

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
<b>Residential</b>	<b>500</b>	<b>140</b>
Single Family	400	70
Multi-family	100	70
<b>Commercial and Industrial</b>	<b>630</b>	<b>350</b>
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

<b>Respondent Type</b>	<b>Number of Interviews</b>
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

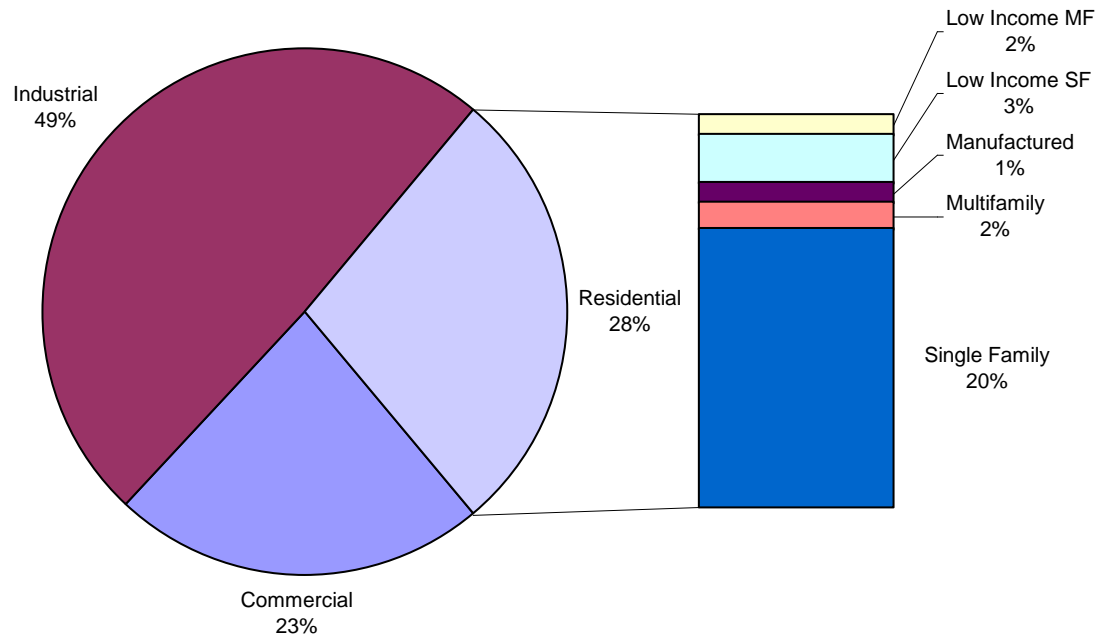
- Sectors:
  - Residential
  - Commercial
  - Industrial
- Customer segments: Within sectors
  - Single-family
  - Multifamily
  - etc.
- End-uses:
  - Lighting
  - Cooling
  - Water Heating
  - Clothes washing/drying
  - Plug loads
  - Industrial processes
  - etc.

