

Helping to Meet Future Energy Needs

Through Cost Effective Demand Side Management



November 19, 2008

Demand Side Management's Role in Resource Planning

Presentation Objective:

Review / Discuss the process for integrating DSM into the overall resource planning process

What This Presentation Includes:

- The process used to identify the cost effective DSM opportunity for the Entergy New Orleans service area
- The role DSM can play in meeting future resource needs for Entergy New Orleans
- High level results of DSM potential study
- Next steps and framework needed to move forward

What This Presentation Doesn't Include:

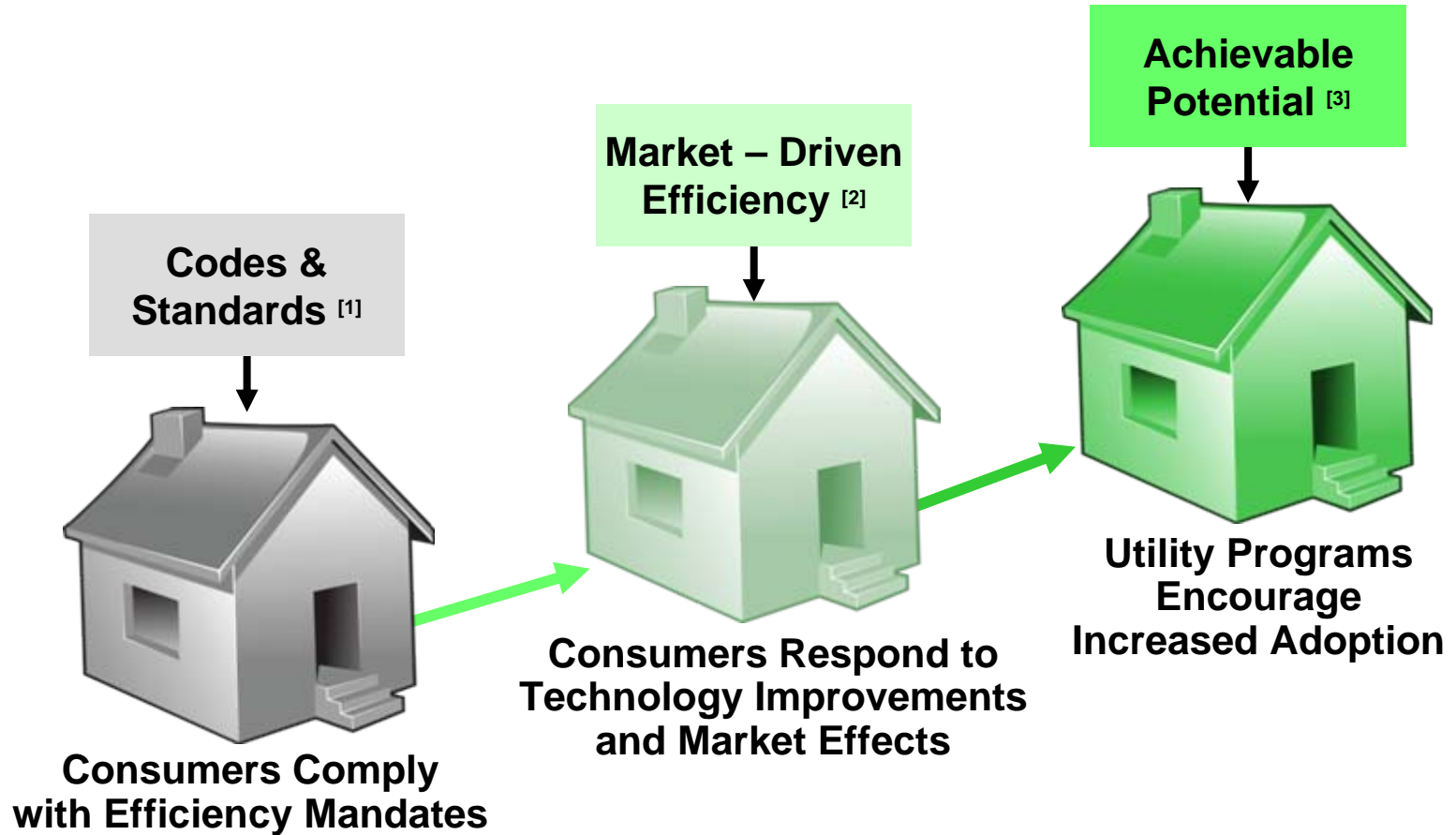
- Detail DSM program design

What is Demand Side Management (DSM)

