

# Quantifying Multiple Benefits of Energy Efficiency in Georgia

Energy Efficiency As A Resource  
Conference  
September 2005

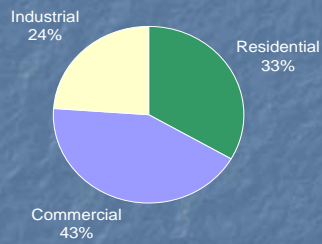
## Results: Achievable Energy Efficiency 2010 Achievable Potential – Total Potential and Percent of 2010 Load

Load Type	Minimally Aggressive	Moderately Aggressive	Very Aggressive
<b>Reduction in Electricity Sales (MWh)</b>			
MWh	3,338,924	8,704,577	12,546,554
Percent of 2010 Load	2.3%	6.0%	8.7%
<b>Reduction in Peak Demand (MW)</b>			
MW	447	1,149	1,608
Percent of 2010 Load	1.7%	4.4%	6.1%
<b>Reduction in Gas Sales (MMcf)</b>			
MMcf	7,041	16,972	21,343
Percent of 2010 Load	1.8%	4.4%	5.5%

# Results: Achievable Energy Efficiency

Moderately Aggressive Scenario:

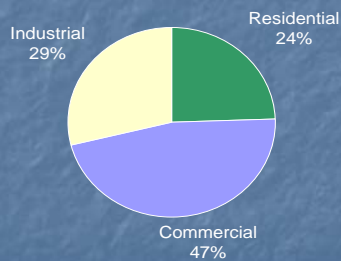
2010 Achievable Potential by Sector (Electricity Sales)



# Results: Achievable Energy Efficiency

Moderately Aggressive Scenario:

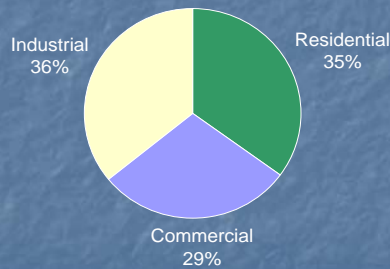
2010 Achievable Potential by Sector (Peak Demand)



# Results: Achievable Energy Efficiency

Moderately Aggressive Scenario:

2010 Achievable Potential by Sector (Gas Sales)

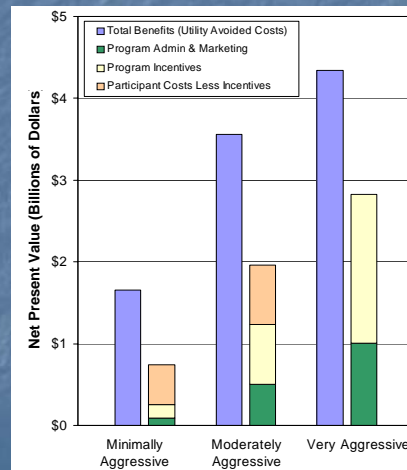


# Achievable Energy Efficiency Potential

- Capturing this potential would be less expensive than producing the energy.

TRC Net Benefits and Benefit-Cost Ratios

Scenario	Net Benefits (\$Billions)	Benefit-Cost Ratio
Minimally Aggressive	\$0.9	2.2
Moderately Aggressive	\$1.6	1.8
Very Aggressive	\$1.5	1.5



## Results: Impact on Power Sector

- Capturing energy efficiency potential reduces the need for new capacity
- Some of the capacity reductions could come from outside of Georgia

Scenario	Reduction in New Generating Capacity (MW)
Minimally Aggressive	679
Moderately Aggressive	1,410
Very Aggressive	1,425

## Power Sector Impacts

Generation Reductions from Achievable Potential Scenarios—GWh in Georgia, National GWh, and Percent of National GWh in Georgia

