DELBERT HOSEMANN
Secretary of State

ECONOMIC IMPACT STATEMENT

An Economic Impact Statement is required for this proposed rule by Section 25-43-3.105 of the Administrative Procedures Act. An Economic Impact Statement must be attached to this Form and address the factors below. A PDF document containing this executed Form and the Economic Impact Statement must be filed with any proposed rule, if required by the aforementioned statute.

AGENCY NAME	CONTACT PERSON		TELEPHONE NUMBER
Public Service Commission	Brian U. Ray		601-961-5432
ADDRESS P.O. Box 1174	CITY Jackson	STATE MS	ADDRESS P.O. Box 1174
EMAIL Brian.Ray@psc.state.ms.us	DESCRIPTIVE TITLE OF PROPOSED RULE Conservation and Energy Efficiency Programs		

Specific Legal Authority Authorizing the promulgation of Rule:	Reference to Rules repealed, amended or suspended by the Proposed Rule:
Miss. Code Ann. § 77-3-45	Public Utilities Rules of Practice and Procedure

SIGNATURE	TITLE
[signature]	Executive Secretary
DATE 11/15/2012	PROPOSED EFFECTIVE DATE OF RULE 30 DAYS FROM FINAL RULE

1. Describe the need for the proposed action:
2. Describe the benefits which will likely accrue as the result of the proposed action:
3. Describe the effect the proposed action will have on the public health, safety, and welfare:
4. Estimate the cost to the agency and to any other state or local government entities, of implementing and enforcing the proposed action, including the estimated amount of paperwork, and any anticipated effect on state or local revenues:
5. Estimate the cost or economic benefit to all persons directly affected by the proposed action:
6. Provide an analysis of the impact of the proposed rule on small business:
    a. Identify and estimate the number of small businesses subject to the proposed regulation:
    b. Provide the projected reporting, recordkeeping, and other administrative costs required for compliance with the proposed regulation, including the type of professional skills necessary for preparation of the report or record:
    c. State the probable effect on impacted small businesses:
    d. Describe any less intrusive or less costly alternative methods of achieving the purpose of the proposed regulation including the following regulatory flexibility analysis:
        i. The establishment of less stringent compliance or reporting requirements for small businesses;

ii. The establishment of less stringent schedules or deadlines for compliance or reporting requirements for small businesses;
iii. The consolidation or simplification of compliance or reporting requirements for small businesses;
iv. The establishment of performance standards for small businesses to replace design or operational standards required in the proposed regulation; and
v. The exemption of some or all small businesses from all or any part of the requirements contained in the proposed regulations:

7. Compare the costs and benefits of the proposed rule to the probable costs and benefits of not adopting the proposed rule or significantly amending an existing rule:
8. Determine whether less costly methods or less intrusive methods exist for achieving the purpose of the proposed rule where reasonable alternative methods exist which are not precluded by law:
9. Describe reasonable alternative methods, where applicable, for achieving the purpose of the proposed action which were considered by the agency:
10. State reasons for rejecting alternative methods that were described in #9 above:
11. Provide a detailed statement of the data and methodology used in making estimates required by this subsection:

Economic Impact Statement of the Mississippi Public Service Commission's Proposed Energy Efficiency Rules,

Docket No. 2010-AD-2

July 2, 2012

Completed by GDS Associates, Inc.

GDS Associates, Inc.
Engineers and Consultants

(a) A Description of the Need for and the Benefits Which Will Likely Accrue as the Result of the Potential Action

Several key benefits would likely accrue as a result of implementing the proposed rule in Mississippi:

1. Reduced Energy Consumption - Aggressive energy-efficiency initiatives Mississippi could prevent energy consumption in the residential, commercial, and industrial sectors from growing over the next twenty years. In the absence of such initiatives, energy consumption in these three sectors is forecast to grow by approximately 3% between 2010 and 2030. With energy efficiency policies in place, Mississippi's energy consumption could drop below its 2010 levels by 2030[1].
2. Reduced Need for New Generating Capacity - Fewer new power plants would likely be needed as a result of demand reduction associated with energy efficiency programs.
3. Job Growth - Increased investments in cost-effective energy efficiency would generate jobs. The public and private investments stimulated by energy-efficiency policies would deliver rapid and substantial benefits to the State.
4. Reduced Water Consumption - Water conservation is an important co-benefit of policies that promote the efficient use of electricity.

