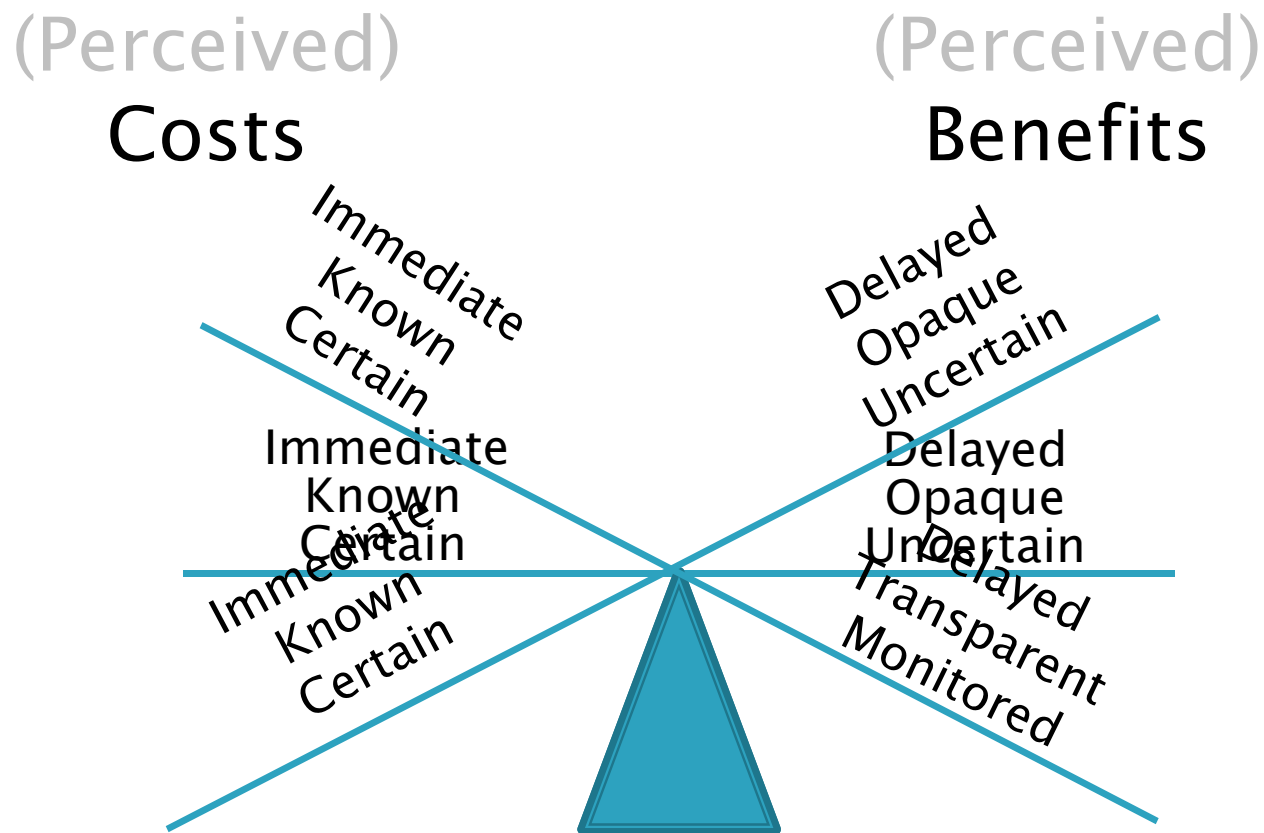
1. Information is vital in ET adoption and promotion.

Trusted source?