Demand Side Management (DSM) is a set of actions, activities or measures that impacts energy use, energy use patterns or customer behavior as it relates to energy consumption. DSM includes:

- ***Conservation***: Activities / actions that reduce energy use through changes in life style and the reduction in energy consumption through activities such as increasing thermostat settings on air conditioning equipment in the summer, lower thermostat settings on water heaters, turning off lights when not in use, etc. Conservation activities typically require little to no investment by the customer to reduce energy usage.
- ***Energy Efficiency***: Activities / actions that typically require an investment to achieve lower energy usage, such as, improving insulation levels, sealing heating and cooling ducts, weather stripping, caulking, the purchase of more efficient appliances etc.
- ***Demand Response***: Activities or actions that result in changes to energy use patterns that may or may not reduce overall energy usage. Demand response programs are utilized to lessen customer usage / demand during peak periods or those times when the cost to supply energy is more expensive. Programs in this area include Time of Use (TOU) rates, load control programs such as AC or pool pump switches, etc.

Steps to Becoming More Energy Efficient...

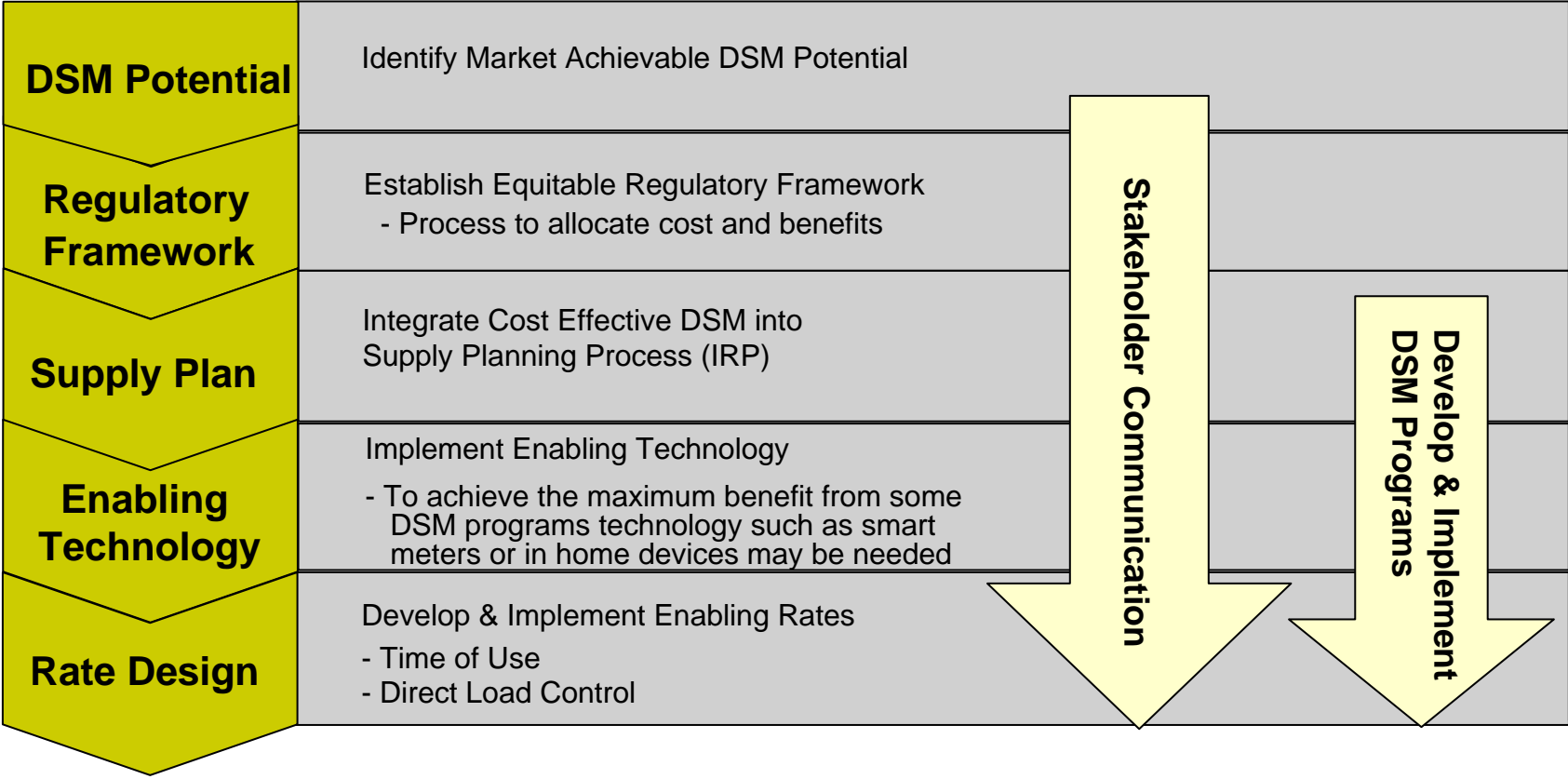


[1] Consumers comply with minimum building codes & equipment efficiency standards mandated by federal or state law

[2] Consumers respond, without intervention of utility programs, to market-driven improvements in technology efficiency, price effects, and other market factors that impact energy consumption

[3] Additional savings through utility energy efficiency programs; range bounded by realistic and maximum achievable potential. Limited to technologies that are economically-feasible, subject to consumer choice.

Key Steps to Develop and Implement an Integrated DSM Strategy



DSM Potential Study: Background

DSM Potential Study Objectives