Projected Energy and Demand Savings

Table 1 below shows projected Year 1 energy savings and demand reduction for each sector. Year 1 energy savings were derived from the *Energy Efficiency in the South*[2] projection for Mississippi and serves as the basis for the economic tests used for the analysis in Section C. Year 1 demand reduction estimates are based on the load profile projections assumed as inputs for the benefit/cost models for each sector, as applied to the projected Year 1 energy savings.

Sector	**Electric Energy Savings (MWh)**	**Natural Gas Energy Savings (MMBtu)**	**Electric Demand Reduction (MW)**
Residential	66,988	71,429	18.5
Commercial	100,000	58,700	27.6
Industrial	174,200	1,005,700	47.0
Total	**341,188**	**1,135,829**	**93.1**

Table 1: Year 1 Energy Savings and Demand Reductions for Each Sector

Table 2 below shows projected cumulative 20-year energy savings and demand reduction. With energy efficiency policies in place, Mississippi may be able to avoid construction of roughly 800 MW of generating capacity.

Sector	Electric Energy Savings (GWh)	Natural Gas Energy Savings (BBtu)	Electric Demand Reduction (MW)
Residential	8,631	9,198	184.9
Commercial	9,270	5,932	207.0
Industrial	19,111	116,776	411.5
Total	**37,012**	**131,906**	**803.4**

Table 2: 20-Year Cumulative Energy Savings and Demand Reductions for Each Sector

Job Growth

Energy efficiency programs lead to job growth. According to an input-output calculation method from ACEEE (American Council for an Energy-Efficient Economy), Mississippi could be expected to experience net gains of 6,900 jobs annually by 2020, and 9,500 annually by 2030.[3]

Reduced Water Consumption

Water conservation is an important co-benefit of policies that promote the efficient use of electricity. According to the *Energy Efficiency in the South* study,

> *"the freshwater consumed in the process of cooling conventional and nuclear thermoelectric power plants in the Southern NERC regions is forecast to grow to 334 billion gallons in 2020 and 381 billion gallons in 2030. Implementation of ... Energy-efficiency policies ... could avoid generation that in turn would save southern NERC regions 8.6 billion gallons of freshwater in 2020 and 20.1 billion gallons in 2030. On a percentage basis, this represents 56% of the projected growth in water consumption over the next decade, and 43% of the projected growth for the following decade. These savings in 2030 represent about one-quarter of the current total water needs of the City of Atlanta."*[4]

Mississippi could be expected to see savings of about 344 million gallons of fresh water in 2020 and 844 million gallons in 2030 based on projected avoided generating capacity of about 800 MW compared with a reduction of 19 GW for the southern NERC regions.

(b) An Estimate of the Cost to the Agency, and to Any Other State or Local Government Entities, of Implementing and Enforcing the Proposed Action, Including the Estimated Amount of Paperwork, and Any Anticipated Effect on State or Local Revenues

The cost to the agency in implementing and enforcing the proposed rule is best represented as the administration cost for the energy efficiency programs that would be created. This cost would include planning, management, tracking and reporting, general paperwork, processing of rebate applications, and costs associated with program evaluation. Program administration costs would be considered as separate from rebate costs. As described in Section C, all program costs to be used as inputs to the benefit/cost models were estimated based on the projected energy savings for each key sector (residential, commercial, and industrial) in the State of Mississippi. Program cost factors were estimated based on budgets per kWh of electricity and per Therm of natural gas for several existing programs. These program cost factors were then applied to the projected electric and gas savings for Mississippi as shown in Section A.

Table 3 below shows the estimated Year 1 program administration costs projected for electric and natural gas programs in each sector. Total Year 1 program costs are estimated at just over $15 Million.

Sector	**Program Admin. Costs**
Residential, elec.	$ 1,568
Residential, gas	$ 116
Commercial, elec.	$ 1,755
Commercial, gas	$ 72
Industrial, elec.	$10,195
Industrial, gas	$ 1,426
Total	**$15,132**

Table 3: Year 1 Program Administration Costs ($000)

Table 4 below shows the net present value of estimated lifetime program administration costs for all sectors to be nearly $130 Million.

Sector	**Program Admin. Costs**
Residential, elec.	$13,707
Residential, gas	$ 831
Commercial, elec.	$15,343
Commercial, gas	$ 520
Industrial, elec.	$89,137
Industrial, gas	$10,243
Total	**$129,781**

Table 4: NPV Lifetime Program Administration Costs ($000)

(c) An estimate of the cost or economic benefit to all persons directly affected by the proposed action

Summary

Persons directly affected by the proposed action include program administrators, program participants, and utilities.

