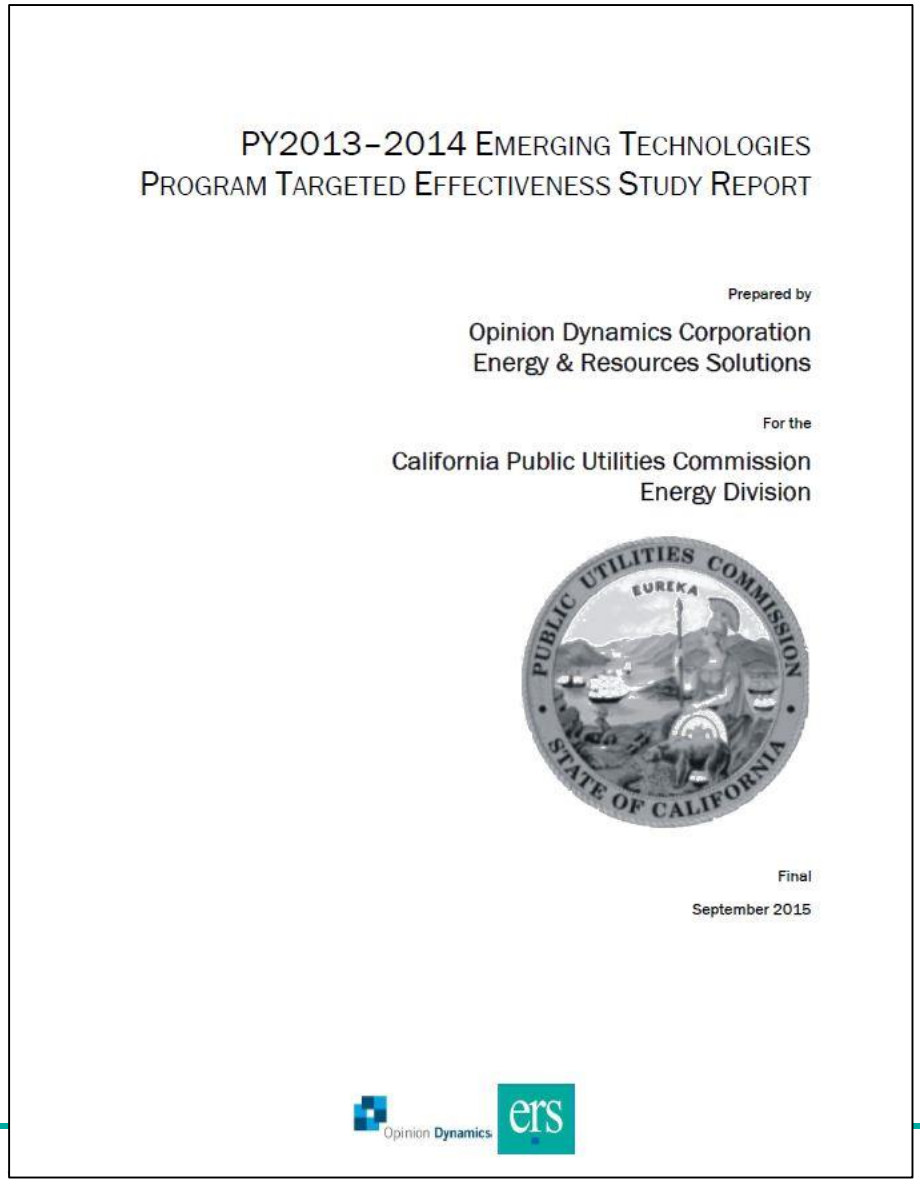
BREAKING BARRIERS:

Leveraging Emerging Technology Programs to Achieve Market Transformation

2016 Symposium on Market Transformation

Allison Donnelly, ERS

Study Background


PY2013–2014 EMERGING TECHNOLOGIES
PROGRAM TARGETED EFFECTIVENESS STUDY REPORT

Prepared by

Opinion Dynamics Corporation
Energy & Resources Solutions

For the

California Public Utilities Commission
Energy Division

Final

September 2015

CPUC study for the California Emerging Technologies Program (ETP)

www.calmac.org

Regardless of the program's mission, all ET programs are uniquely positioned to capture information and/or actively target big-picture market issues, and do so in ways that may not require **additional resources**.