- Identify “market achievable potential” for Entergy’s service area by jurisdiction
- Estimate program costs to capture achievable potential
- Identify / prioritize cost-effective programs

Process

- Contracted with ICF to perform analysis
- Bottoms-up analysis at the measure level
- Analysis based on Entergy New Orleans specific data (weather, rates, customer usage, customer counts, appliance saturation data, avoided costs, etc.)

Current Status

- Initial results from the potential study incorporated into the current Supply Plan

Types of DSM Potential Studies

Technical Potential

The theoretical maximum amount of energy use that could be displaced by efficiency, disregarding all non-engineering constraints such as cost-effectiveness and the willingness of end-users to adopt the efficiency measures.

Economic Potential

Refers to the subset of the technical potential that is economically cost effective as compared to conventional supply-side energy resources

Maximum Achievable Potential

Is the amount of energy use that efficiency can realistically expect to displace assuming the most aggressive program scenario possible (e.g., providing end-users with payments for the entire incremental cost of more efficiency equipment).

Achievable / Market Potential

Refers to the efficiency potential possible given specific program funding levels and designs. Often, program potential studies are referred to as “achievable” in contrast to “maximum achievable.” In effect, they estimate the achievable potential from a given set of programs and funding

VARIOUS BENEFIT-COST RATIOS DESCRIBE DISTRIBUTION OF VALUE FOR STAKEHOLDERS FROM IMPLEMENTATION OF DSM PROGRAMS

Total Resource Cost (TRC) Test : The total costs and benefits of a program, including costs and benefits to the utility and the participants and the avoided costs of energy supply

Utility Cost Test (UCT): Assesses benefits and costs from the program administrator’s perspective (e.g., benefits of avoided fuel and operating capacity costs compared to rebates and administrative costs)