All program projections had lifetime benefit/cost model results of greater than 1.0 for the Total Resource Cost (TRC) Test and the Participant Test. The Ratepayer Impact (RIM) Test had mixed results, with benefit/cost ratios of close to neutral or below 1.0.

First year avoided energy costs were estimated to be $21,692,000 and first year avoided capacity costs were estimated to be $395,000 based on the derived energy efficiency program savings goals. Note that three different capacity forecasts were used to test the sensitivity of the benefit/cost model, and the results are shown in the discussion below. Differences in the capacity forecasts did have an impact on the benefit/cost model results, but the impacts were relatively minor; therefore, the capacity cost forecast developed from discussion with key utilities and the Public Service Commission (Electric Capacity Forecast 1) is the one highlighted in the benefit/cost results and the lifetime net present value of benefits results.

First year program costs were estimated as follows:

- Program participant net incremental installation cost (after rebate) - $71,690,000
- Program rebate cost - $53,996,000
- Program Administration cost - $15,132,000

First year utility lost revenues (customer retail rate savings) were estimated to be $24,123,000

Methodology

Dummy energy efficiency programs with savings goals derived from baselines and potential savings projected by the *Energy Efficiency in the South*[1] study were evaluated by sector using standard benefit/cost tests for energy efficiency - the Total Resource Cost (TRC) Test, the Participant Test, and the Ratepayer Impact Measure (RIM) Test. Derived first year savings projections by sector were compared with population-adjusted savings from the State of Wisconsin's existing *Focus on Energy Program* as a check of reasonableness. The magnitude of projected first year savings does not affect benefit/cost model results, but does affect the total projected first year and NPR lifetime dollar costs and savings.

Total Resource Cost (TRC) Test

Per the *California Public Service Commission Standard Practice Manual, 2001*, the TRC Test measures the net costs of an energy efficiency program as a resource option based on the total costs of the program, including both the participants' and the utility's costs. The benefits calculated in the TRC Test are the avoided supply costs, the reduction in transmission, distribution, generation, and capacity costs valued at marginal cost for the periods when there is a load reduction. The avoided supply costs should be calculated using net program savings (savings net of changes in energy use that would have happened in the absence of the program). The costs in the TRC Test are the program costs paid directly by both the utility and the participants, plus the increase in supply costs for the periods in which load is increased.

Participant Test

Per the *California Public Service Commission Standard Practice Manual, 2001*, the Participant Test is the measure of the quantifiable benefits to the customer due to participation in a program. The benefits of participation in an energy efficiency program include the reduction in the customer's utility bill(s), any incentive paid to the customer by the program, and any federal, state, or local tax credit received. The reductions to the utility bill(s) should be calculated using the actual retail rates that would have been charged for the energy service provided (electric demand or energy or gas). The costs to a program participant are all out-of-pocket expenses incurred as a result of participating in a program, plus any increases in the customer's utility bill(s). The out-of-pocket expenses include the cost of any equipment or materials purchased, including sales tax and installation; any ongoing operation and maintenance costs; any removal costs (less salvage value); and the value of the customer's time in arranging for installation of the measure, if significant.

Ratepayer Impact Measure (RIM) Test

As described in the *California Public Service Commission Standard Practice Manual, 2001*, the Ratepayer Impact Measure (RIM) Test measures what happens to customer bills or rates due to changes in utility revenues and operating costs caused by the program. Rates will go down if the change in revenues from the program is greater than the change in utility costs. Conversely, rates will go up if revenues collected after program implementation are less than the total costs incurred by the utility in implementing the program. The benefits calculated in the RIM Test are the savings from avoided supply costs. These avoided costs include the reduction in transmission, distribution, generation, and capacity costs for periods when the load has been reduced and the increase in revenues for any periods in which load has been increased. The costs for the RIM Test are the program costs incurred by the utility, and/or other entities incurring costs in creating and administering the program, the incentives paid to the participant, decreased revenues for any periods in which load has been decreased, and increased supply costs for any period when load is increased. Results of the RIM Test are probably less certain than those of other tests because the test is sensitive to the differences between long-term projections of marginal costs and long-term projections of rates – two cost streams that are difficult to quantify with certainty.

