

# ENERGY EFFICIENCY EQUALS ECONOMIC DEVELOPMENT

## **The Economics of Public Utility System Benefit Funds:**

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### **ABOUT THE AUTHORS**

Jerrold Oppenheim and Theo MacGregor are the co-authors of a comprehensive examination of the benefits of early childhood education, published in 2002. That document has been used extensively to inform policy makers about the needs and values of investments made in Pre-K and other early childhood programs. In 2006, Entergy again turned to Oppenheim and MacGregor for the answer to another critical question—that of “What is the business case for investing in low-income programs?”

For 2008, Entergy asked Oppenheim and MacGregor to examine more deeply the economics of investing in low-income programs that focus on energy use.

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Together, they are co-authors, with Greg Palast, of *Democracy And Regulation* (Pluto Press, 2002), winner of the American Civil Liberties Union Upton Sinclair Freedom of Expression Award. Much of their recent work is posted on [www.DemocracyAndRegulation.com](http://www.DemocracyAndRegulation.com).

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# I. INTRODUCTION<sup>1</sup>

Which does more for a local economy – a manufacturing plant or energy affordability programs for low-income homes? Perhaps surprisingly, investing in low-income energy affordability is one of the most potent tools available for stimulating the economy and softening income disparities, while providing to everyone benefits that far exceed the investment. To be sure, public investment in tax breaks to attract well-paid manufacturing jobs yields a positive economic benefit for a state. But, across the Entergy jurisdictions of Arkansas, Louisiana, New Orleans, Mississippi, and the Beaumont-Port Arthur area of Texas, investments in low-income efficiency yield *more than 23 times the investment*, as well as 216 jobs for every million dollars of investment. Public investments to attract manufacturing jobs also yield a positive benefit to the local economy – but, when analyzed in the same way, the economic benefit of low-income energy efficiency trumps that of the manufacturing plant.

We do not suggest that the decision should be either one or the other -- that is, we do not propose that state policies should not try to attract the relatively high-paid jobs a large-scale manufacturing plant brings. But we do suggest at least parallel investments in low-income energy efficiency.

In this study, we analyze the economic cost-effectiveness of investments in low-income energy efficiency, including how such investments multiply through the economy. We show that the investments:

- create jobs, the wages from which are spent on goods and services, thus creating more jobs, the wages from which are spent on more goods and services, and so on multiplying through the economy (net of the lesser multiplier effect of leaving these funds in household hands);
- lower energy bills, which puts more cash in the hands of low-income households to be spent on goods and services, multiplying as above (this is partially offset by the negative multiplier effect of reduced utility revenue);
- reduce pollution – particularly emissions of carbon dioxide, which in turn reduces property and health damage from climate change, conservatively measured as the cost of controlling carbon dioxide (*i.e.*, the projected price for an allowance to emit carbon dioxide); and
- result in other benefits not otherwise accounted for, such as reduced fires, lower crime rates, increased health, and reduced costs of utility collections and terminations, the value of which also multiply through the economy.

Investments to attract high-paying manufacturing jobs are also beneficial, so we do not recommend against them. But, when analyzed in the same way, state-mandated utility investment in low-income energy efficiency programs are a powerful source of economic development – almost three (2.7) times more powerful than alternatives, and they yield

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<sup>1</sup> The authors are grateful for research assistance from Dan Baw (Entergy Corp.), Elizabeth MacGregor, and Arthur Willcox.

triple the number of jobs. A combination of long-term energy efficiency investments and short-term emergency assistance is an essential and cost-effective way to break the back of poverty in a way that benefits the entire economy. (We chose manufacturing because it is a particularly strong driver of economic development. Our point is that there is also high economic value to investments in low-income energy efficiency.) Even a program comprised of one-third efficiency and two-thirds assistance would generate 19 percent more economic activity and 56 percent more jobs than an equal public investment in attracting a manufacturing plant. So public investment in low-income energy efficiency should be a key component of a balanced economic development strategy.

<b>Multipliers across Energy jurisdictions</b>		
<b>For every \$1,000,000 in investment</b>	<b>Increased economic output</b>	<b>Jobs</b>
<b>ENERGY EFFICIENCY</b>		
Net effect of investment	\$3,699,944	31
Net effect of bill savings	\$4,397,586	63
Effect of environmental improvement	\$1,707,728	13
Effect of non-energy benefits	\$13,211,457	109
<b>TOTAL</b>	<b>\$23,016,716</b>	<b>216</b>
<b>ASSISTANCE</b>		
Net effect of investment	\$2,108,640	44
Effect of non-energy benefits	\$1,791,523	15
<b>TOTAL</b>	<b>\$3,900,162</b>	<b>59</b>
<b>MANUFACTURING PLANT</b>		
Net effect of investment	\$11,977,143	90
Effect of environmental detriment	-\$3,376,227	-19
<b>TOTAL</b>	<b>\$8,600,916</b>	<b>71</b>

In an earlier study, we showed that investments to eradicate poverty return *almost four times the investment* to all people, not just the poor, by increasing wages multiplying through the economy and decreasing the costs we all pay for such things as healthcare and crime.<sup>2</sup> When families have enough money in their pockets, they spend more at the grocer and pharmacy, and at department stores, clothing stores, and toy stores – creating more jobs for people who then spend their new incomes on more products and services, thus creating yet more jobs. That is what economists call the multiplier effect. In this report, we demonstrate that confronting the low-income energy crisis is an extremely cost-effective way to reduce poverty and thus support families’ transition to self-sufficiency.

We have also shown in earlier studies that even a modest investment of \$1 per residential customer per month targeted to low-income energy efficiency yields benefits, using conventional benefit:cost analysis, of *seven times* the investment.<sup>3</sup> Obviously, energy is

<sup>2</sup> J. Oppenheim and T. MacGregor, “The Economics of Poverty: How Investments to Eliminate Poverty Benefit All Americans,” (Entergy Corp. n.d.[2006]), [www.democracyandregulation.com/detail.cfm?artid=99&row=0](http://www.democracyandregulation.com/detail.cfm?artid=99&row=0).

<sup>3</sup> J. Oppenheim and T. MacGregor, “The Economics of Low-Income Electricity Efficiency Investment” (Entergy Corp., 2001) (benefit:cost ratio of seven times investment, updated in the instant paper). *See also* J. Oppenheim and T. MacGregor, “Protecting Low-Income Consumers: Building on Two Decades of

saved and bills are reduced. In addition, environmental pollutants are reduced and jobs are created, property values are increased, and the costs of fire and ill health are reduced, as are utility collection costs.