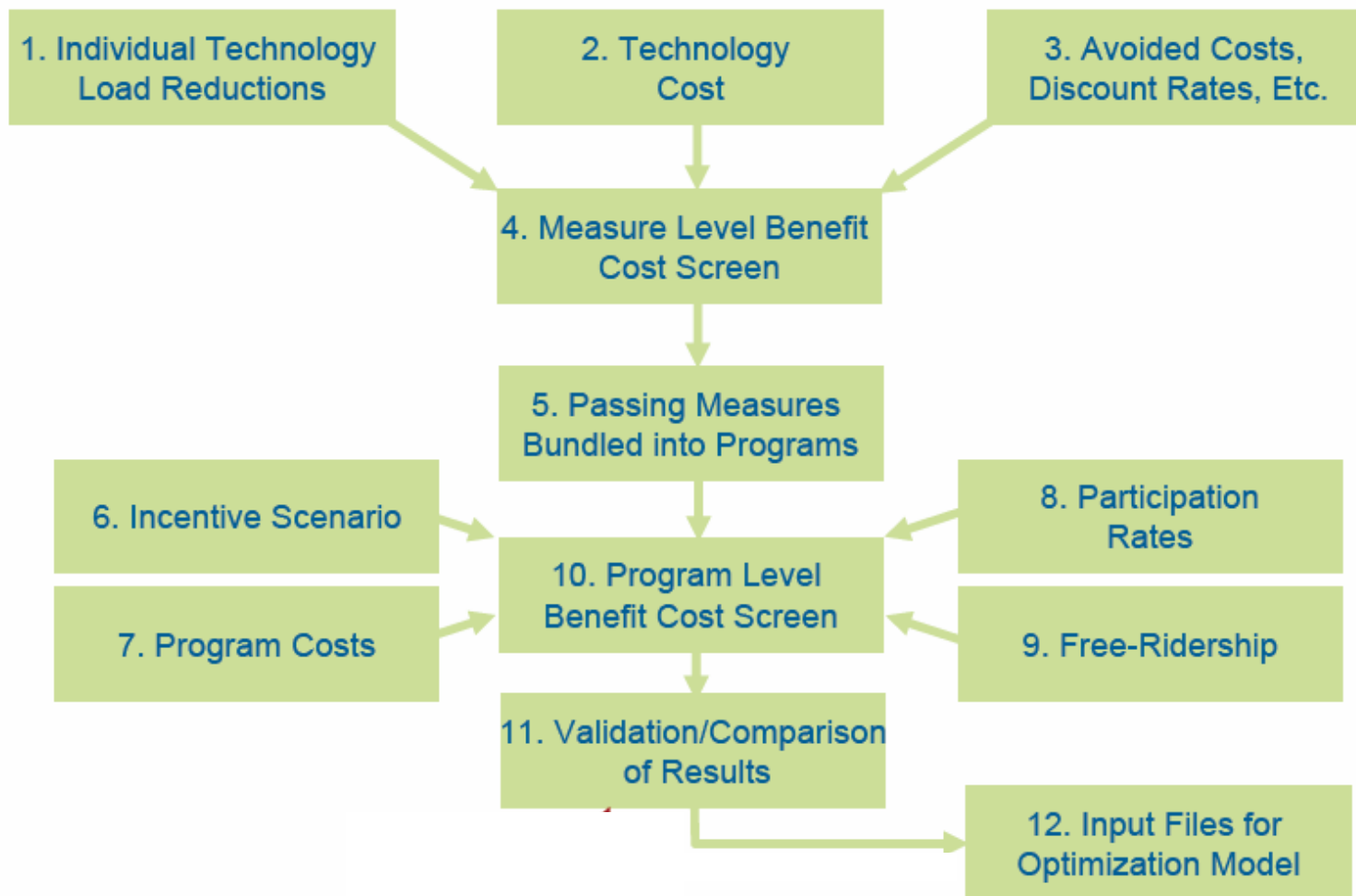
Participant Cost Test (PCT): Assesses benefits and costs from a participant’s perspective (e.g., the reduction in customers’ bills, incentives paid by the utility, and tax credits received as compared to out-of-pocket expenses such as costs of equipment purchase, operation, and maintenance)