As described above, program savings from the *Energy Efficiency in the South*[1] study for each of the sectors were used as the basis for projecting program administrative costs, program incentive costs, and incremental cost of energy efficiency measures in the programs. It was necessary to make three key assumptions in completing the model inputs because the starting point was overall annual energy savings for generic programs, instead of results of a full energy efficiency potential study built from the bottom up from individual measures and saturation data:

1. Measure mix for electric and natural gas programs for each of the sectors – This is needed in order to determine a profile for each program, in order to obtain an average measure life and simple payback. Measure mixes assumed for each sector were obtained from previous energy efficiency potential studies completed by GDS Associates. The measure mixes from existing potential studies were then used to obtain weighted average measure life and simple payback for each sector's programs. Measure life is a direct input in the benefit/cost model, and average simple payback was used to estimate total incremental cost of the program measures from total avoided costs of the program.
2. Program costs per annual kWh of electricity saved and per Therm of natural gas saved – This was needed in order to project total program administrative costs and program incentive costs based on the annual energy savings per sector. This information was obtained from public information on budgets for electric and gas utilities' energy efficiency programs. Budgets included total administrative costs and incentive budgets for projected annual energy savings. This was used to determine an average administrative and incentive cost per annual kWh and Therm saved that were multiplied by the annual energy savings for each sector to obtain total program administrative and incentives costs that are required direct inputs to the benefit/cost model.
3. Load profile for each sector's programs –This was needed in order to estimate avoided capacity based on the annual energy savings per sector, and was input to the benefit cost model as an average load profile for all end uses contained in the program.

Avoided costs and retail rates for electricity and natural gas were obtained from Entergy Mississippi, Mississippi Power, Centerpoint Energy, and Atmos Energy.

Cost of electric capacity for Mississippi required input from several parties.

In many states, the avoided cost of electric capacity used in benefit/cost models is Cost of New Entry (CONE) of a natural gas fired turbine or similar technology. Mississippi (based on discussions with Mississippi Power, Entergy, and Public Service Commission staff members) currently has an abundance of generating capacity, such that some current projections don't include new capacity being needed until 2026. In order to address the uncertainty of avoided capacity costs and to provide an idea of the sensitivity of the benefit/cost model to avoided capacity cost, three different scenarios of the model were run:

Electric Capacity Forecast 1

This scenario utilizes the existing forecast of new capacity being added in 2026, with extremely low market capacity costs seen from 2013 to 2025. Capacity costs used in the model avoided cost inputs for 2013-2025 ranged from $1.10/kW-yr to $9.40/kW-yr. After 2025 a capacity cost generally between $80/kW-yr and $96/kW-yr is used in the model.

Electric Capacity Forecast 2

This scenario includes an accelerated need for new capacity, with new capacity added in 2019 rather than 2026, and essentially the same cost levels before and after new capacity addition as in Electric Capacity Forecast 1.

Electric Capacity Forecast 3

This scenario includes a delayed need for new capacity, with new capacity added in 2031 rather than 2026, and essentially the same cost levels before and after new capacity addition as in Electric Capacity Forecast 1.

For the purposes of the impact statement, Electric Capacity Forecast 1 is the only one based on current projections from Mississippi electric utilities. Forecast 2 and Forecast 3 should be viewed primarily as sensitivity tests of the model to variations in timing of capacity additions. Net Present Value totals for avoided capacity cost are shown in Table 5 below.

Results of the benefit/cost modeling for electric (three separate versions for the three different electric capacity cost forecasts) and gas programs in each sector are shown in Table 5 below. Key results (TRC Test results for Electric Capacity Forecast 1 and for Natural Gas) are shown in bold.

Sector	Fuel	Elect. Capacity Forecast	TRC	Participant	RIM
Residential	Elec.	1	**1.65**	1.58	1.06
Residential	Elec.	2	1.98	1.58	1.27
Residential	Elec.	3	1.52	1.58	0.98
Residential	N.G.	N/A	**1.37**	1.82	0.58
Commercial	Elec.	1	**2.95**	2.99	1.04
Commercial	Elec.	2	3.85	2.99	1.25
Commercial	Elec.	3	2.73	2.99	0.96
Commercial	N.G.	N/A	**1.14**	2.13	0.57
Industrial	Elec.	1	**3.08**	3.51	1.05
Industrial	Elec.	2	3.68	3.51	1.25
Industrial	Elec.	3	2.85	3.51	0.97
Industrial	N.G.	N/A	**2.60**	6.71	0.58

Table 5: Benefit/Costs Model Results for Each Sector

Residential and commercial natural gas energy efficiency programs had the lowest benefit/cost ratio in terms of the TRC Test (the standard benefit/cost test because of its broad perspective of program economic impacts) at 1.37 and 1.14, respectively. This would be expected because residential and commercial natural gas programs are typically dominated by measures that either directly or indirectly impact space heating – an end use that presents less opportunity for savings in the South than in northern climates.