It is increasingly difficult to live as a poor family in the richest nation the world has ever known. Being poor in America means not knowing whether enough food for dinner will be in the pantry tomorrow, or even whether essential prescriptions will be in the medicine cabinet. If you are poor in America, the odds are high that you cannot afford a doctor for your underweight or asthmatic child. It often means you cannot find a job – or that the job you have does not pay you enough to buy the essentials of life. You may not even have a home telephone or glass in every window. And you certainly cannot afford energy – \$4 a gallon for gasoline, the high and volatile price for heating gas or oil, or the increased price of electricity.

The territories served by Entergy – parts of Arkansas, Louisiana (including all of New Orleans), Mississippi, and Texas (Beaumont area) – are particularly hard hit by poverty and this has consequences far beyond the particular families directly affected. Low educational attainment drives wages down, the impact of which multiplies through the entire local economy. Poor health drives up medical costs that everyone must pay.

As energy prices have doubled and tripled, poor families have fallen further and further behind. The proportion of Entergy customers disconnected from utility service and then unable to reconnect has increased.<sup>4</sup> Eliminating or reducing this energy crisis is an extremely cost-effective contribution to the eradication of poverty by helping to move people toward self-sufficiency. Helping families meet essential needs, such as that for energy, helps them work toward addressing their other fundamental problems, such as hunger, ill health, lack of education, unemployment, and industrial relocation. In this way, energy assistance complements other public policy anti-poverty efforts.

Energy is such a significant part of a family's budget – some elderly recipients who live on fixed incomes pay as much as 35 percent of their annual incomes for energy bills<sup>5</sup> – that it is impossible to address poverty without addressing energy use and costs. Helping families permanently reduce their energy bills also attacks the hopelessness that poverty imposes. It teaches that one can overcome poverty by planning, rather than passing it on to one's children.

State public policy in the energy area is thus extremely well-situated to help break the poverty cycle. State policy can build on the existing energy assistance infrastructure (federal fuel assistance and weatherization programs, and private fuel funds), as well as on utility customer relationships. State policy can facilitate public utility work with stakeholders to help poor families help themselves by using energy more efficiently.

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Lessons Learned" (Entergy Corp, 2000, updated 2001); J. Oppenheim and T. MacGregor, "Poverty in the Entergy Service Territories" (Entergy Corp., 2002). In Section II, below, we update Societal Cost-effectiveness to a benefit:cost ratio of 7.9.

<sup>4</sup> Computed by the authors from Entergy data.

<sup>5</sup> US DOE EERE, <http://www.eere.energy.gov/weatherization/reducing.html>.

Energy affordability programs, as part of an overall national strategy to combat poverty, can contribute to poverty reductions of close to 50 percent. A national strategy against poverty includes public expenditures for necessities such as shelter, heating, and cooling, as well as food and health care. Public policy may also include such tried and true weapons as early childhood education,<sup>6</sup> Individual Development Accounts (IDAs),<sup>7</sup> job training, legal services to help poor people secure rights the rest of us take for granted, and anti-fraud enforcement to protect against unscrupulous vendors. The War on Poverty of the 1960s cut the fraction of the population living below the poverty line almost in half. Even a Federal policy in the 1990s of simply improving the economy and slightly equalizing income distribution cut the poverty fraction by almost a quarter.

Reducing poverty is a moral imperative. The point of this paper is that reducing poverty also represents economic opportunity. Addressing poverty creates a powerful engine of economic advancement for all. Low-income energy efficiency and assistance is a giant opportunity for broad economic development.

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<sup>6</sup> J. Oppenheim and T. MacGregor, “The Economics of Education: Public Benefits of High-Quality Preschool Education for Low-Income Children” (Entergy Corp., n.d. [2002]), <http://www.democracyandregulation.com/detail.cfm?artid=37&row=5>.

<sup>7</sup> Below at text and footnotes from note 145 *et seq.*

## II. QUANTIFYING THE BENEFITS

### Introduction

As cost-effective as are investments against poverty generally, or in early childhood education particularly, investments in low-income energy efficiency are probably the most powerful investments available. We analyzed investments in energy efficiency, energy payment assistance, and (as an illustration of strong alternative investments) manufacturing across the region served by Entergy – Arkansas, Mississippi, Louisiana (including New Orleans), and Beaumont, Texas. Our research and calculations show, for example, that investments in efficiency create almost three (2.7) times the economic activity, and three times as many jobs, as an equal-sized investment to attract a large manufacturing plant. The economic multiplier for low-income energy efficiency is more than 23, with 216 jobs produced per million dollars of investment.

This study does not question the need for public investment to attract or keep large-scale manufacturing plants. The research points to the benefits of investing in both manufacturing plants and low-income energy efficiency programs.

<b>Multipliers across Entergy jurisdictions</b>		
<b>For every \$1,000,000 in investment</b>	<b>Increased economic output</b>	<b>Jobs</b>
<b>ENERGY EFFICIENCY</b>		
Net effect of investment	\$3,699,944	31
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<b>TOTAL</b>	<b>\$8,600,916</b>	<b>71</b>

National results are similar.

<b>National multipliers</b>		
<b>For every \$1,000,000 in investment</b>	<b>Increased economic output</b>	<b>Jobs</b>
<b>ENERGY EFFICIENCY</b>		
Net effect of investment	\$5,773,943	47
Net effect of bill savings	\$5,217,648	105
Effect of environmental improvement	\$5,743,952	36
Effect of non-energy benefits	\$17,437,091	150
<b>TOTAL</b>	<b>\$34,172,634</b>	<b>337</b>
<b>ASSISTANCE</b>		
Net effect of investment	\$2,686,702	83
Effect of non-energy benefits	\$2,708,579	21
<b>TOTAL</b>	<b>\$5,395,281</b>	<b>104</b>
<b>MANUFACTURING PLANT</b>		
Net effect of investment	\$16,510,983	127
Effect of environmental detriment	-\$5,110,207	-29
<b>TOTAL</b>	<b>\$11,400,776</b>	<b>98</b>

Thus, nationally, investments in energy efficiency are 3.0 times more economically productive than investments in manufacturing and create 3.4 times as many jobs. The economic multiplier is more than 34, with 337 jobs per million dollars of investment. Using a conventional benefit:cost analysis, we recently re-computed the conventional benefit:cost ratio of energy efficiency to be 9.5 – by that calculation, investments in efficiency return to society (including utilities, participants, taxpayers, and the environment) almost ten times their investment.