Emerging technology program:
an energy program strategy that accelerates the use of commercially available but underutilized technologies, generally by targeting barriers to adoption

Market transformation program:
an energy program strategy that leads to a reduction in market barriers resulting from a market intervention[1]

[1]NEEP Glossary, v2.1

There are many barriers, and they are unique to the technology.

Domestic hot water heat pumps

HVAC heat pumps

Plug-loads

Smart thermostats

Commercial whole-building EMS

Advanced lighting controls

Residential Zero Net Energy retrofit

Boiler controls

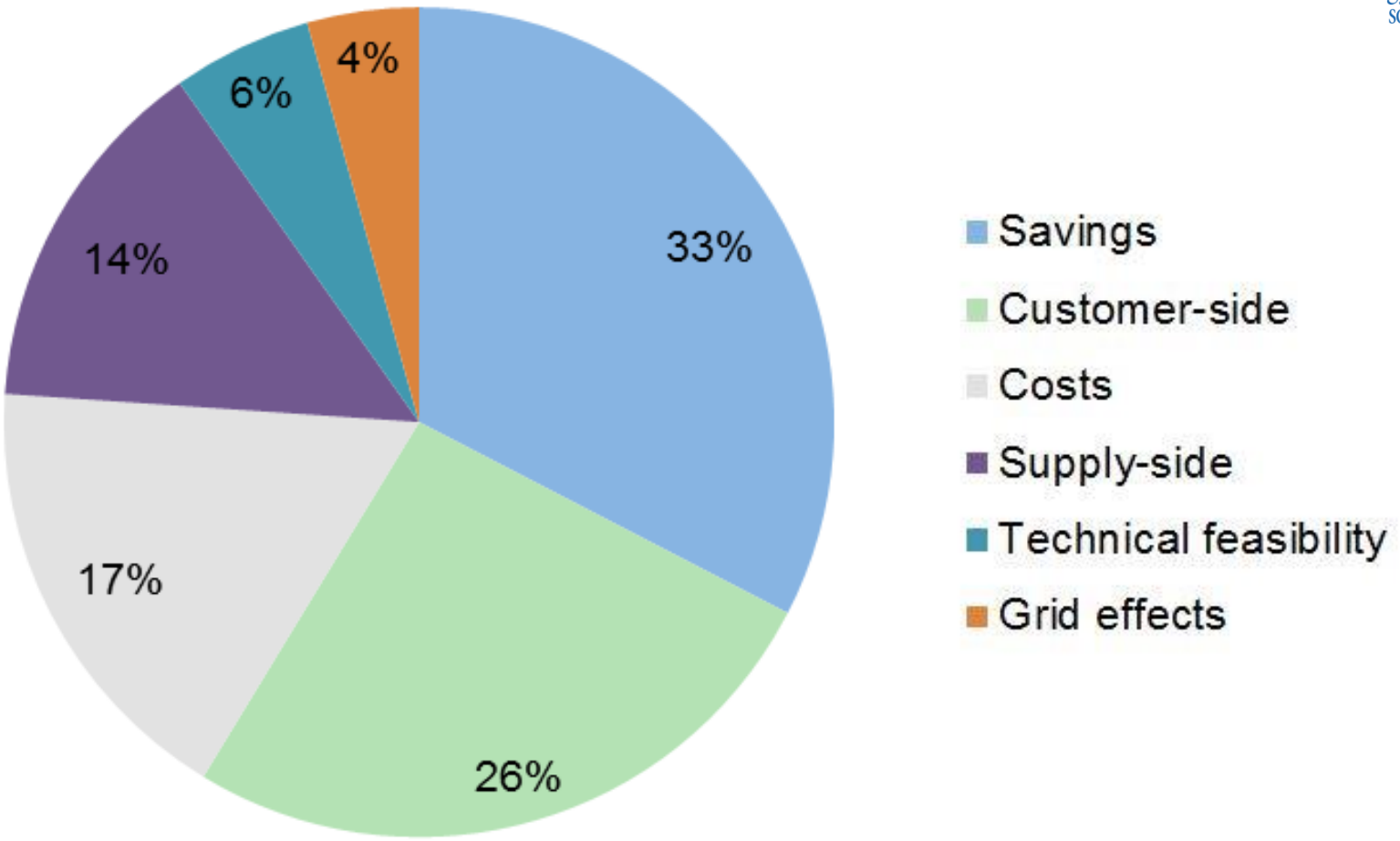
Savings uncertainty

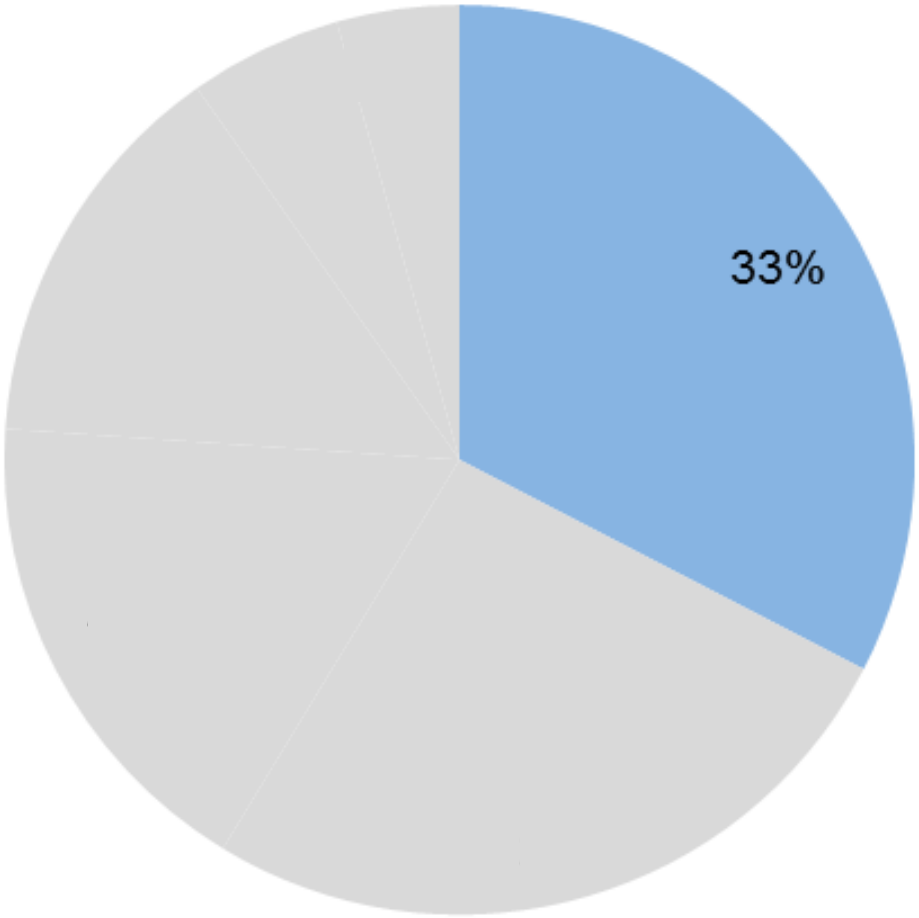
Market fragmentation

Connectivity

92 barriers listed across 8 technologies – 58 unique barriers

6 Barrier Categories (n=92)