Residential electric energy efficiency programs had a lower TRC Test benefit/cost ratio than commercial and industrial electric programs. This is commonly seen because lower runtimes of certain equipment (notably lighting) in residential applications limits savings potential, measures installed in residential applications are often shorter-lived than measures installed in commercial and industrial settings, and commercial and industrial customers have very limited tolerance for longer payback measures.

Natural gas energy efficiency programs had lower TRC Test benefit/cost ratios than electric energy efficiency programs.

TRC Test benefit/cost ratios for all three sectors and for both electric programs and natural gas were greater than 1.0, meaning that overall program lifetime benefits to the state would be greater than lifetime program costs in all cases.

Participant Test benefit/cost ratios for all three sectors and for both electric programs and natural gas programs were also greater than 1.0 in all cases, meaning that direct economic benefit to residential, commercial, and industrial customers in the form of immediate bill savings and program incentives would expected to be greater than the cost of installing program measures.

Ratepayer Impact Measure (RIM) Test benefit/cost ratios were mixed. RIM test results were slightly better than 1.0 for electric programs but were under 1.0 for natural gas programs. This would indicate a neutral to negative impact on rates (neutral to higher rates). As described earlier, however, results of the RIM Test are less certain than results of the other tests, and the RIM Test often fails to consider the impact that energy efficiency programs have on avoiding new base generation facilities that are significant in impacting rates.

First year program costs and benefits are shown in Table 6 and Table 7, respectively. These represent an estimate of what program costs and benefits would be in Year 1 of Mississippi statewide programs based on the derived electric and natural gas energy savings. Note that Year 1 capacity cost savings are the same for all three electric capacity forecast models.

Sector	**Fuel**	**Elect. Capacity Forecast**	**Net Incremental Equipment & Installation Costs**	**Rebate Costs (Benefit from Participant Perspective)**	**Program Admin. Costs**	**Lost Utility Revenue (Benefit from Participant Perspective)**
Residential	Elec.	1, 2, 3	$25,956	$10,492	$1,568	$3,429
Residential	N.G.	N/A	$ 5,416	$ 1,041	$ 116	$ 605
Commercial	Elec.	1, 2, 3	$ 9,090	$11,745	$1,755	$3,839
Commercial	N.G.	N/A	$ 1,981	$ 652	$ 72	$ 368
Industrial	Elec.	1, 2, 3	$17,328	$17,236	$10,195	$7,800
Industrial	N.G.	N/A	$11,920	$12,830	$ 1,426	$8,082
Total			**$71,691**	**$53,996**	**$15,132**	**$24,123**

Table 6: Program Year 1 Costs ($000)

Sector	**Fuel**	**Elect. Capacity Forecast**	**Energy Savings (Avoided Supply Costs)**	**kW Savings (Capacity and T&D)**	Retail Rate Savings (Lost Revenue Cost from Utility Perspective)
Residential	Elec.	1, 2, 3	$3,531	$ 91	$3,429
Residential	N.G.	N/A	$ 605	N/A	$ 605
Commercial	Elec.	1, 2, 3	$3,952	$102	$3,839
Commercial	N.G.	N/A	$ 242	N/A	$ 368
Industrial	Elec.	1, 2, 3	$8,042	$202	$7,800
Industrial	N.G.	N/A	$5,320	N/A	$8,082
Total			**$21,692**	**$395**	**$24,123**

Table 7: Program Year 1 Benefits ($000)

Lifetime net present value program costs and benefits are shown in Table 8 and Table 9, respectively. These represent an estimate of what program costs and benefits would be through 2034 based on the derived electric and natural gas energy savings and projected lifetime of measures installed.

