

THE
CADMUS
GROUP, INC.

ComEd Assessment of Residential, Commercial, and Industrial Program Potential

Stakeholder Advisory Group Meeting
February 17, 2009

Core Activities and Goals

- Energy Use Customer Survey
 - Fuel use and envelope characteristics
 - Demographics and energy use profiles
- Market Penetration Study
 - Penetration of efficient technologies
- Program Potential Assessment
 - Hourly impacts
 - Efficiency potential
 - Demand response and energy efficiency (electric only)

Results and Outcomes

- Database of primary research
- Trends and projections of market share
 - Emerging technologies
 - Determine when a market is transformed
- Ranking of program potentials for portfolio development

Data Collection Metrics

- Goals: The market data collection effort will focus on three broad metrics critical to estimating efficiency potential
 - ***Equipment saturation***. The percent of customers who own specific equipment
 - ***Efficiency penetration***. The percent of the installed equipment stock considered efficient
 - ***Market share***. Current sales percentages for efficient equipment

Task 1: Research and Data Collection

- Combination of telephone and on-site
 - Reliability varies by measure
 - Telephone surveys → equipment saturation
 - On-site surveys → efficiency saturation
- Goals: Confidence/precision of at least 90/10 by segment and 90/5 at sector levels
- Oversampling of highest priority segments

Task 1: Research and Data Collection

- Current sampling and stratification plan

	Telephone Surveys	Site Visits
Residential	500	140
Single Family	400	70
Multi-family	100	70
Commercial and Industrial	630	350
Office Buildings	60+ per segment	20+ per segment
Food Service (Restaurant)		
Food Stores (Grocery)		
Retail		
Food & Kindred Products		
Health Services		
Educational		
Other Nonresidential		
Fabricated Metals		
Rubber and Misc. Plastics		

Task 1: Research and Data Collection

- Results will be shared in multiple formats
 - Presentation for ComEd/stakeholders
 - Detailed frequencies/means

Task 2: Market Penetration Study

- Importance of “marginal shares”
 - Potential analysis
 - Program design implications (net-to-gross)
- Secondary Data Analysis
 - ENERGY STAR® Retailer and Manufacturer Partner Data
 - Trade Associations
- Primary Data Collection Efforts
 - Trade Allies
 - Oversampling largest “players”
 - Market coverage vs. statistical sampling

Task 2: Market Penetration Study

Respondent Type	Number of Interviews
Retailers	70
Builders (Res & Nonres)	50
A&E firms	20
HVAC dealers	30
Plumbers	20
Mechanical contractors/wholesalers	15
Building controls/automation vendors	15
Lighting vendors	15
Motor/ASD vendors	15
Industrial refrigeration vendors	15
Compressed air vendors	15

Task 3: Program Potentials

- Types of resource potential:
 - Naturally occurring (market-driven) conservation
 - Technical potential
 - Economic potential
 - Achievable potential
- Resource interactions
 - Intra-class interactions
 - Measure shares (competing measures)
 - Stacking effect (complementary measures)
 - Technical measure interactions (e.g. lighting and HVAC)
 - Limits of participation in demand response programs
 - Inter-class interactions
 - Energy efficiency and demand response

Task 3: Program Potentials

- Economic Potential
 - Screening criterion: Societal Test: $NPV(b) / NPV(c) > 1$
 - Benefit components:
 - Net present value of avoided hourly energy and capacity costs
 - Adjustments for line losses
 - Cost components:
 - Incremental efficiency measure installed costs (upgrades)
 - Full efficiency measure installed costs (new measures)
 - Program administration
- Achievable Potential
 - Benchmarking the experiences of similar programs

Task 3: Program Potentials

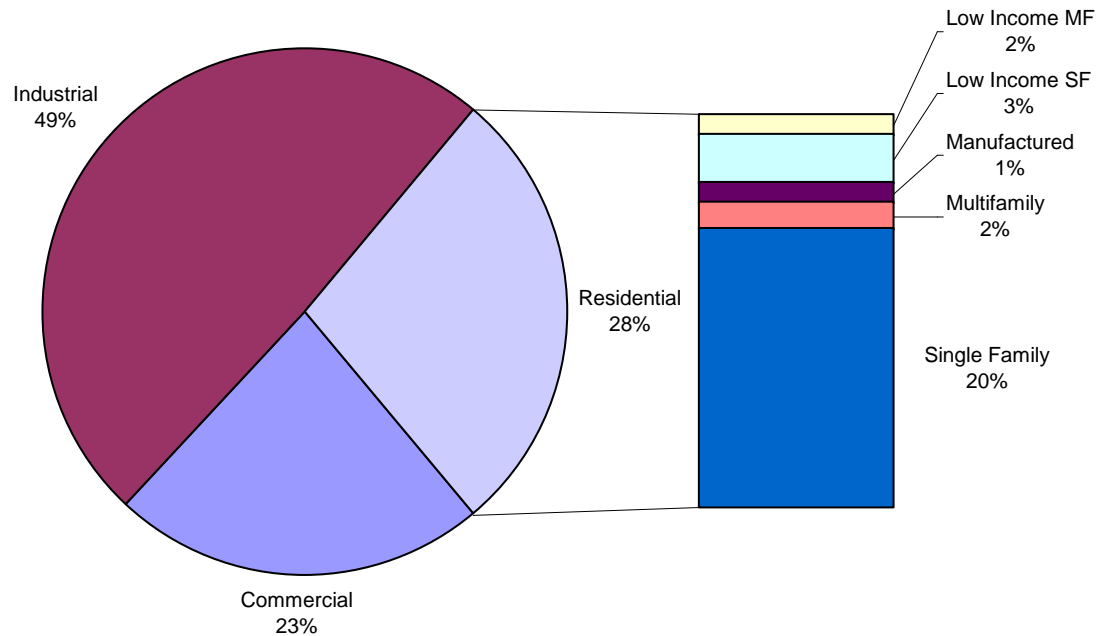
- Sectors:
 - Residential
 - Commercial
 - Industrial
- Customer segments: Within sectors
 - Single-family
 - Multifamily
 - etc.
- End-uses:
 - Lighting
 - Cooling
 - Water Heating
 - Clothes washing/drying
 - Plug loads
 - Industrial processes
 - etc.