Our economic multiplier studies show that each dollar in LIHEAP assistance creates \$3.90 in positive economic impacts in the local economy of the five Entergy jurisdictions. Nationally, each LIHEAP dollar generates \$5.40 of economic activity. A large part of this economic activity is jobs – 59 per million dollars spent Entergy-wide, 104 nationally.

## Multiplier effects

Our analysis is based on the regional input-output tables maintained by the U.S. Department of Commerce Bureau of Economic Analysis (BEA).<sup>8</sup> Investments of any kind ripple through the economy, creating additional economic activity – including jobs. An investment in energy efficiency, for example, creates jobs to fabricate, distribute, and install products ranging from weatherstripping to refrigerators to compact fluorescent light bulbs (CFLs). Each of those jobs creates income that is spent to create further economic activity, and so on. Input-output analysis tracks this path of investment dollars

<sup>8</sup> <http://www.bea.gov/regional/rims/index.cfm>.

in particular economic sectors within a region and describes their total economic and employment impact within that region.

Unlike many studies of this kind,<sup>9</sup> we conservatively report this impact net of the impact of transferring the funds necessary for the investments from taxpayers or ratepayers. The funds so transferred would themselves have had a multiplier effect in the absence of the transfer, so we subtract that baseline impact in order to compute the net impact of transferring the funds to support energy efficiency, energy assistance, or a manufacturing plant. In the case of manufacturing plants, we track only the public investment and assume, based on historic experience, that it leverages out-of-region investment of 4.3 times the public investment.<sup>10</sup>

We computed the impacts of investments in efficiency improvements with a weighted average 19.25-year life.<sup>11</sup> We assumed a 20-year life for the manufacturing plant, though this is considerably less certain. Some manufacturing plants are not economically stable – a typical product model may only be built for five years, after which a plant must be temporarily closed for re-tooling or even permanently closed.<sup>12</sup> Ironically, mirroring the nation, all Entergy states are losing manufacturing despite the efforts to attract it:<sup>13</sup>

Manufacturing losses, 2001-2007	
US	-2.2%
Arkansas	-3.9%
Louisiana	-1.1%
Mississippi	-2.9%
Texas	-1.4%

By comparison, weatherization and efficiency are necessarily local and therefore create a large number of local jobs, many of which can be filled from the low-income

<sup>9</sup> E.g., “A comprehensive review of the total net economic impacts would need to assess not only the impacts of the fuel assistance expenditures, but consider also the offsetting impacts of the expenditures that this money would have been spent on had it not been spent on fuel assistance. This analysis does not consider these net impacts, but rather only the gross impacts of fuel assistance. Considering gross impacts is widely accepted as an appropriate analysis of the economic impacts of designated expenditures. See e.g., [citations omitted].” R. Colton, “*The Economic Development Impacts of Home Energy Assistance: The Entergy States*” (Entergy Corp. 2003).

<sup>10</sup> Computed from Hill & Brahmst, “The Auto Industry Moving South: An Examination of Trends” (Center for Automotive Research, 2003).

<sup>11</sup> Efficiency measure lives range from 7 years for water heater wraps to 30 for attic insulation.

<sup>12</sup> Hill & Brahmst, “The Auto Industry Moving South: An Examination of Trends” at 13 (Center for Automotive Research, 2003). The economics of existing plants do not necessarily favor keeping them open. E.g., E. Eckholm, “Blue-Collar Jobs Disappear, Taking Families’ Way of Life Along” *New York Times* (Jan. 16, 2008).

<sup>13</sup> Economic Policy Institute (EPI) from U.S. Bureau of Labor data, March 2001-November 2007, L. Fox et al., “States continue to hemorrhage manufacturing jobs,” (EPI, Dec. 2007) [www.epi.org/content.cfm/webfeatures\\_snapshots\\_20071212](http://www.epi.org/content.cfm/webfeatures_snapshots_20071212).

community<sup>14</sup> – home installation work cannot be shipped overseas or across North American borders. And the need to weatherize low-income homes and make them energy-efficient is largely unmet and will therefore take decades to complete.

It is also noteworthy that low-income households pump proportionately more money into the economy than average households<sup>15</sup> – they cannot afford to save – so the multiplier effect of lowering their bills with energy efficiency measures is particularly strong. This is partially offset by reductions in utility revenue (the utility multiplier is lower than that of low-income households), though this effect is attenuated somewhat by utility benefits that lower utility costs: lower arrears, lower collection costs, and lower disconnection-reconnection costs.

## Environmental impacts

In determining the economic value of energy efficiency, we have taken into account the economic impact of avoiding property and health damage from environmental pollutants, mostly carbon dioxide. Conversely, we account for the environmental costs of manufacturing.<sup>16</sup>

The damage caused by increasing concentrations of carbon dioxide is their tendency to increase the overall temperature of the planet. Adverse impacts in the US include:

- more intense storms (Boston, for example, has been subjected to two “100-year storms” and three “fifty-year storms” in the last decade; Hurricanes Rita and Katrina may also be examples of this phenomenon);
- coastal flooding;
- urban heat-related mortality (including deteriorated air quality, *i.e.*, smog);
- increases in allergic reactions;
- reduced winter recreation;
- increased competition for fresh water;
- increased damage to forests from fires, pests, and disease; and
- drought in the Southwest.<sup>17</sup>

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<sup>14</sup> T. Friedman, “The Green-Collar Solution” (New York Times, Oct. 17, 2006). Conservatively, we did not include the resulting benefits of reduced unemployment and reduced social supports.

<sup>15</sup> P. R. Tcherneva, “Missouri’s Cost of Unemployment” (University of Missouri – Kansas City Department of Economics, Center for Full Employment and Price Stability, Special Report 0502, 2002). *Also see* BLS consumer expenditure data: in 2006, for example, the average household, with after-tax income of \$58,101, spent 83% of income; above \$70,000, averaging income of \$119,298, spent only 60%, but the group between \$30,000 and \$40,000, averaging income of \$33,916, spent 104% of income – at lower incomes, expenditures above income are even larger. Income before taxes: Average annual expenditures and characteristics, Consumer Expenditure Survey, 2006  
<ftp://ftp.bls.gov/pub/special.requests/ce/standard/2006/income.txt>

<sup>16</sup> For purposes of calculating environmental impacts, we looked specifically at automobile manufacturing.