Sector	**Fuel**	**Elect. Capacity Forecast**	**Net Incremental Equipment & Installation Costs**	**Rebate Costs (Benefit from Participant Perspective)**	**Program Admin. Costs**	Lost Utility Revenue (Benefit from Participant Perspective)
Residential	Elec.	1, 2, 3	$226,924	$ 91,730	$13,707	$412,223
Residential	N.G.	N/A	$ 38,917	$ 7,480	$ 831	$ 64,853
Commercial	Elec.	1, 2, 3	$ 79,471	$102,683	$15,343	$441,725
Commercial	N.G.	N/A	$ 14,234	$ 4,683	$ 520	$ 22,215
Industrial	Elec.	1, 2, 3	$151,493	$150,693	$89,137	$911,402
Industrial	N.G.	N/A	$ 85,643	$ 92,187	$10,243	$488,499
Total			**$596,682**	**$449,456**	**$129,781**	**$2,340,917**

Table 8: NPV Lifetime Costs ($000)

Differences in NPV capacity cost savings are shown in Table 9 for the three different capacity cost forecast models.

Sector	Fuel	Elect. Capacity Forecast	Energy Savings (Avoided Supply Costs)	kW Savings (Capacity and T&D)	Retail Rate Savings (Lost Revenue Cost from Utility Perspective)
Residential	**Elec.**	**1**	**$494,567**	**$ 54,305**	**$412,223**
Residential	Elec.	2	$494,567	$161,868	$412,223
Residential	Elec.	3	$494,567	$ 11,157	$412,223
Residential	**N.G.**	**N/A**	**$ 64,853**	**N/A**	**$ 64,853**
Commercial	**Elec.**	**1**	**$529,853**	**$ 53,098**	**$441,725**
Commercial	Elec.	2	$529,853	$170,719	$441,725
Commercial	Elec.	3	$529,853	$ 9,889	$441,725
Commercial	**N.G.**	**N/A**	**$ 22,215**	**N/A**	**$ 22,215**
Industrial	**Elec.**	**1**	**$1,095,416**	**$110,822**	**$911,402**
Industrial	Elec.	2	$1,095,416	$346,541	$911,402
Industrial	Elec.	3	$1,095,416	$ 21,440	$911,402
Industrial	**N.G.**	**N/A**	**$488,499**	**N/A**	**$488,499**
Total			**$2,695,403**	**$218,225**	**$2,340,917**

Table 9: NPV Lifetime Benefits ($000)

Note on Effectiveness of Energy Efficiency Programs

Some arguments against energy efficiency programs described in the proposed rule are that energy efficiency programs overlook the human dimension, and that only the individual ratepayer can decide how best to allocate scarce resources.[6] The result, it is argued, is that energy efficiency programs lead to inefficient outcomes by increasing rates for all ratepayers, but only benefiting a few of these ratepayers.[7]

Counter arguments include the following:

1. Energy Efficiency Programs have been shown to be cost effective - All of the New England states, for example, have achieved very high kWh savings as a percentage of total annual kWh sales, with actual program administrator costs ranging from $.0082 to $.03 per lifetime kWh saved.[8]
2. Energy Efficiency Programs Have Not Been Shown to Cause Rates to Increase -There are numerous causes for rates to increase, including need for additional capacity due to load growth, and it has not been shown conclusively that energy efficiency programs result in rate increases. Many states with energy efficiency programs have seen a neutral impact on rates or a moderating impact on rates after programs have been enacted.
3. The RIM Test Should not be the Primary Cost/Benefit Test for Energy Efficiency Programs - Unlike the TRC Test, the RIM Test fails to consider the impact on participants'

> electric bills. Therefore, a program that would result in a consumer paying a higher rate would fail the RIM test, even if the program enabled the consumer to reduce usage so that the overall electric bill was less. Additionally, the inclusion of lost revenues as an actual "cost" in the RIM Test is not a common accounting practice for any other electric investment and thus, places an unfair penalty on energy efficiency.[9]

The December 2007 Energy Independence and Security Act (EISA) requires electric utilities to consider energy efficiency as a high priority resource.[10]

(d) An Analysis of the Impact of the Proposed Rule on Small Business

The impact of energy efficiency programs in Mississippi would be expected to have a positive impact on small businesses. This expectation is best illustrated by the Participant Test and TRC Test, modeled for small commercial customers.

The Participant Test lifetime electric energy efficiency program benefit/cost result for small businesses was 2.89 and TRC Test benefit/cost result was 2.70. These results are slightly lower than results of the same tests for overall commercial customers (2.99 Participant Test and 2.95 TRC Test), but this is most likely due to the fact that several measures with long expected lives that are appropriate for large commercial customers only (e.g. large centrifugal chillers and large motor measures) were eliminated from the small commercial program measure mix, thereby reducing the weighted average expected life for a small commercial measure from 12.4 years to 10.4 years.