# Task 3: Program Potentials

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

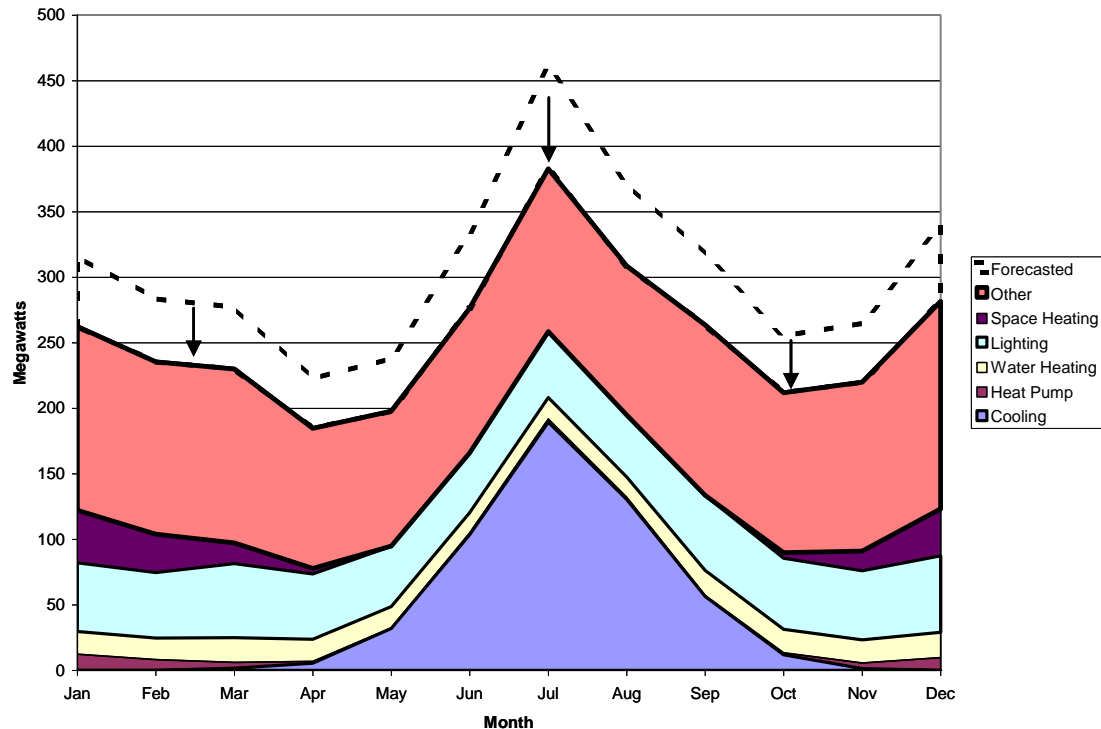
# Task 3: Program Potentials

- Step 1: Allocate consumption to sectors/segments



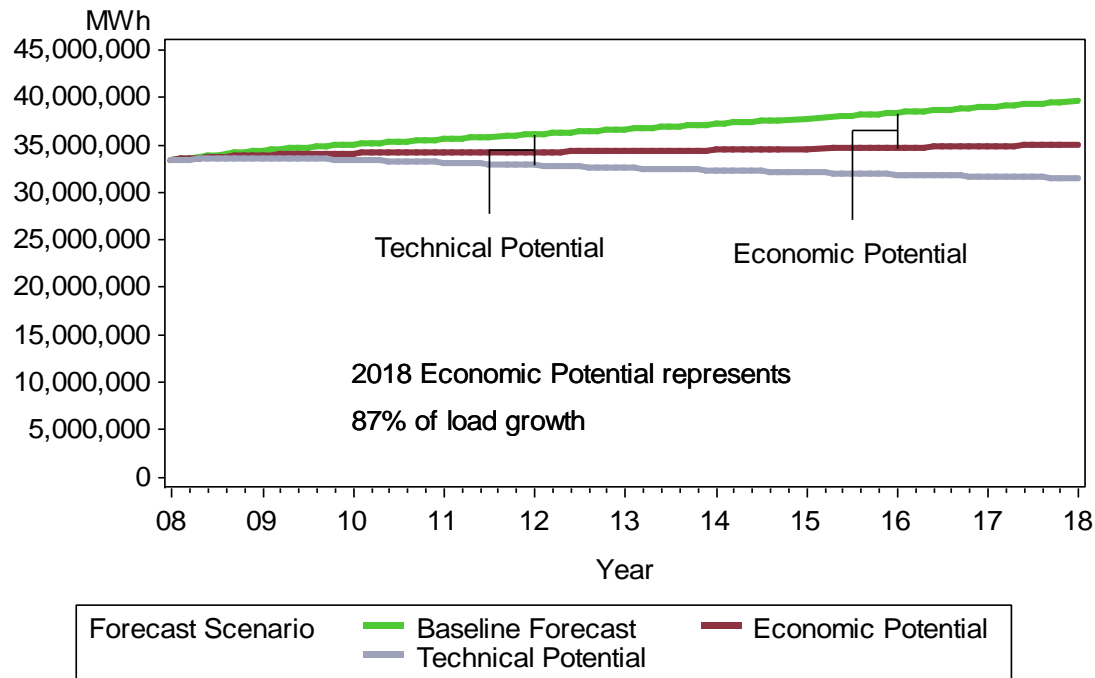
# Task 3: Program Potentials

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



# Task 3: Program Potentials

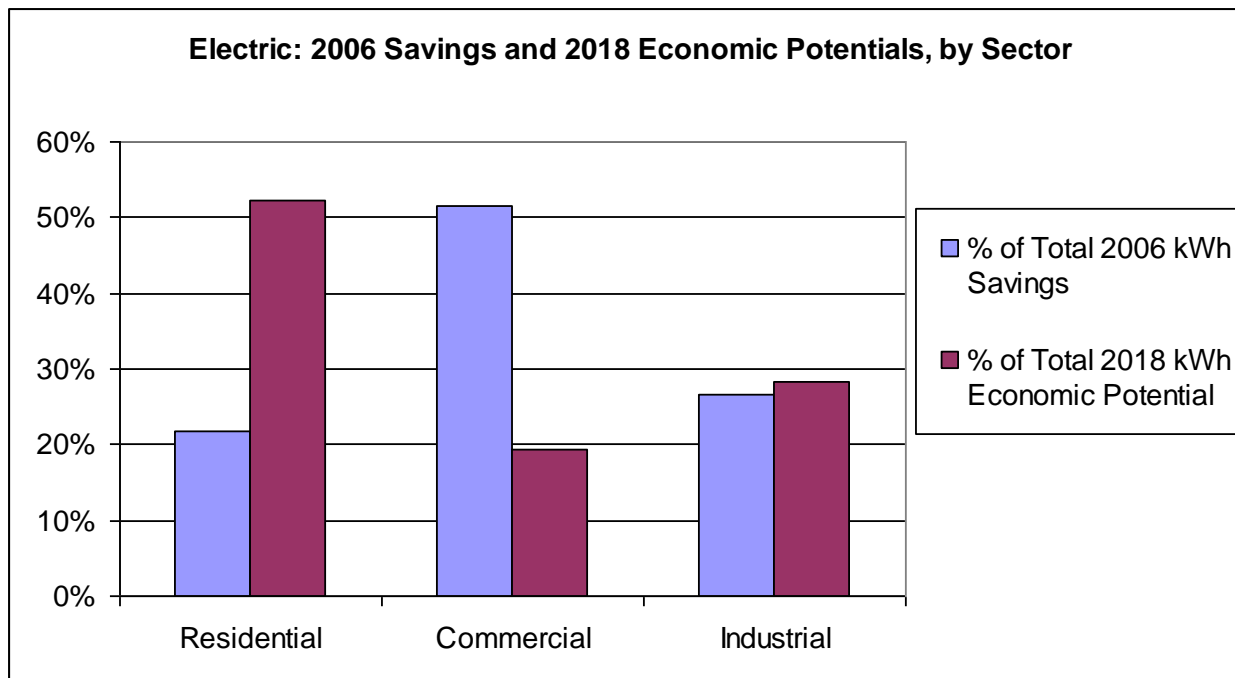
- Calibrated back to forecasts





# 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
<b>Task 1: Research and Data Collection</b>													
Design and Develop Survey Instruments	●	● ●											
Data Collection													
Findings								●					
<b>Task 2: Market Penetration Study</b>													
Secondary Data Analysis													
Primary Data Collection Efforts	●							●					
<b>Task 3: Program Potentials Analysis</b>													
Assembling Utility Data	●												
Assessment of Potential									●	●		●	

● Deliverable, interim results, or meeting