Can you really get 20 % energy efficiency savings by 2020?

Liz Hicks

January 29, 2009

Overview of Presentation

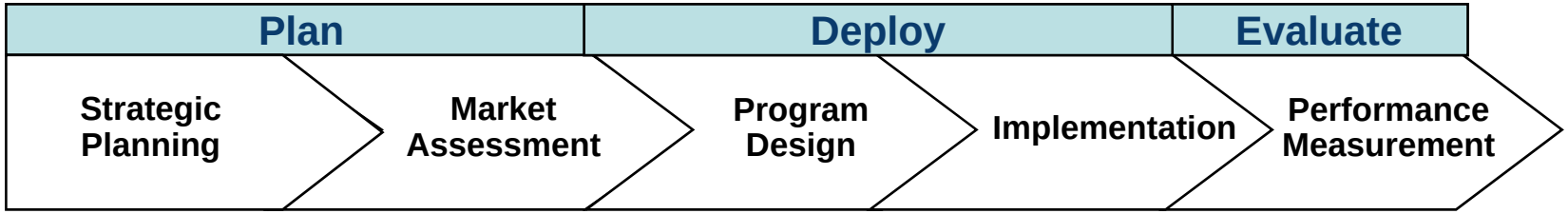
- Background on KEMA
- Overview of Energy Efficiency Potential
- Results of Potential Studies
- Limitations of Potential Studies
- Role of new technologies
- Experience with very aggressive programs
- What does this mean for setting goals?

KEMA Profile

- Four Major Areas of Business
  - Consulting
  - Inspection Services
  - Testing
  - Certification
- 79 years of experience
  - Nearly 30 years in Demand-side Management (DSM)
- 1,500 professionals worldwide
  - 400 in the USA
- 50+ offices in 20+ countries
  - Offices throughout the USA

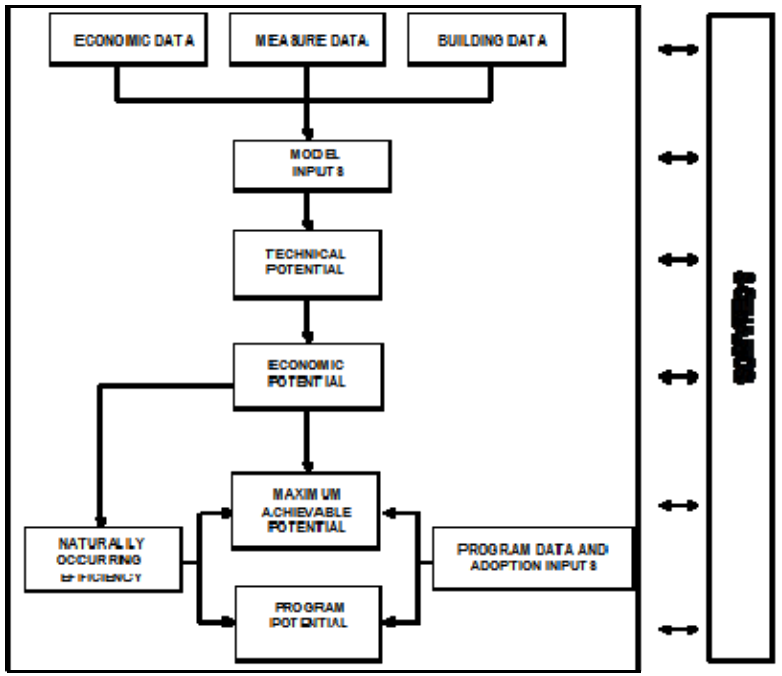
KEMA offers a comprehensive set of DSM Services