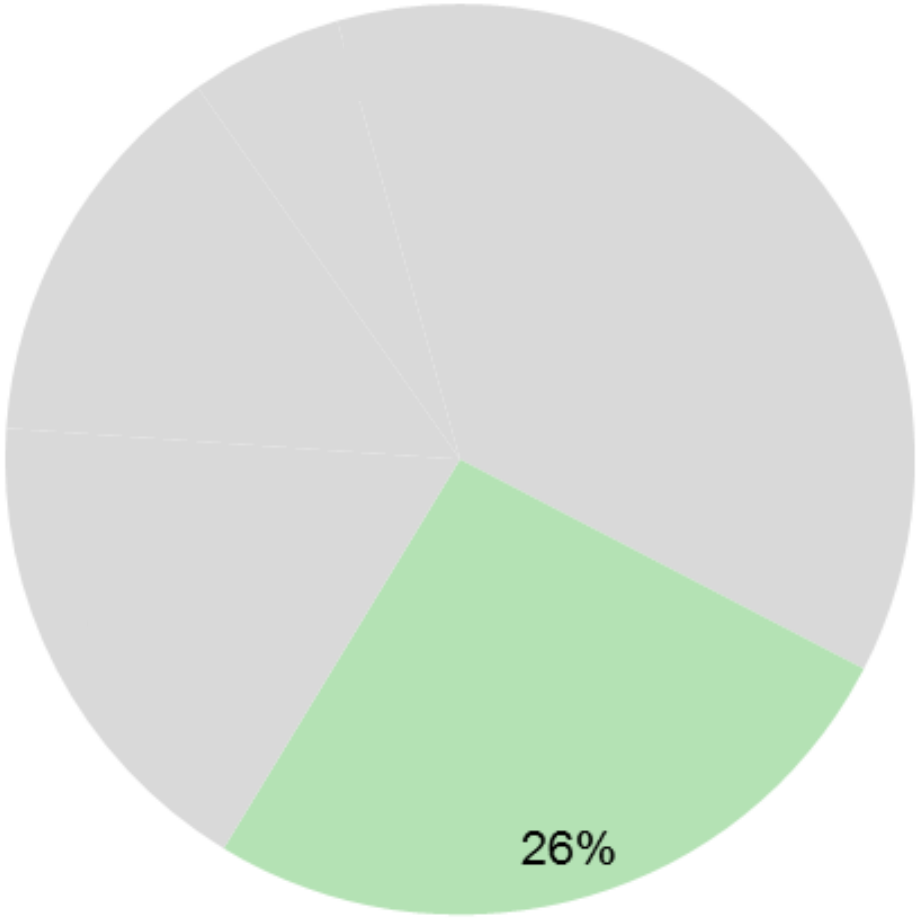




Savings:

Factors that diminish the reliability of energy savings

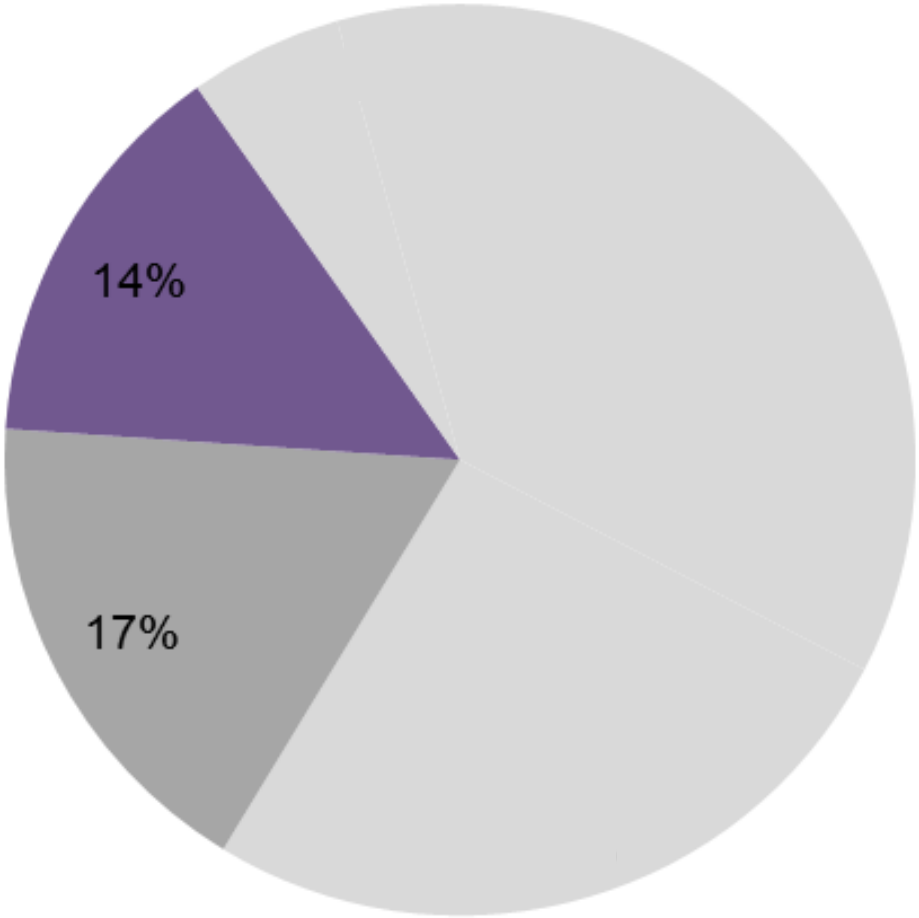
- Persistence
- Variability by application
- Customer behavior impacts
- “Black box” savings calculations



Customer-Side:

Lack of motivation for customers to seek out, purchase, and use the technology

- Disinterest/distrust
- Lack of knowledge of benefits
- Consumer education on operation