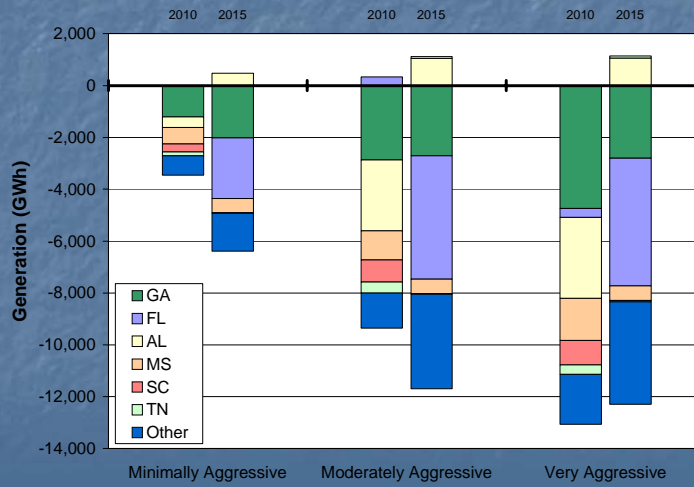
Scenario	2010			2015		
	Georgia GWh	National GWh	% in Georgia	Georgia GWh	National GWh	% in Georgia
Minimally Aggressive	1,207	3,457	35%	2,021	5,926	34%
Moderately Aggressive	2,874	9,023	32%	2,714	10,577	26%
Very Aggressive	4,749	13,065	36%	2,805	11,166	25%

2010 Generation and Emissions Reductions Within Georgia from Achievable Potential Scenarios – Total and Percent of State Power Sector

Scenario	Generation (GWh)		NO <sub>x</sub> (Thous Tons)		SO <sub>2</sub> (Thous Tons)		CO <sub>2</sub> (Thous Tons)	
Minimally Aggressive	1,207	0.7%	0.5	0.3%	1.1	0.2%	634	0.6%
Moderately Aggressive	2,874	1.8%	1.8	1.2%	4.8	0.8%	1,692	1.5%
Very Aggressive	4,749	2.9%	2.7	1.9%	7.6	1.3%	2,710	2.4%

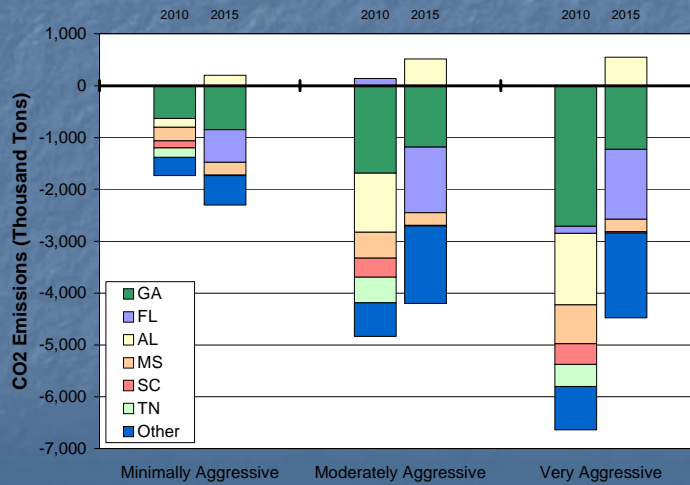
# Power Sector Impacts

## Changes in 2010 and 2015 Generation by State



# Power Sector Impacts

## Changes in 2010 and 2015 CO<sub>2</sub> Emissions by State



## Results: Impact on Prices

- The Integrated Planning Model was used to estimate changes in wholesale power costs for the “southern region”, an area that corresponds to trading market for Georgia