Task 3: Program Potentials

- Efficiency measures and technologies
 - Over 300 unique measures
 - Includes emerging technologies
- Measure savings and costs
 - Sector
 - Segment
 - Vintage

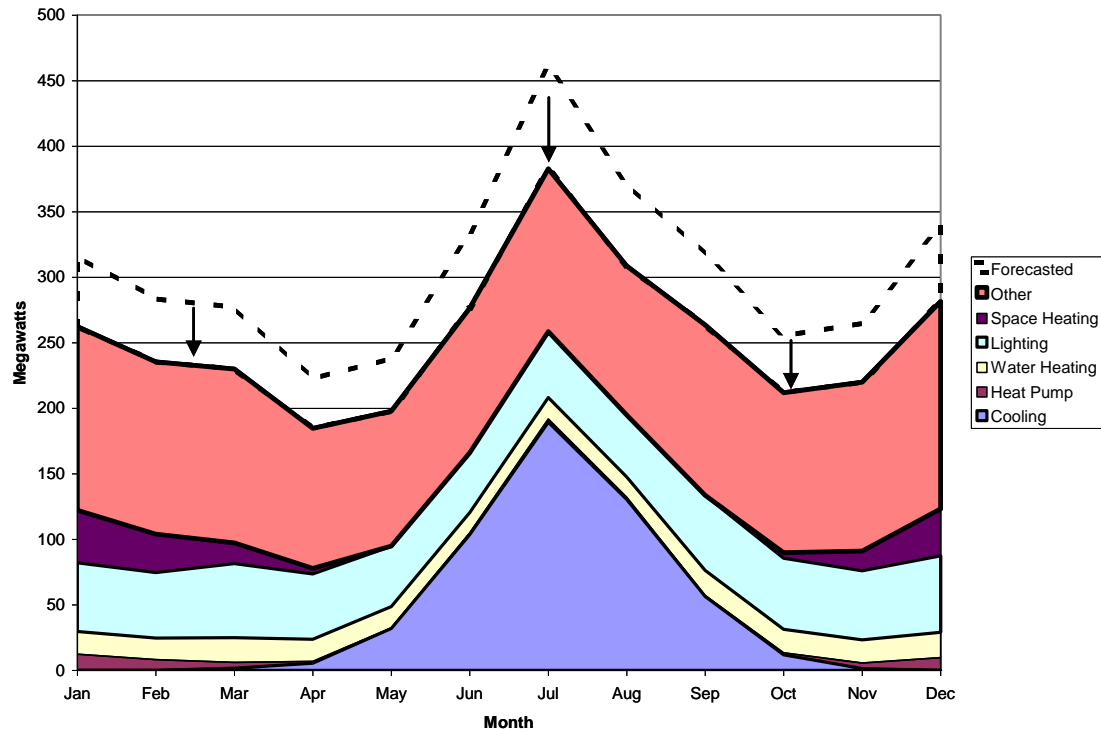
Task 3: Program Potentials

- Step 1: Allocate consumption to sectors/segments



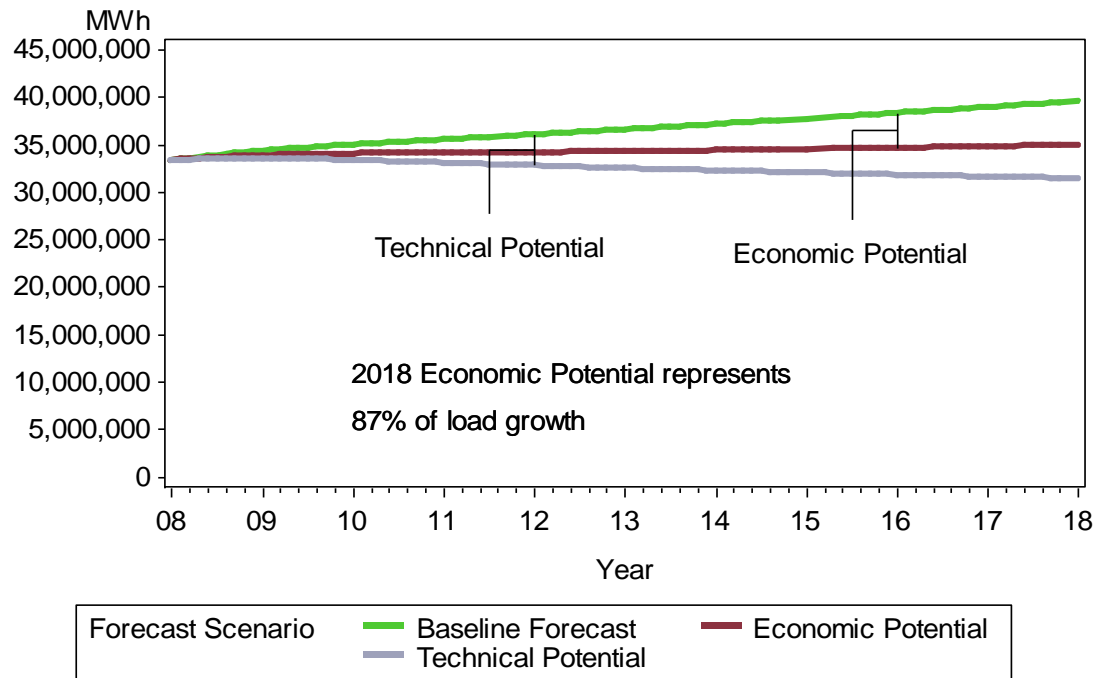
Task 3: Program Potentials

- Task 2: Allocate consumption to end-use
- Task 3: Estimate reduction by “swapping” out measures



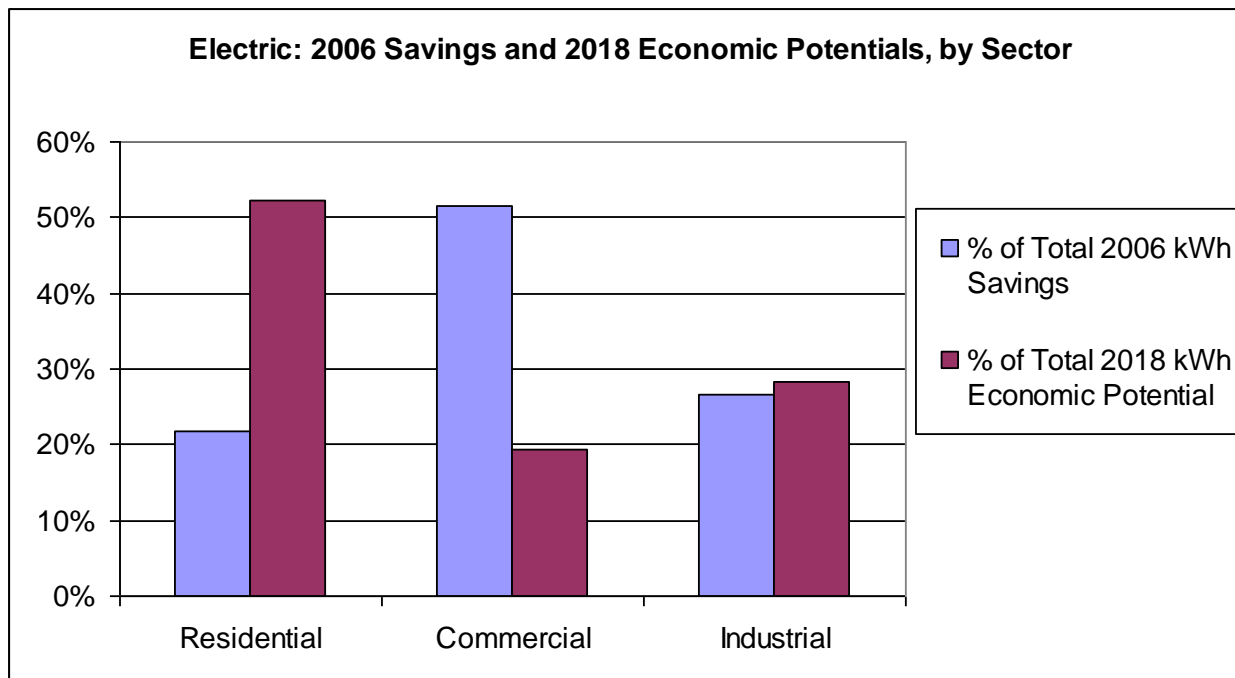
Task 3: Program Potentials

- Calibrated back to forecasts



Task 3: Program Potentials

- Gap Analysis with current program offerings/achievements



Project Timeline

Tasks	2008		2009										
	December	January	February	March	April	May	June	July	August	September	October	November	December
Task 1: Research and Data Collection													
Design and Develop Survey Instruments	●	● ●											
Data Collection													
Findings								●					
Task 2: Market Penetration Study													
Secondary Data Analysis													
Primary Data Collection Efforts	●							●					
Task 3: Program Potentials Analysis													
Assembling Utility Data	●												
Assessment of Potential									●	●		●	

● Deliverable, interim results, or meeting