Rate Impact Test (RIM): Assesses the effect of changes in revenues and operating costs caused by a program on customers’ bills and rates

- The TRC test represents the total value of a program and assesses impact on all stakeholders
- The value of the TRC is impacted by avoided costs of traditional generation
- TRC can be applied to all DSM measures to assess their relative cost-effectiveness and impact

All tests were applied to each DSM measure to assess its potential impact for Energy

Process Flow Chart



DSM POTENTIAL STUDY: HIGH-LEVEL SUMMARY OF ANALYTICAL APPROACH

- Highly-detailed analysis was completed for Entergy New Orleans for the residential, commercial, and industrial sectors
- For each sector, unique factors were considered:
 - program costs
 - customer counts by type
 - rate structures
 - building types
 - weather conditions

	Sectors/ Building Types	Energy End-Uses	Unique Weather Locations	DSM Measures
Residential	147	5	15	39
Commercial	9	5	15	21
Industrial	16	9	n/a	126

- After estimating the savings for each measure, the number of potential annual installations and the cost effectiveness was estimated for each measure.
- From this, the potential savings from each measure was bundled into larger programs; implementation costs were estimated, and program-level cost-effectiveness and annual savings impacts were estimated for the 10 year analysis period.

Market Scenarios / Assumptions to Measure DSM Potential

	Low case	Reference case	High case
Gas price	\$5.0 / MMBtu	\$7.60 / MMBtu	\$12.0 / MMBtu
CO₂ price	\$10 / ton by 2020	\$25 / ton by 2020	\$50 / ton by 2020
New capacity cost	\$350 / kW	\$680 / kW	\$850 / kW
Net to gross ratio	Same as reference	80%	Same as reference
Program cost	+20%	Baseline	-20%
Participation level	-10%	Baseline	Baseline +
Incentive level	3 yr payback capped at 50% measure	2 yr payback capped at 75% measure	1 yr payback capped at 100% measure (or best judgment by ICF)

ENOI – Estimated 10 Year DSM Potential

	Energy			Demand			10 Year Cumulative Program Cost (Thousands)
	Cumulative mWh Saved over 10 Years	% of Total Energy Forecast	% of Sales Growth	Cumulative mW Saved over 10 Years	% of Total Demand Forecast	% of Demand Growth	
Low	57,829	1.2%	16.8%	40	4.4%	32.2%	\$18,061
Reference	114,565	2.3%	33.5%	73	7.9%	58.6%	\$37,044
High	171,499	3.4%	50.1%	102	11.2%	82.4%	\$71,115

Key Takeaways:

- The estimated 10 year DSM potential assumes that all cost effective DSM programs are fully funded and implemented
- The range of DSM potential estimates in the Low, Reference and High scenarios are driven by the key assumptions that define these scenarios as shown on the previous slide
- These DSM potential estimates are derived from a bottoms up engineering analysis and actual results may vary based on regional market forces that may only be identified through DSM program pilots and full scale program implementation

Projected CO2 Reductions from DSM Program Energy Savings

It is estimated that DSM programs implemented over a ten year time frame in ENO's service area could avoid 40,682 Metric Tons of CO2

Which is equivalent to:

- Annual GHG emissions from 6,759 passenger vehicles**
- CO2 emissions from 4,189,113 gallons of gasoline consumed**
- Carbon sequestered by 946,310 tree seedlings grown for 10 years**
- Carbon sequestered annually by 8,388 acres of pine forest**

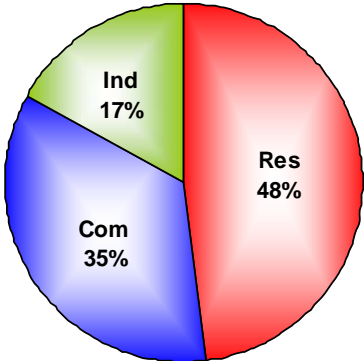
ENOI - Cumulative Energy/Demand Saved Over 10 Yrs