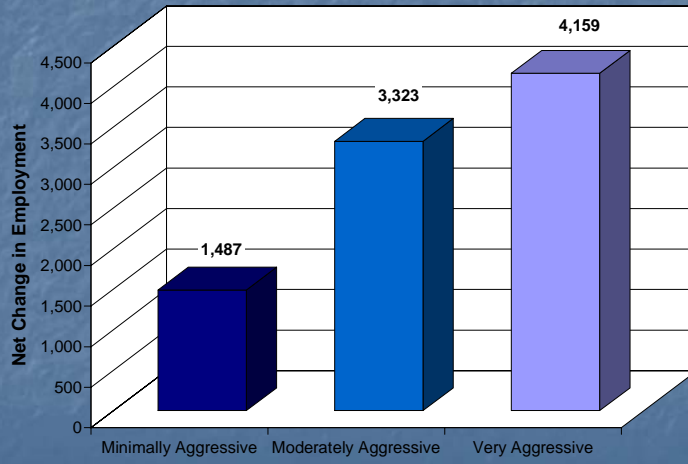
Changes in Southern Region Electricity Wholesale Prices and Georgia Electricity Retail Prices from Achievable Potential Scenarios

Scenario	Wholesale Prices (Southern Region)		Retail Prices (Georgia) One-Time Change	
	2010	2015	\$/kWh	% of 2005 Rate
Minimally Aggressive	-0.4%	-0.5%	\$0.001	0.9%
Moderately Aggressive	-0.7%	-3.8%	\$0.002	2.5%
Very Aggressive	-1.8%	-3.9%	\$0.003	3.9%

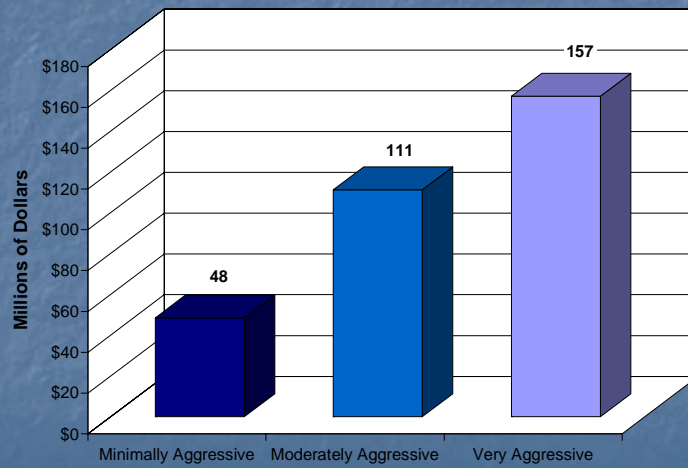
## Results: Impacts on the Economy

- Investment in energy efficiency generates a net gain for the economy
  - Employment
  - Personal income
- The results are sensitive to assumptions regarding the source of funds for the energy efficiency programs, but jobs increase under all assumptions.

### 2015 Employment Impacts from Achievable Potential Scenarios



### 2015 Personal Income Impacts from Achievable Potential Scenarios



## Policy Options

- Potential cannot be realized outside of a policy framework designed to support energy efficiency acquisition.
- Two primary policy “rationales”
  - **Resource acquisition**
  - **Public benefits**
- Two broad classes of policies
  - **Enabling policies:** Policy structures to support decision-making
  - **Direct intervention policies:** Policies which if implemented will directly lead to increased energy efficiency

## Types of Enabling Policies

- **Integrated Resource Planning** – make decision regarding ratepayer investment in EE in the context of overall resource decision making
- **Public Benefits Funding** – Policy decision made outside of resource planning process to support investment in EE due to broad public benefits
- **Portfolio Standards** – “X%” of load growth to be met with EE
- **Emissions Offsets** – Set-aside emissions allowances for EE projects
- **Certificate of Public Convenience and Necessity** – Show that cost-effective EE has been considered as an alternative

## Types of Direct Interventions

- **Building Codes** – adopt more stringent energy efficiency elements
- **Appliance Efficiency Standards** – States adopt standards for equipment not covered by Fed standards
- **Tax incentives** – Credits, deductions, sales tax rebates
- **“Feebates”** – Sliding scale hook-up fees based on building efficiency

## Why this report?

- Lack of *effective* EE/RE policy tools
  - Georgia has IRP, but has seen few new utility-sponsored DSM program in last decade.
  - No RPS, no public benefits fund, no EE/RE set-aside.
- Serious and persistent air quality problems.