<sup>17</sup> The Intergovernmental Panel on Climate Change (IPCC) of the United Nations (UN), Fourth Assessment Report, [www.ipcc.ch](http://www.ipcc.ch); Nicholas Stern, *The Economics of Climate Change: The Stern Review* (Cambridge University Press, 2007), [http://www.hm-treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/stern\\_review\\_report.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm)

It is often pointed out in response that an extended US growing season would offset the adverse economic effects of such impacts.<sup>18</sup> However, this short-run benefit will be offset by high temperatures and water shortages in the longer run.<sup>19</sup> “High temperature episodes can reduce yields by up to half.”<sup>20</sup> Another pressure on food supplies, and thus prices, is the sharply increased use of corn to produce the gasoline substitute ethanol – the fraction of the corn crop devoted to ethanol has gone from three percent to 20 percent in five years while the price of corn has about doubled in two.<sup>21</sup>

In the rest of the world, particularly the less developed world, impacts also include:

- drought,
- heat-related mortality,
- increased cardio-respiratory disease caused by increased ground level ozone,
- additional stress on water resources (including hydroelectricity) from both reduced snow melt and pollution such as algae and salinization,
- flash floods,
- decreased ability to grow food (including aquaculture),
- stress on fisheries,
- flooding (to the point of overwhelming some small South Pacific islands) and erosion,
- increased insect-borne disease, and
- pressure to migrate.<sup>22</sup>

These impacts translate to national security concerns in the US as pressure mounts for aid and conflict resolution.<sup>23</sup> Changes in ocean temperatures and melting ice sheets also have

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(October 2006). Supporting documents are located at [http://www.hm-treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/stern\\_review\\_supporting\\_documents.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_supporting_documents.cfm) (Stern Review).

<sup>18</sup> *E.g.*, R. Mendelsohn and J. Neumann, eds., The Impact of Climate Change on the United States Economy (Cambridge Univ. Press 1999). “The research provides repeated support of the importance of adaptation. Adaptation mitigates the impacts of environmental damage in every sector studied. The research also demonstrates that modest warming will entail benefits for the United States in some sectors. The U.S. agriculture, forestry, and outdoor recreation sectors are all projected to benefit from a *slightly* warmer, wetter, CO<sub>2</sub>-enriched world. These benefits outweigh the damages measured in the coastal, water, and energy sectors, suggesting *small* amounts of warming could be good for the U.S. economy. The research, however, does not measure all relevant nonmarket [costs and] benefits such as health effects, species loss, and human amenity impacts, so nothing definitive can be said about the net effect of climate change on the quality of life in the United States. The research also does not extend beyond U.S. borders.” (Introduction, p. 15, emphasis added)

<sup>19</sup> Stern Review at 71, 80.

<sup>20</sup> Stern Review at 80.

<sup>21</sup> *E.g.*, Anon., “Very, Very Big Corn,” Wall St. Journal at A8 (Jan. 27, 2007).

<sup>22</sup> IPCC; Stern Review.

<sup>23</sup> A. Revkin (New York Times), “UN: Poor nations unprepared for global warming,” Boston Globe at A5 (April 1, 2007) (referring to IPCC Fourth Assessment, vol II); B. Bender, “Bill ties climate to national security/Seeks assessments by CIA, Pentagon,” Boston Globe at A1 (April 9, 2007).

an impact on US Navy operations.<sup>24</sup> Also of concern is that economic pressures on other nations reduce their ability to export to, or import from, the US.

As a proxy for this health, property, and economic damage, we use cost of control, which is approximated by the projected market price for an allowance for carbon dioxide emission.<sup>25</sup> The cost of damage is very much greater than the cost of control,<sup>26</sup> so our use of the cost of control is very conservative. Avoiding these costs is a benefit of energy efficiency; incurring them is a cost of manufacturing.

Environmental costs of manufacturing include, for example, jobs lost due to damaged machines and hours of employment lost due to damaged health. Of course these costs can be mitigated and this additional cost creates jobs and economic output, albeit at lower economic multipliers than a manufacturing plant. However, such environmental mitigation also requires investment. Our analysis compares \$1 million of public investment in low-income energy efficiency against the same investment to attract a manufacturing plant. The latter requires investment in environmental mitigation, which must be netted against the manufacturing investment in order to maintain the comparison at \$1 million each. Since the multipliers for environmental mitigation are less than those for manufacturing, the net economic impact of an efficiency investment remain superior to manufacturing with environmental mitigation. As an additional conservatism, we do not account for this in our results.

We accounted for criteria air pollutants – oxides of sulphur (SO<sub>x</sub>) and nitrogen (NO<sub>x</sub>), as well as mercury (Hg) – but not carbon monoxide (CO) or fine particulates, which have no consensus value. We also accounted for water savings.

## **Other benefits**

We also computed other benefits that multiply through the economy,<sup>27</sup> including (conservatively estimated):

\* Societal and taxpayer benefits, such as avoided fire damage, reduced costs of homeless shelters, the cost of crime avoided by reducing poverty, and the reduced costs of healthcare as a result of reducing poverty.

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<sup>24</sup> B. Bender, “Bill ties climate to national security/Seeks assessments by CIA, Pentagon,” Boston Globe at A1 (April 9, 2007); S. Hargreaves, “Ex-CIA chief spooked by fossil fuels/R. James Woolsey says the switch to renewables must be made to head off global warming and terrorism,” CNN. Com (March 8, 2007).

<sup>25</sup> J. K Boyce et al., “Cap and Rebate: How to Curb Global Warming while Protecting the Incomes of American Families” Table 7 (University of Massachusetts at Amherst Political Economy Research Institute, Oct. 2007).. This exercise assumed a consensus estimate of carbon price of \$200 per ton (about \$55 per ton of CO<sub>2</sub>) The price of CO<sub>2</sub> in Europe has already reached an average of \$22.89 in 2007. Computed from L. Abboud, “Hot Carbon Market Signals New Interest,” *Wall St. Journal* at A6 (Jan. 18, 2007).

<sup>26</sup> IPCC; Stern Review.

<sup>27</sup> Our methodology is described in Appendix B, below.

\* Savings to program participants, including the reduced costs of moving (due to termination for non-payment) and resulting lost education, the value of deferring the purchase of a refrigerator, the value of not losing utility service, the value of spending less time on the phone with the utility, the value of increased comfort, and the reduced costs of poor health.

Many benefits are not quantified here, including increased property tax payments, energy price reductions caused by lower demand, or energy rate reductions caused by retained sales.