The DSM Process



Major Services				
• Potential Analysis • Measure Screening • Program Portfolio Design • IRP • Rate case support • Forecasting • Collaborative Support	• Market Research • Technology Assessment • Baseline Studies • Market Segmentation • Market Barrier Assessment • Energy Use Survey • Load Research	• Program Plan • Staffing Plan • Pilot Programs • Marketing Plan • Information Technology • Incentive Design • Load Control Strategy • Cost-effectiveness assessment	• Program Administration • Turnkey Programs • Technical Support Services • Customer Relationship Management • Data Management • Custom Software • Rebate Processing • Quality Assurance	• Impact Evaluation • Process Evaluation • Business Process Improvement • Customer Satisfaction • Market Effects

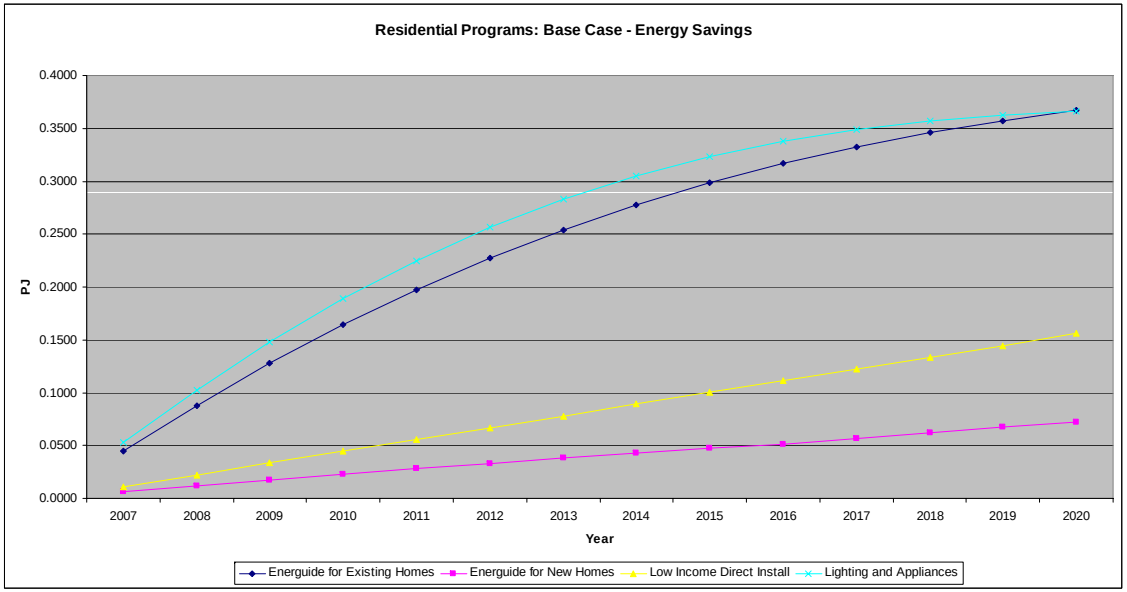
Overview of a Potential Study



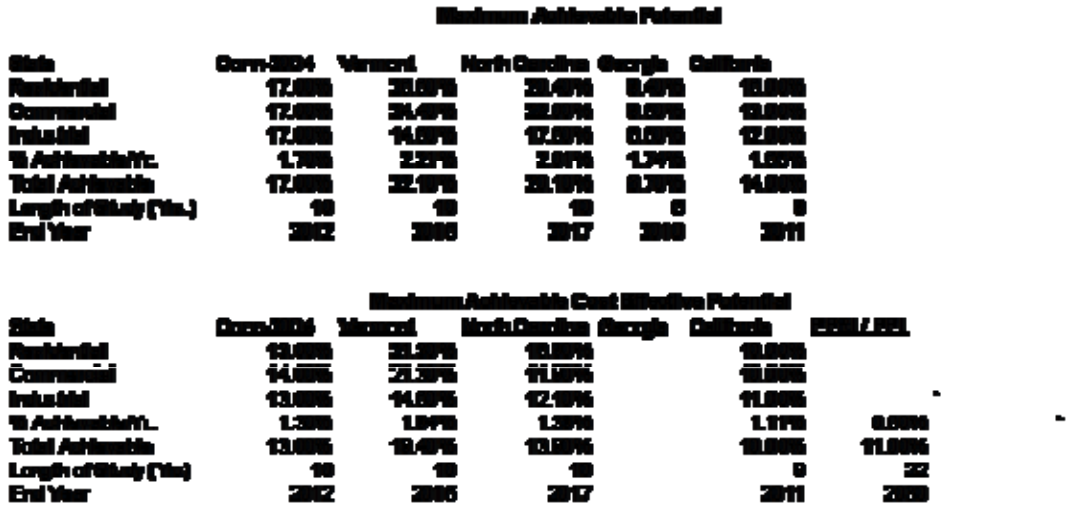
Outcomes of a potential study

- Technical Potential
  - Typically a snapshot
- Economic Potential
  - Typically a snapshot
- Achievable or Program Potential
  - Can be projected year by year or as a snapshot

Sample


Residential Programs: Base Case - Energy Savings
PJ
0.4000
0.3500
0.3000
0.2500
0.2000
0.1500
0.1000
0.0500
0.0000
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Year
Energuide for Existing Homes
Energuide for New Homes
Low Income Direct Install
Lighting and Appliances

Some examples of achievable potential



Limitations of Potential Studies

- Often don’t explicitly include new technologies
- Are in many cases based on old data
- Impacts on price are ignored
- Systems integration not considered
- No treatment of naturally occurring conservation
- Codes or standards may not be included
- Totally disconnected from a load forecast

Role of new technologies

- Technologies are constantly changing
- They are changing too fast in most cases to model explicitly