The Participant Test lifetime natural energy efficiency program benefit/cost result for small businesses was 2.08 and TRC Test benefit/cost result was 1.12. These results are slightly lower than results of the same tests for overall commercial customers (2.13 Participant Test and 1.14 TRC Test), again most likely due to the fact that some longer lived measures were eliminated from the small commercial natural gas program measure mix.

The Ratepayer Impact Measure (RIM) Test lifetime benefit/cost result for small businesses was 0.99 for electric programs and 0.54 for natural gas programs. This indicates that rate increases could be possible due to loss of utility revenue and program administration costs; however, as pointed out earlier, RIM Test results are not certain given the many factors that can influence rates that are not considered in the RIM Test.

(e) A Comparison of the Costs and Benefits of the Proposed Rule to the Probable Costs and Benefits of Not Adopting the Proposed Rule or Significantly Amending an Existing Rule

The economic analysis completed in section (c) of this impact statement compares the costs and benefits of the proposed rule to the probable costs and benefits of not adopting the proposed rule. The costs of not adopting the proposed rule would be in the form of added energy use and added electric generation, transmission, and distribution capacity costs. Benefits of not adopting the proposed rule would include avoided program costs, avoided participant installation costs, and avoided utility lost revenue.

(f) A Determination of Whether Less Costly Methods or Less Intrusive Methods Exist for Achieving the Purpose of the Proposed Rule Where Reasonable Alternative Methods Exist Which Are Not Precluded by Law

The alternative to energy efficiency programs in the proposed rule to achieve similar energy production would be new generation sources for electricity and purchasing and burning additional natural gas for space heating and for industrial process applications.

In order to determine whether these approaches would be a less costly method of achieving the purpose of the proposed rule, GDS compared the levelized cost per unit of energy for energy efficiency programs based on the projected energy savings and program costs shown in Sections a and c to the levelized cost of supply side alternatives (power generation including transmission and distribution costs, and the costs of natural gas).

Table 10 below shows minimum, average, and maximum levelized costs ($/kWh) for conventional coal plants, advanced coal plants including carbon capture and storage, conventional combustion turbines, and advanced combustion turbines including carbon capture and storage. Levelized cost includes capital overnight cost, fixed O&M, variable O&M, fuel cost, and transmission and distribution cost.

Generation Technology	**Min. Levelized Cost ($/kWh)**	**Avg. Levelized Cost ($/kWh)**	**Max. Levelized Cost ($/kWh)**
Conventional Coal	$0.0855	$0.0941	$0.1108
Advanced Coal with CCS	$0.1263	$0.1362	$0.1545
Conventional Combustion Turbine	$0.0600	$0.0661	$0.0741
Advanced Combustion Turbine with CCS	$0.0808	$0.0893	$0.1040

Table 10: Levelized Cost of Common Electricity Generation Technologies[5]

Natural gas prices are difficult to forecast due to the volatility of the commodity price, but a delivered price of $8.00/MMBtu is a widely used estimate.

Table 11 below shows the levelized cost (20 year) of electric and gas energy efficiency programs as modeled in Sections a. and c. In the first scenario for each fuel type only measure installation costs, rebate costs, and program administration costs were included. In the second scenario, lost utility revenue was also included as a cost (although ratepayers would see this as a benefit).

Program	Costs Included	Levelized Cost Electricity ($/kWh)	Levelized Cost Natural Gas ($/MMBtu)
Electric	Installation Cost, Rebates, and Program Admin.	$0.0249	-
Electric	All program costs plus Utility Lost Revenue	$0.0726	-
Natural Gas	Installation Cost, Rebates, and Program Admin.	-	$1.93
Natural Gas	All program costs plus Utility Lost Revenue	-	$6.29

Table 11: Levelized Cost of Energy Efficiency Programs

Electric energy efficiency programs were more cost effective than all coal and combustion turbine technology options on a levelized cost ($/kWh) basis when only direct program costs are considered. When lost utility revenue is included along with program costs, the levelized program costs per kWh are in the range of levelized cost for a conventional combustion turbine (higher than average, but lower than the maximum projected).

Natural gas energy efficiency programs were more cost effective on a levelized cost basis ($/MMBtu) than burning natural gas at an equivalent level of consumption.