There may be additional societal costs of a manufacturing plant, such as the need to build infrastructure and the increase in traffic congestion; however, these are not quantified.

Our point is not to oppose public investments in manufacturing plants, but rather to establish the economic benefits of public investments in low-income energy efficiency.

### III. ADDRESSING ENERGY AFFORDABILITY

#### The Loss of Energy Affordability

Poverty in the Entergy service territories runs deep. In a number of measures of poverty, residents of the Entergy states remain at or near the economic bottom compared to the rest of the US. For example:

- The high percentage of children living in poverty in Mississippi and Louisiana rank them at the bottom of the scale in the US (50 and 49, respectively). Arkansas and Texas are tied for 44<sup>th</sup> place.<sup>28</sup>
- As a percentage of their total populations in poverty, the ranks are almost the same, with Mississippi at 50, Louisiana at 49, and Arkansas and Texas tied for 42.<sup>29</sup>
- The median household income in Mississippi was only \$34,473 in 2006. The US median was \$48,451, ranking Mississippi number 51 (including the District of Columbia). Arkansas was at 49, and Louisiana at 46. Entergy's service territory in Texas, the Beaumont-Port Arthur region, had a median income of \$40,072; the median income in New Orleans was \$35,859.<sup>30</sup>
- A better measure of economic well-being is whether incomes are sufficient to cover basic essentials. By this measure, 27 percent of the population of Arkansas has inadequate income, 28 percent of Louisiana, 30 percent of Mississippi, and 35 percent of Texas.<sup>31</sup>
- Low-paid service jobs are the fastest growing category of job creation,<sup>32</sup> yet the average service wage is about two-thirds of what is needed to support a family at a basic level.<sup>33</sup>
- Hunger is rampant in the Entergy states, with over 18 percent of people in Mississippi not having enough to eat (ranking it 51 among the states), followed by Texas at 49, Louisiana at 45, and Arkansas at 44.<sup>34</sup>

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<sup>28</sup> "Kids Count," Annie E. Casey Foundation (2006). New York City is developing a new method of calculating poverty that would take into account the amount families actually spend on necessities, as well as the value of assistance received. "Bloomberg Seeks New Way to Decide Who Is Poor," NY Times (Dec. 30, 2007). See the derivation of the federal poverty level, described in footnote 49.

<sup>29</sup> US Census CPS, [factfinder.census.gov](http://factfinder.census.gov).

<sup>30</sup> US Census, [www.factfinder.census.gov/home](http://www.factfinder.census.gov/home).

<sup>31</sup> Economic Policy Institute, The Basic Family Budget, [www.epi.org/content.cfm/datazone\\_fambud\\_budget](http://www.epi.org/content.cfm/datazone_fambud_budget).

<sup>32</sup> A. Dohm *et al.*, "Occupational employment projections to 2016." *Monthly Labor Review* at 86-105, Tables 2-3 (Nov. 2007) (based on BLS data; eight of the top ten are retail, customer service, food preparation, clerk, health aides, and cleaning).

<sup>33</sup> Average service wage in 2004 was \$10.65, according to the Bureau of Labor Statistics. The median hourly wage for the primary worker in low-income families is about \$9. The Urban Institute, "Low-Income Working Families: Facts and Figures (2005), [www.urban.org/url.cfm?ID=900832](http://www.urban.org/url.cfm?ID=900832). The Basic Family Budget in 2004 in the Entergy states ranged from \$34,032 in Jackson, Mississippi, to \$38,136 in New Orleans. Economic Policy Institute, [www.wpi.org/content.cfm/datazone\\_fambud\\_budget](http://www.wpi.org/content.cfm/datazone_fambud_budget).

- There are nearly twice the percentage of elderly poor in Mississippi, despite receipt of Social Security, than the average across the US. The numbers are lower for the other Entergy states, but in each state, there are more poor elderly on a percentage basis than the national average.<sup>35</sup>
- While the percentage of adults in Entergy’s service territories that finished high school in 2006 rose in each state from the level in 2000, they were still in the very bottom ranks in the nation: Mississippi at number 51; Texas at 50; Louisiana at 49; and Arkansas at 45.<sup>36</sup>
- About half of Entergy’s customers live in rural areas where large numbers speak a language other than English as their first language.<sup>37</sup>

A statistical review of the past decade shows:

- Official poverty rates in the Entergy jurisdictions are high and increasing, sharply in some jurisdictions.
- Incomes of the bottom 60 percent across the country, adjusted for inflation, are about the same now as in 1998.
- Meanwhile, incomes at the top have grown, so the gap between rich and poor is widening.

## **Poverty**

Poverty rates in the Entergy jurisdictions are higher than in 2000, by as much as 16 percent.<sup>38</sup> The exception is Louisiana, where the poverty rate is down by one point (five percent).

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<sup>34</sup> “Household Food Security in the United States, 2006,” USDA, <http://www.ers.usda.gov/Publications/ERR49/ERR49appD.pdf> (includes District of Columbia).