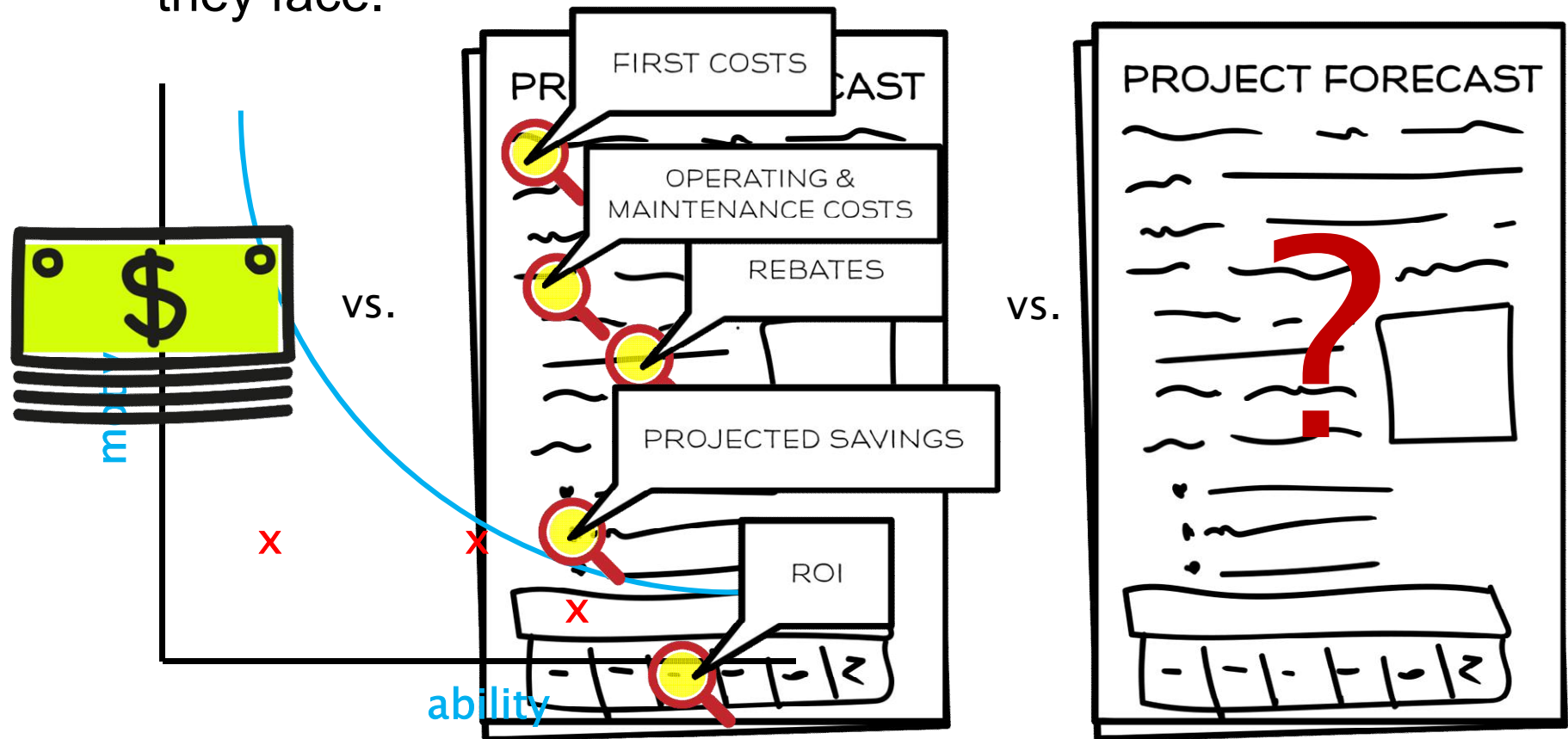
Three Conclusions - #2

2. A behavioral analysis of the costs and benefits reveals an imbalance.



Three Conclusions - #3

3. Stakeholders differ in the specific impediments to adoption they face.



Thank you.

Read the paper:

http://www.etcc-ca.com/sites/default/files/reports/et14sce7060_market_barriers_to_hvac_retrofit_technologies_final.pdf

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Triggers to adopt/promote ET

- ET doesn't have the benefit of existing equipment failure as a trigger for *replacement*, but...you can leverage
 - HVAC failure or degradation
 - Adoption by another stakeholder group
 - Awareness, training, outreach
 - Rising energy prices, low interest rates
 - Changes in customer needs with occupant turnover