- Can have a huge impact – think – magnetic ballasts to electronic ballasts to T-8s to High performance T-8s.....
- Did we ever think CLF's would be code in 2012 ?
- Call for a need to treat new technology generically in potential studies

New trends in goal setting

- Potential studies are now frequently being used to set goals for ee programs
- Often goals being considered are very very aggressive
- In many cases – studies are based on old data
- In many cases - there is little integration with a forecast
- Limited experience with very aggressive programs over time

Experience with aggressive programs

Table 1. Examples of High Annual Electric Energy Savings Realized through DSM

Jurisdiction or Entity	Annual Savings (Percent)	Year(s)	Source
Interstate Power & Light (MN)	3.0	2001	Garvey, E. 2007. "Minnesota's Demand Efficiency Program."
San Diego Gas & Electric (SDG&E) (CA)	2.1	2005	SDG&E 2006. Energy Efficiency Programs Annual Summary
Minnesota Power	1.9	2005	Garvey, E. 2007
Sacramento Municipal Utility District (SMUD) (CA)	1.9	1994	Data provided by SMUD
Vermont	1.8	2007	Efficiency Vermont 2008. 2007 Preliminary Results and Savings Estimate Report
Southern California Edison (SCE)	1.7	2005	SCE 2006. Energy Efficiency Annual Report
Western Mass. Electric Co. (MA)	1.6	1991	MA Dept. of Telecommunications & Energy (DTE) 2003. Electric Utility Energy Efficiency Database
Pacific Gas & Electric (PG&E) (CA)	1.5	2005	PG&E 2006. Energy Efficiency Programs Annual Summary
Massachusetts Electric Co.	1.3	2005	MECo 2006. 2005 Energy Efficiency Annual Report Revisions
Connecticut IOUs	1.3	2006	CT Energy Conservation Management Board (ECMB). 2007
Commonwealth Electric (MA)	1.2	1990	MA DTE 2003.
Cambridge Electric (MA)	1.1	2000	MA DTE 2003.
Seattle City Light (WA)	1.0	2001	Seattle City Light 2006. Energy Conservation Accomplishments: 1977-2005
Eastern Edison (MA)	1.0	1994, 1998	MA DTE 2003.

KEMA Experience with trying to run cases to meet aggressive goals....