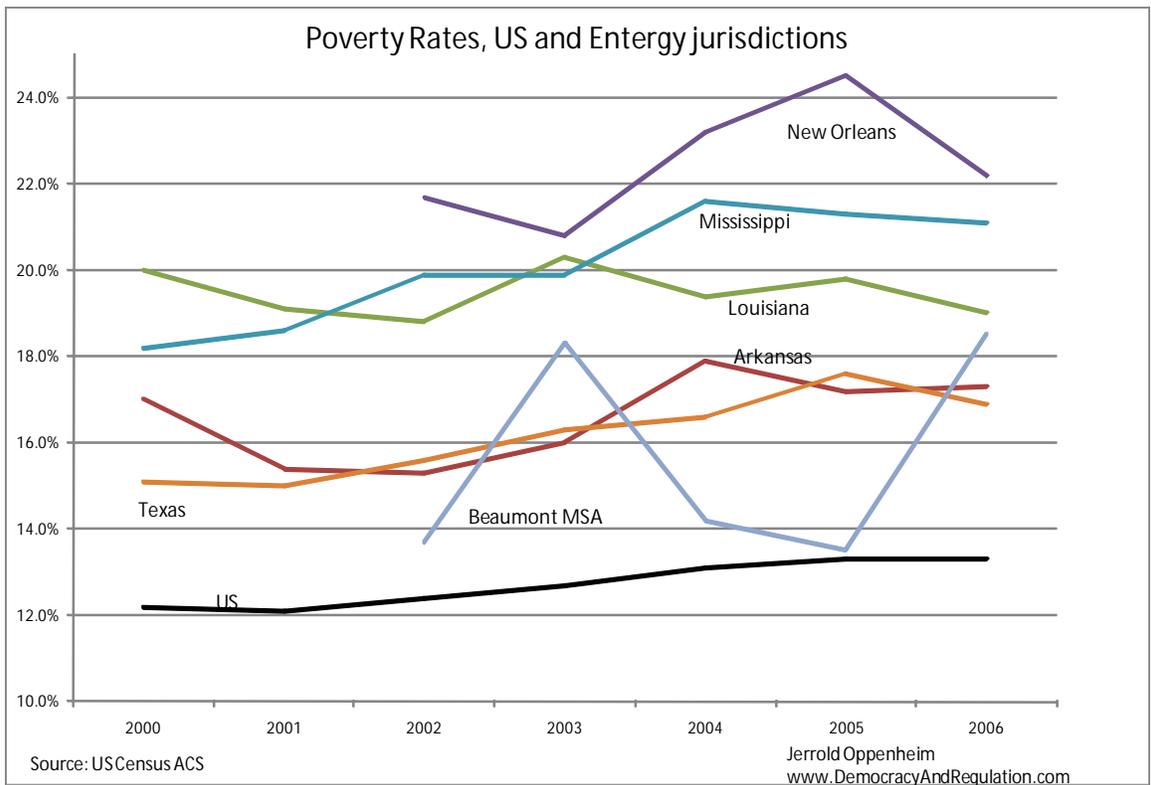
<sup>35</sup> <http://www.statehealthfacts.org/comparebar.jsp?ind=10&cat=1>.

<sup>36</sup> US Census, [factfinder.census.gov/servlet/ACS](http://factfinder.census.gov/servlet/ACS) 2006.

<sup>37</sup> Linda Barnes, “Entergy reaches out to those hardest to reach,” presentation to Chartwell’s Audio Conference on Best Practices in Reaching Low-Income Customers with Energy Efficiency Programs (Oct. 18, 2006).

<sup>38</sup> Data are from US Census American Community Survey (ACS). Data before 2000 are not quickly available, but are obtainable if desired.

	US	Arkansas	Louisiana	New Orleans	Mississippi	Texas	Beaumont MSA
2000	12.2%	17.0%	20.0%		18.2%	15.1%	
2001	12.1%	15.4%	19.1%		18.6%	15.0%	
2002	12.4%	15.3%	18.8%	21.7%	19.9%	15.6%	13.7%
2003	12.7%	16.0%	20.3%	20.8%	19.9%	16.3%	18.3%
2004	13.1%	17.9%	19.4%	23.2%	21.6%	16.6%	14.2%
2005	13.3%	17.2%	19.8%	24.5%	21.3%	17.6%	13.5%
2006	13.3%	17.3%	19.0%	22.2%	21.1%	16.9%	18.5%
2006 v '00	9.0%	1.8%	-5.0%		15.9%	11.9%	
2006 v '02	7.3%	13.1%	1.1%	2.3%	6.0%	8.3%	35.0%



## ***Income***

While incomes in the US for the bottom 60 percent are the same now as in 1998, the top 20 percent has enjoyed an income increase of seven percent.<sup>39</sup> Income concentration in 2005 (*i.e.*, share of income going to the top one percent) was the greatest since 1929.<sup>40</sup> Here are the average inflation-adjusted incomes of each quintile:



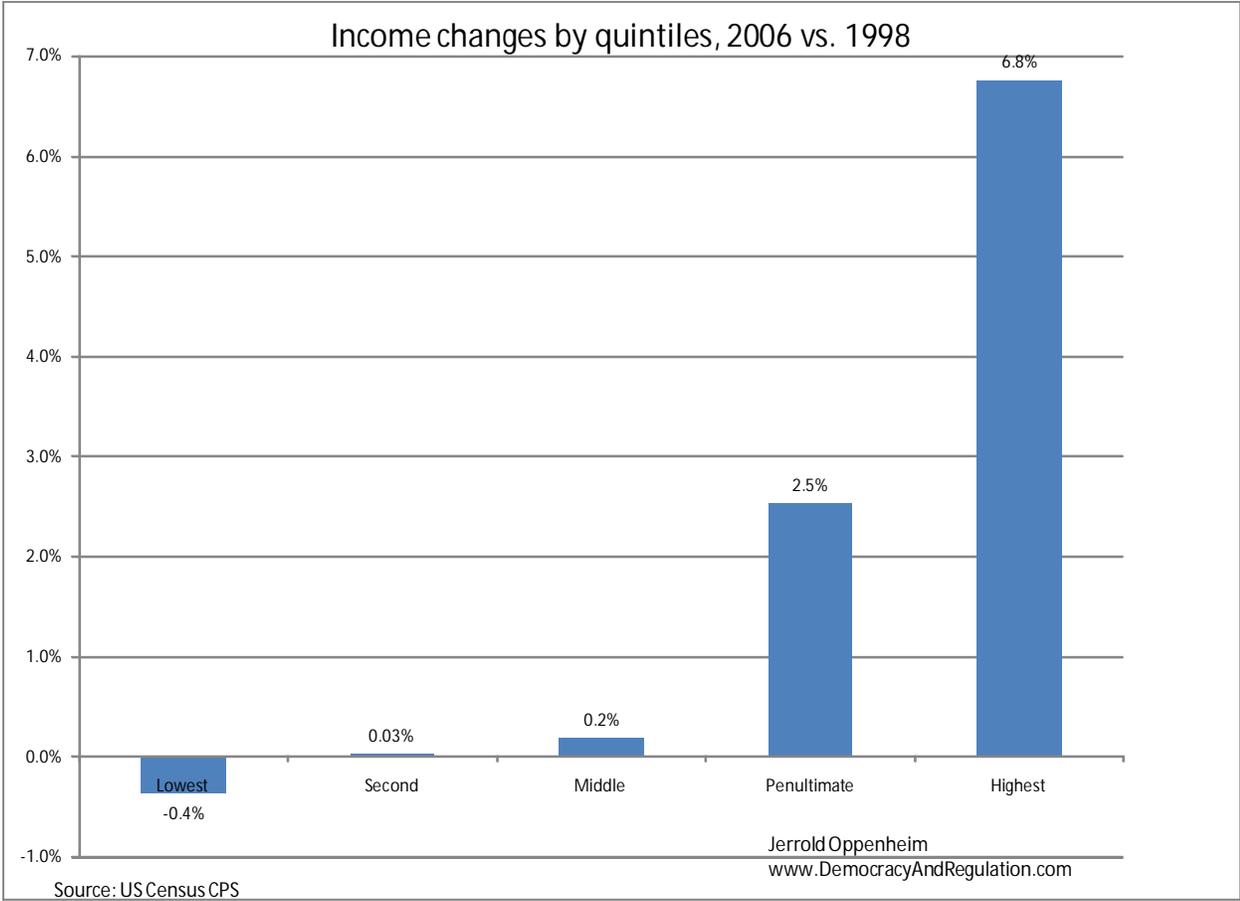
By comparison, although the prior 20-year period also brought uneven income growth, there was growth at every level. The average inflation-adjusted income of the upper 20 percent increased 59 percent and the next quintile's income grew 36 percent. But at least there was also income growth for the bottom 60 percent of 19-28 percent.<sup>41</sup>