Low Scenario

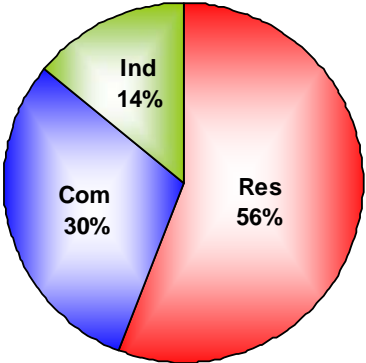
Reference Scenario

High Scenario

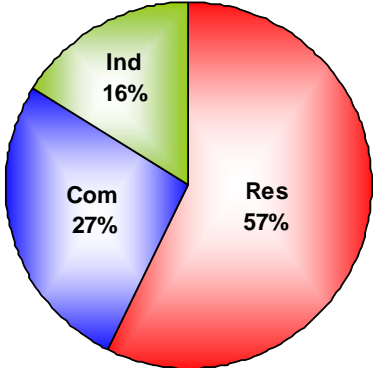
**Energy
mWh**



57,829 mWh

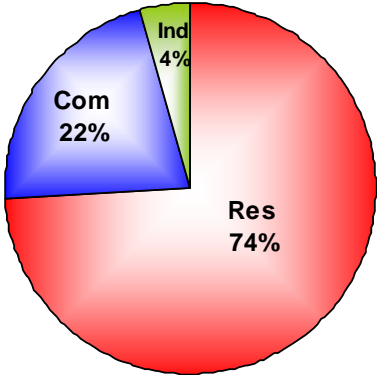


114,565 mWh

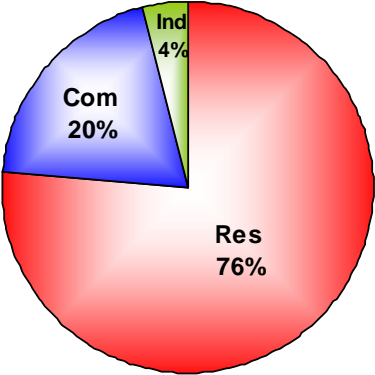


171,499 mWh

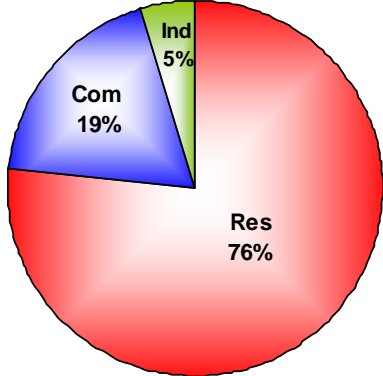
**Demand
mW**



40 mW



73 mW



102 mW

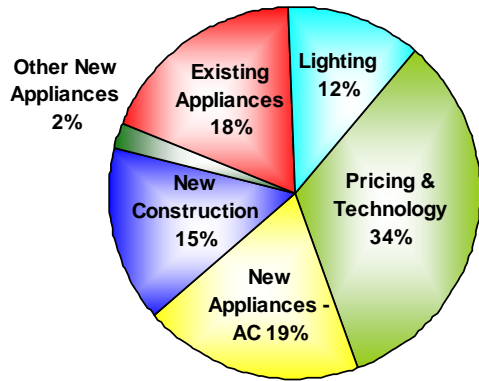
ENOI - Reference Scenario – DSM Energy/Demand Saved Over 10 Yrs