(g) A Description of Reasonable Alternative Methods, Where Applicable, for Achieving the Purpose of the Proposed Action Which Were Considered by the Agency and a Statement of Reasons for Rejecting Those Alternatives in Favor of the Proposed Rule

Alternative methods for achieving a similar purpose of the proposed rule (based on the level of projected savings for electric and natural gas energy efficiency programs) would include supply side options in the form of new electricity generation and burning of additional natural gas for space heating and process requirements, as discussed in Section f.

The estimated electric demand reduction by 2032 would be approximately 800 MW, as discussed in section a. In the absence of the programs that would be part of the proposed rule, this shortfall would likely need to be made up by some combination of base generation and peaking units (most likely in the form of coal or other fuel base generating stations and natural gas-fueled combustion turbines or similar). Levelized cost estimates for new generation shown in Section f. are costs for conventional and advanced coal stations and conventional and advanced combustion turbines.

(h) A Detailed Statement of the Data and Methodology Used to Prepare the Economic Impact Statement

Projections of potential savings for Mississippi's commercial, industrial, and residential sectors from Energy Efficiency in the South, Appendix G, State Profiles of Energy Efficiency Opportunities in the South: Mississippi, April 2010, Georgia Institute of Technology and Duke University.

GDS Associates Benefit/Cost Model was used to complete all economic tests for energy efficiency programs.

Weighted average commercial, industrial, and residential natural gas measure life and payback data from GDS Associates' 2009 SMEPA Potential Study measure data.

Weighted average commercial, industrial, and residential natural gas measure life and payback data from GDS Associates' 2009 Wisconsin Potential Study measure data. Projected annual energy consumption for weather-sensitive measures was weather-adjusted to Mississippi climatic conditions using a ratio of Heating Degree Days (Mississippi HDD/Wisconsin HDD).

Average program cost data ($/KWh electricity and $/Therm natural gas) and percent of program costs attributed to program administration from AEP TNC, Centerpoint Houston, and Ameren Illinois 2011 Projections.

Electric rates and avoided cost data provided by Mississippi Power Company and Entergy Mississippi, Inc.

Natural Gas rates and avoided cost data provided by Centerpoint and Atmos Energy.

Additional detailed methodology discussion is provided in Sections (c) and (d) of the impact statement.

References

1. *Energy Efficiency in the South, Appendix G, State Profiles of Energy Efficiency Opportunities in the South: Mississippi*, April 2010, Georgia Institute of Technology and

Duke University; Brown, Marilyn A.; Wang, Joy; Cox, Matt; Baek, Youngsun; Cortes, Rodrigo; Deitchman, Benjamin; Wang, Yu; Gumerman, Etan; Sun, Xiaojing; p. 4.

2. *Energy Efficiency in the South, Appendix G, State Profiles of Energy Efficiency Opportunities in the South: Mississippi*, pp. 5-7.
3. *Energy Efficiency in the South, Appendix G, State Profiles of Energy Efficiency Opportunities in the South: Mississippi*, pp. 8-9.
4. *Energy Efficiency in the South, April 2010*, Georgia Institute of Technology and Duke University; Brown, Marilyn A.; Wang, Joy; Cox, Matt; Baek, Youngsun; Cortes, Rodrigo; Deitchman, Benjamin; Wang, Yu; Gumerman, Etan; Sun, Xiaojing.
5. *EIA, Levelized Cost of New Generation Resources in the Annual Energy Outlook 2011*, Nov. 2010.
6. *Demand-Side Management: Government Planning Not Market Conservation (Testimony of Dan Simmons before the Georgia Public Service Commission)*, May 20, 2010, paragraph 2 of Summary from Testimony.
7. *Demand-Side Management: Government Planning Not Market Conservation (Testimony of Dan Simmons before the Georgia Public Service Commission)*, May 20, 2010, paragraph 3 of Summary from Testimony.
8. *Testimony of Richard F. Spellman, Caroline L. Guidry, and John L. Kaduk before the Georgia Public Service Commission* - May 7, 2010, p. 45.
9. *Testimony of Richard F. Spellman, Caroline L. Guidry, and John L. Kaduk before the Georgia Public Service Commission* - May 7, 2010, p. 27.
10. *Testimony of Richard F. Spellman, Caroline L. Guidry, and John L. Kaduk before the Georgia Public Service Commission* - May 7, 2010, p. 6.