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<sup>39</sup> Data are from the US Census Current Population Reports and reported here in 2006 dollars. Data for earlier years are readily available. It is too soon for consistently gathered data for 2007 or 2008. Gini index measures increasing inequality (higher values represent greater inequality). "The most widely used summary measure of the degree of inequality in a household income distribution is the Gini coefficient. It represents an overall measure of the cumulative income share against the share of households in the population. The lower the value of the Gini coefficient, the more equally household income is distributed." UK National Statistics, [www.statistics.gov.uk/about/methodology\\_by\\_theme/gini/default.asp](http://www.statistics.gov.uk/about/methodology_by_theme/gini/default.asp).

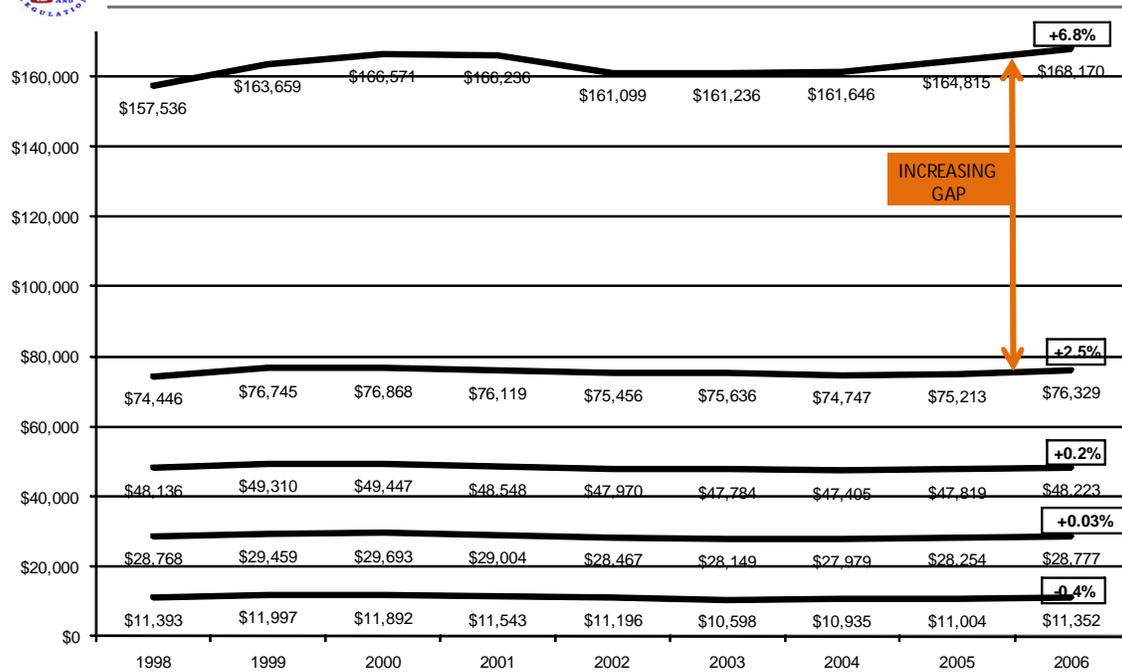
<sup>40</sup> Data from economics professors T. Piketty (Paris School of Economics) and E. Saez (Berkeley) in A. Aron-Dine, "New Data Show Income Concentration Jumped Again in 2005" (Center for Budget and Policy Priorities, 2007).

<sup>41</sup> 19%, 22%, and 28%, from bottom to middle quintile, respectively. Computed from US Census CPS data in J. Bernstein *et al.* "Pulling Apart" (Center on Budget Policy and Priorities, 2006).





US Average Income By Quintile (2006\$)



Source: US Census, analyzed by Center on Budget and Policy

This is part of a longer-term trend. At the economic top, America has been a wonderland. For the top 20 percent of households, income after inflation has increased at a reasonably steady 1.5 percent per year, compared to less than half that rate of growth at the bottom.<sup>42</sup> As a result, income inequality has widened to its worst gap since the 1920s<sup>43</sup> -- average income at the top has swollen from eleven times income at the bottom to 15 times. (For the top five percent, the jump is even bigger, from 18 times to 26 times.)<sup>44</sup> The top 20 percent accounts for more than half the spending on new cars and trucks and almost half the spending on furniture and major home appliances.<sup>45</sup> As more of America's resources become concentrated at the top, it has become increasingly impossible for those at the bottom to get by. In fact, households below the official poverty line are losing ground -- the official poverty line is rising two percentage points faster than their income.<sup>46</sup> Even at

<sup>42</sup> Computed from [www.cbpp.org/10-19-05pov.htm](http://www.cbpp.org/10-19-05pov.htm) (compiling US Census data), at Table 22; *see also* Table 28 (CBO data).