- Running out of certain measures over time –especially CFLs and other lighting equipment –hence making it difficult to achieve 2% per year sustained in a modeling framework
- Higher standards and codes taking away program potential
- Uncertainty about new measures and their actual performance
- Uncertainty about where the “max” point on the market penetration curve really is
- Uncertainty about how much embedded energy efficiency is in a given load forecast and how that relates to current programs.
- Using old data
- Higher energy prices driving up naturally occurring energy efficiency

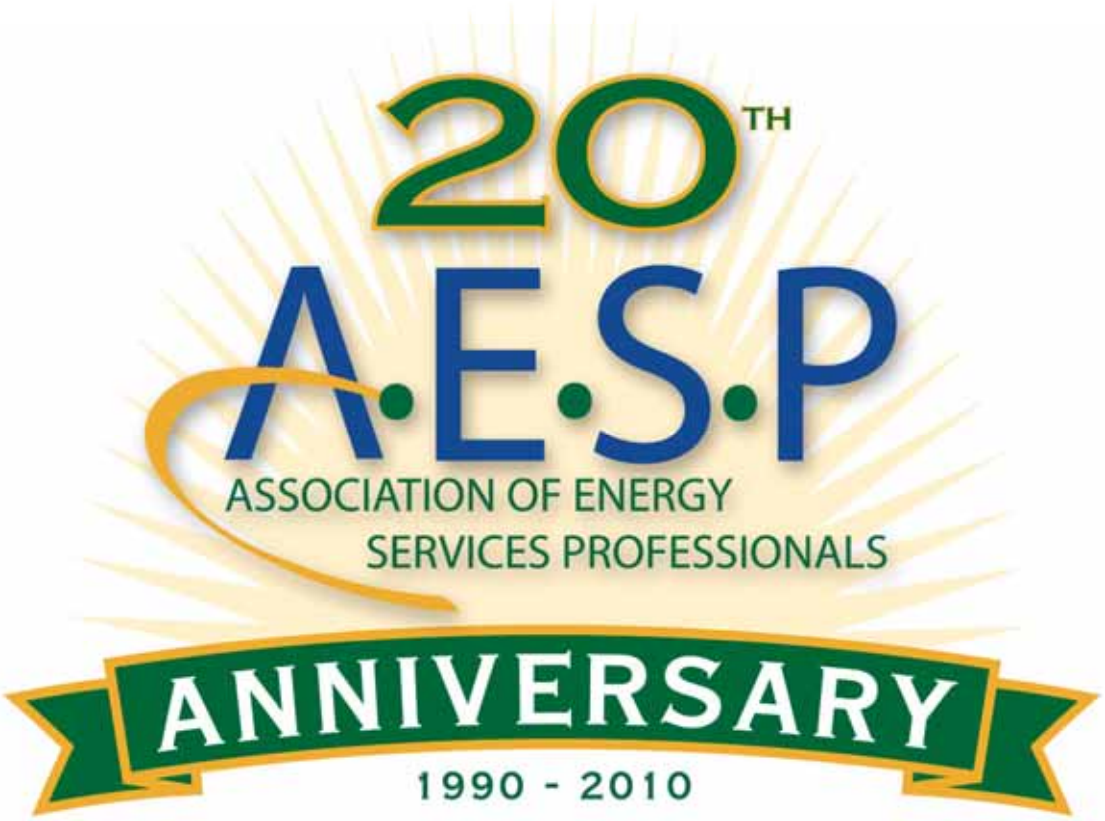
Suggested improvements

- Modeling new technologies – both explicitly and generically
- Adding more systems based measures – both explicitly and generically
- Modeling codes and standards more explicitly
- Further research into the modeling of naturally occurring energy efficiency at current energy prices
- Further research on what is a realistic “max” on the market penetration curve.
- And last but not least - more primary data collection

A·E·S·P
ASSOCIATION OF ENERGY SERVICES PROFESSIONALS

19th National Energy Services

Thank you for your attention.



CELEBRATE WITH US NEXT YEAR IN TUCSON!