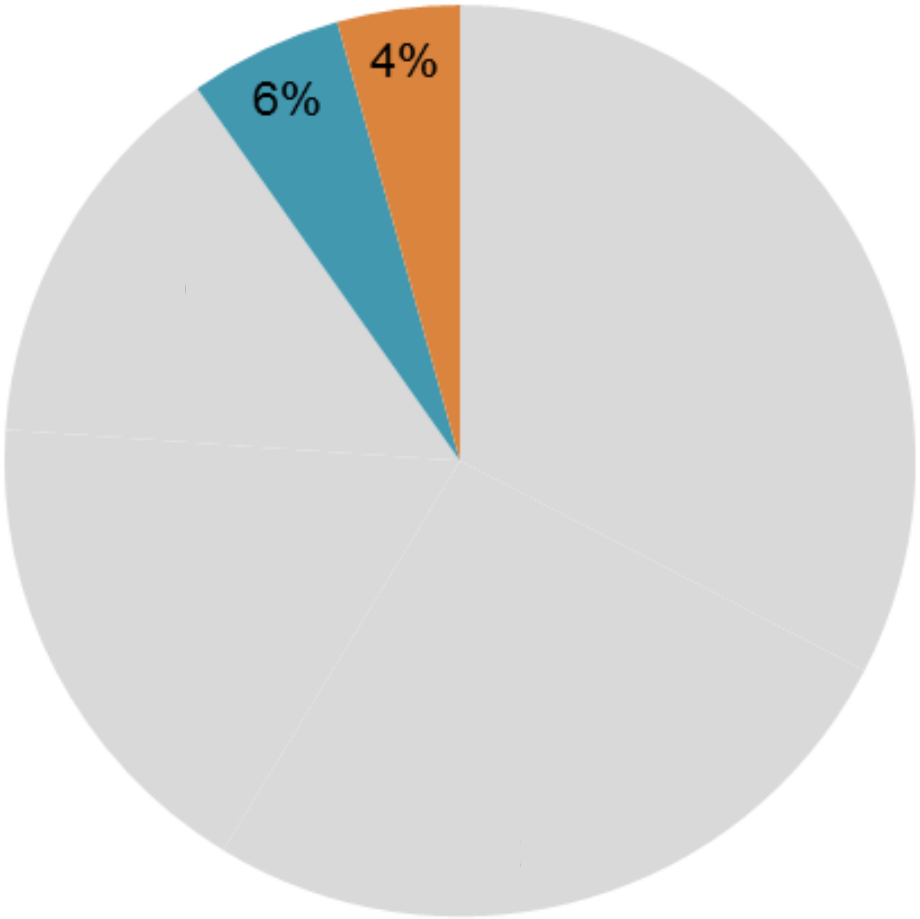


Cost:

Higher costs than traditional equipment

Supply-Side:

Similar to customer-side. Lack of motivation for suppliers to understand, stock, and correctly install the technology.



Technical Feasibility:

Factors that inhibit technology's ability to work effectively

Grid Effects:

For heat pumps: additional barriers from fuel switching or demand response

The program's mission influences what barriers it targets.

Bonneville Power Authority (BPA)

California Emerging Technologies Program (CA ETP)

Gas Technology Institute (GTI)

Lawrence Berkeley National Laboratory (LBNL)

MassSave

New York State Energy Research & Development Authority (NYSERDA)

Nicor Gas

Northeast Energy Efficiency Partnership (NEEP)