Residential

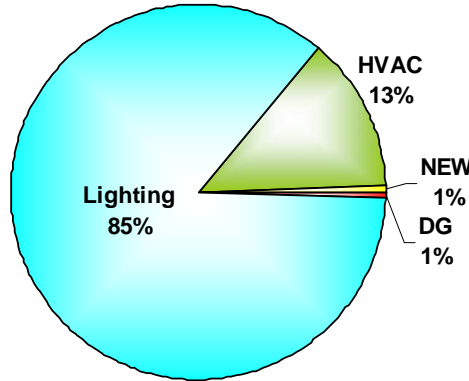
Commercial

Industrial

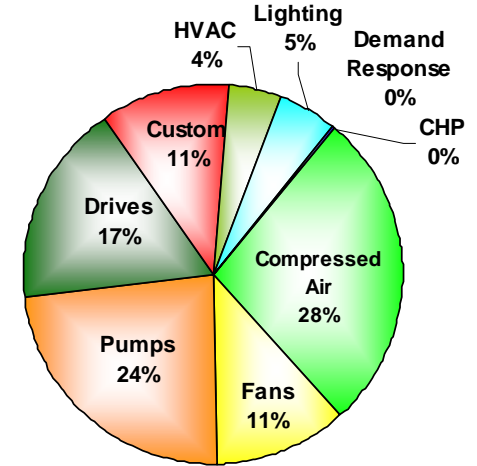
Energy
mWh



64,156 MWH

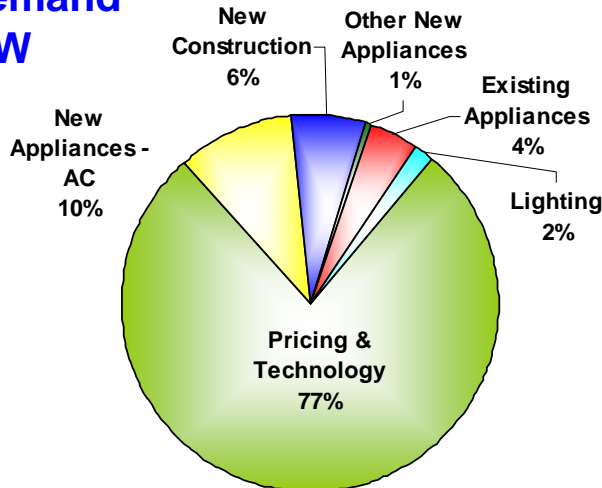


34,370 MWH

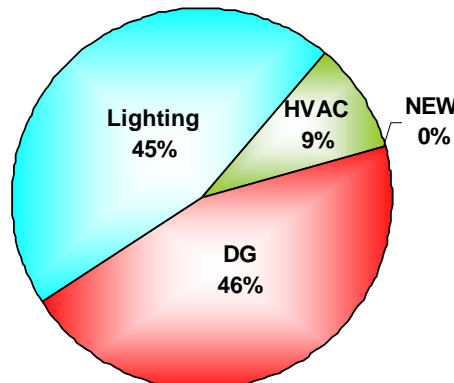


16,039 MWH

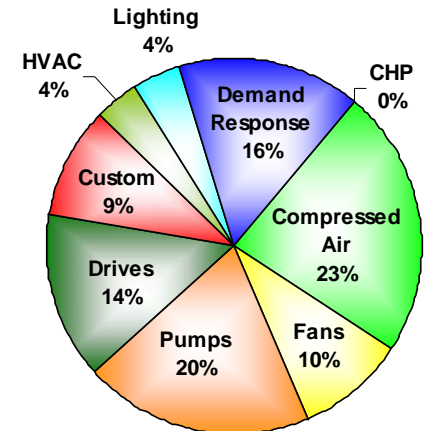
Demand
mW



55 MW



15 MW

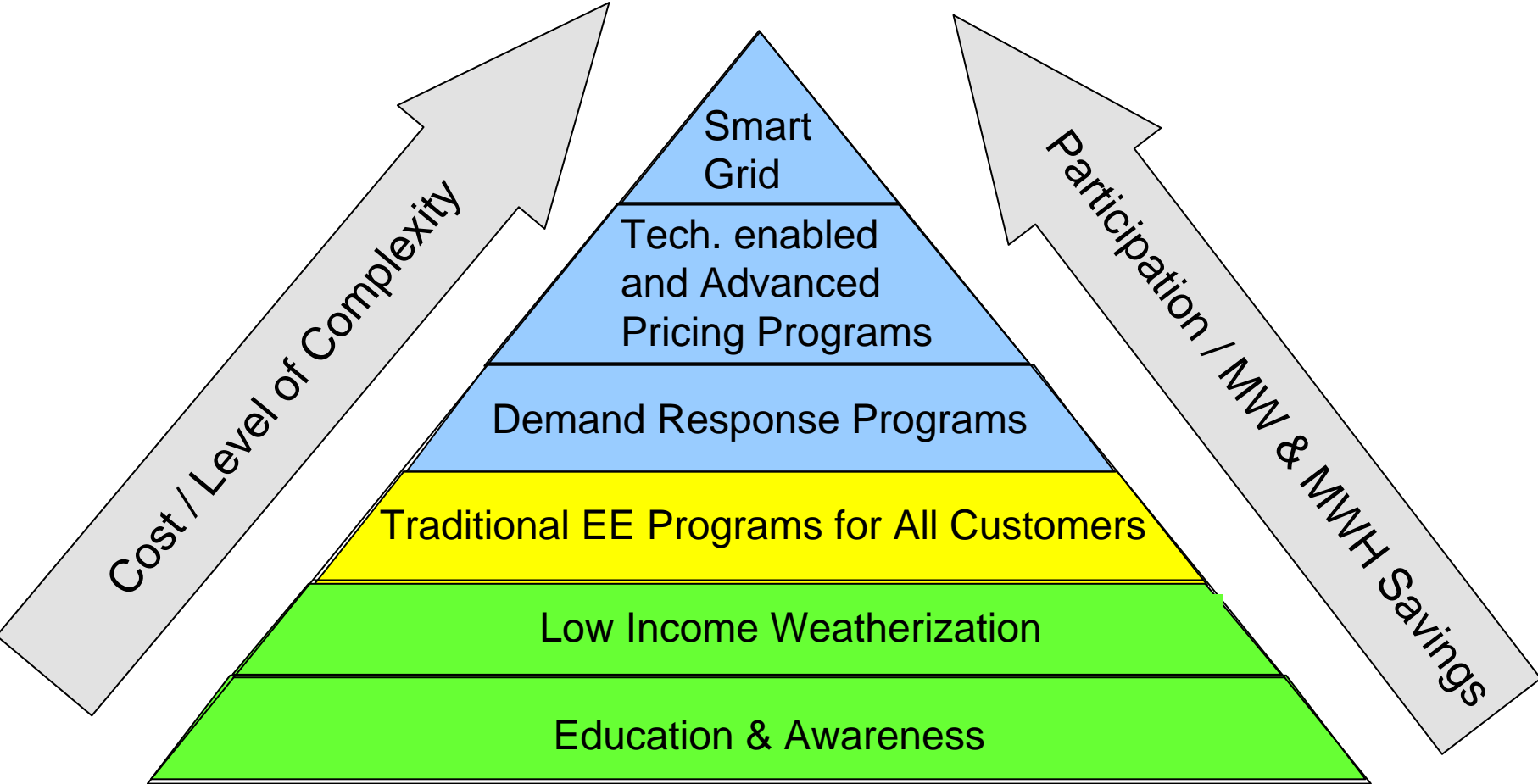


3 MW

NEXT STEPS

- Continue to work with the City Council and Key Stakeholders to develop an integrated DSM approach and the regulatory framework to implement cost effective DSM programs on a larger scale
- Roll out initial energy efficiency programs that address low hanging fruit and the immediate needs of the Community
- Continue to move forward with the development and implementation of enabling technologies (AMI / Smart Grid)
- Develop and implement rate designs that support DSM pricing programs

Building a Comprehensive DSM Platform



-  **Underway**
-  **Planned – Limited Scale in 2009**
-  **Future Programs – Timing Based on Investment Approval and the Rate of Technology Development**