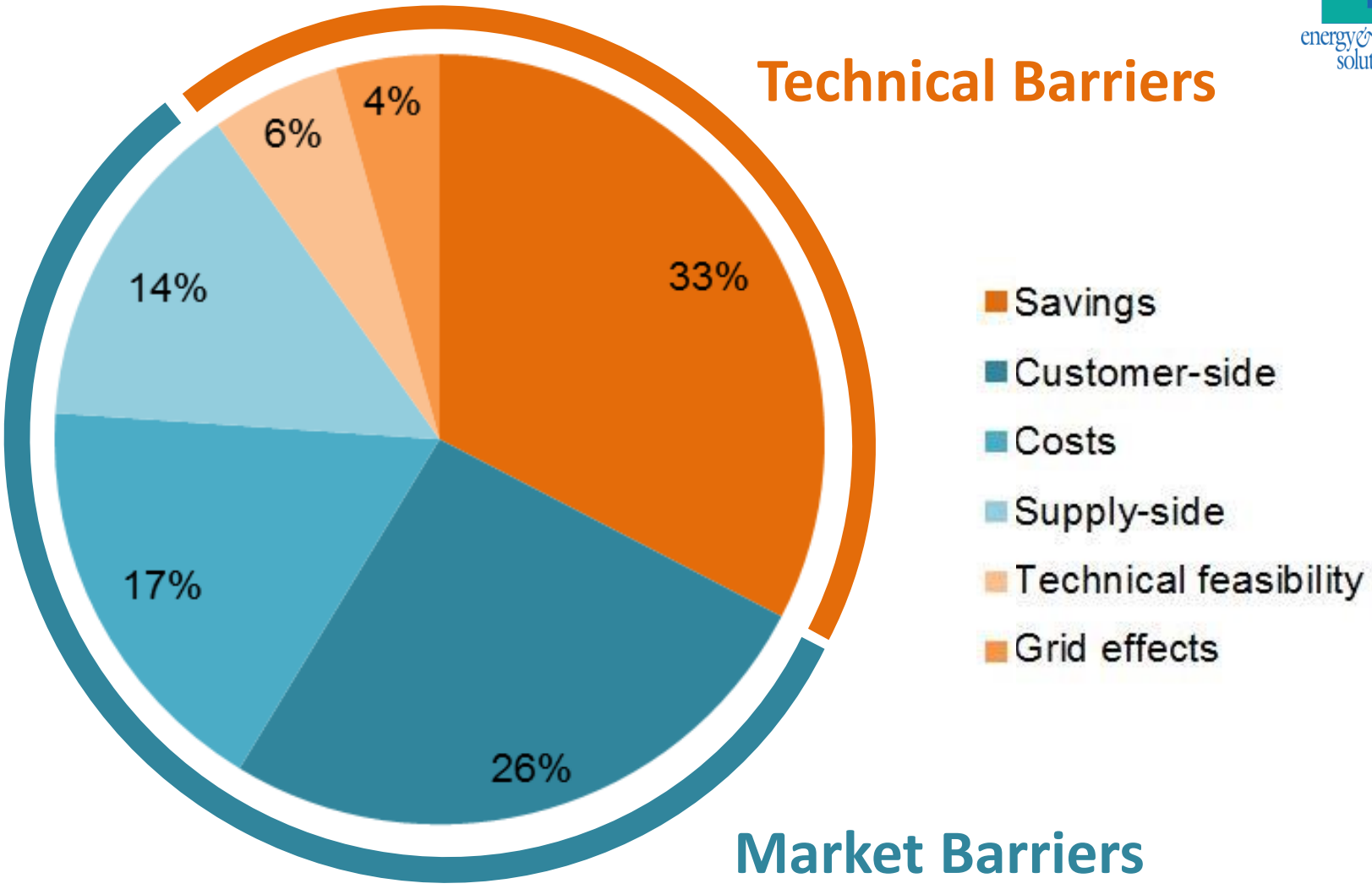
Northwest Energy Efficiency Alliance (NEEA)

Pacific Northwest National Laboratory (PNNL)

Sacramento Utility District (SMUD)

- **Technical readiness**
- **Technical and market readiness**

Programs target different barriers.



Mission also impacts tactics used.

Lab evaluations

Field evaluations

Scaled field placements

Demonstration showcases

Market studies

Paper studies/reviews

Behavioral studies

enhancement

Test standard development

Training program

Policy advice

Codes & standards research

Can include customer education (market barrier)

Can address product quality concerns (technical barrier)

- **Technical readiness/ Technical barriers**
- **Market readiness/ Market barriers**

Technical barriers are the first barriers that need to be targeted, but oftentimes market barriers can be what stop the technology from getting across the **"valley of death."**

All ET projects – regardless of mission – can and should be used to **gather intelligence** that can support later efforts to address market barriers.

5 suggestions:

- List all barriers facing a technology and include it in the project documentation.
- Identify places during projects to collect information about barriers that aren't directly targeted.
- Check in with the customer, vendor, and staff about challenges and lessons learned.
- Include a summary of the barriers and any information gathered in the project report.
- Provide recommendations to downstream entities that will work with the technology.

CONTACTS

Allison Donnelly
(212) 789-8182 x295
adonnelly@ers-inc.com

Report can be accessed at www.calmac.org