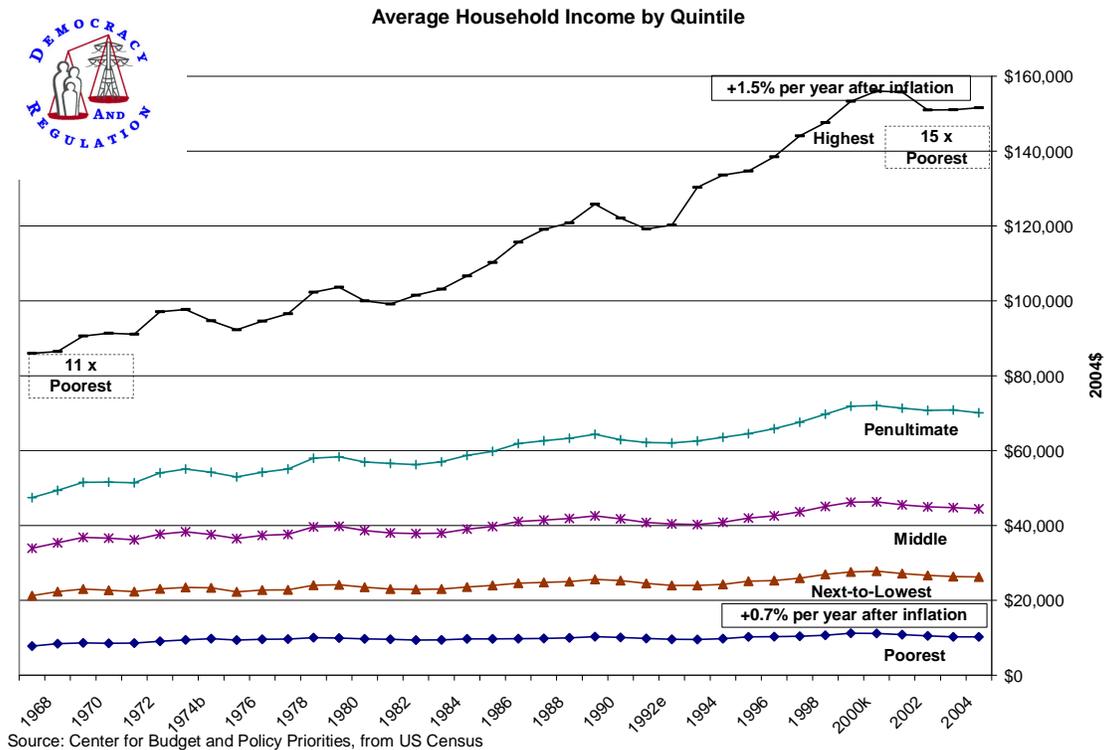
<sup>43</sup> A. Aron-Dine, "New Data Show Income Concentration Jumped Again In 2005: Income Share Of Top 1% At Highest Level Since 1929" (Center on Budget Policy and Priorities, 2007), <http://www.cbpp.org/3-29-07inc.htm>.

<sup>44</sup> Computed from [www.cbpp.org/10-19-05pov.htm](http://www.cbpp.org/10-19-05pov.htm) (compiling US Census data), at Table 22.

<sup>45</sup> 53% of new cars and trucks, 47% of furniture, 44% of major appliances. Bureau of Labor Statistics Consumer Expenditure Survey (2006), "Quintiles of income before taxes: Shares of average annual expenditures and sources of income, [www.bls.gov/pub/special.requests/ce/standard/2006/quintile.txt](http://www.bls.gov/pub/special.requests/ce/standard/2006/quintile.txt).

<sup>46</sup> Put another way, the poverty gap -- the amount by which a household income falls short of the poverty line -- is increasing 2% per year. Computed from [www.cbpp.org/10-19-05pov.htm](http://www.cbpp.org/10-19-05pov.htm) (compiling US Census data), at Table 13.

the middle, median household income is falling – two percent less in 2006 than it was in 1999.<sup>47</sup> This widening gap is “entirely without precedent in the post-war period,” according to former US Treasury Secretary Lawrence Summers.<sup>48</sup>



(The poorest 20 percent is a rough proxy for the poor in America. In this period, the fraction of the population below the official poverty line ranged from eleven to 15 per cent, but the official poverty line is an inadequate specification of poverty and the fraction in poverty nationally is closer to a third.<sup>49</sup>)

<sup>47</sup> US Census CPS, [www.census.gov/hhes/www/income/histinc/h08.html](http://www.census.gov/hhes/www/income/histinc/h08.html). Median family income is two percent less than in 2000. J Bernstein, “The Recession Analysis I Haven’t Seen, Or Why We May be About to Make Economic History” (Dec. 2, 2007), [http://www.epi.org/printer.cfm?id=2850&content\\_type=1&nice\\_name=webfeatures\\_via\\_wpoints\\_recession\\_analysis](http://www.epi.org/printer.cfm?id=2850&content_type=1&nice_name=webfeatures_via_wpoints_recession_analysis). Until recently, household incomes in the middle three quintiles rose slightly, considerably slower than those at the top.

<sup>48</sup> D. Wessel, “The Case for Taxing Globalization’s Big Winners,” *Wall St. Journal* at A2 (June 14, 2007).

<sup>49</sup> The FPL today is more a measure of destitution than poverty and this analysis should be viewed in that light. The assumption of this section is that the trends at the FPL are more or less mirrored at a true measure of poverty, which is about twice the FPL. The fraction of Americans actually living in poverty is between 25% and 33%, depending on the measure used. J. Oppenheim and T. MacGregor, “The Economics of Poverty: How Investments to Eliminate Poverty Benefit All Americans,” at 1, 21, 22 (Entergy Corp. n.d.[2006]), [www.democracyandregulation.com/detail.cfm?artid=99&row=0](http://www.democracyandregulation.com/detail.cfm?artid=99&row=0).

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The FPL was first developed in 1963 by Mollie Orshansky of the Social Security Administration. She started with the “thrifty food plan,” an emergency food plan based on a U.S. Department of Agriculture (USDA) 1955 food consumption survey published for times “when funds are low.” At the time, the average cost of food represented a third of a household’s budget, so Ms. Orshansky simply multiplied the cost of the USDA thrifty food plan by three to arrive at the FPL. Subsequently the FPL has been adjusted for inflation, but nothing else. Jessie Willis, “How We Measure Poverty: A History and Brief Overview” (Oregon Center for Public Policy ,2000), <http://www.ocpp.org/poverty/how.htm>. For Fiscal 2008, the FPL for a family of 4 is \$20,650. Mass. Dept. of Housing & Community Development, “Cold Relief” at 7 (2007). If the FPL were re-computed just to account for the fact that food now accounts for only about 10.6 percent of the budget of the average four-person household (Bureau of Labor Statistics, <ftp://ftp.bls.gov/pub/special.requests/ce/crosstabs/y0506/sizbyinc/xfour.txt>), the FPL would about triple, to \$61,950. Even at an average income of \$35,212, food takes only 17.8% of the budget of a four person household (<ftp://ftp.bls.gov/pub/special.requests/ce/crosstabs/y0506/sizbyinc/xfour.txt>), 1.85 times the FPL assumption, resulting in an FPL of \$38,203. A similar approach is to observe that essential expenditures today include many items that were not included in a basic 1963 budget, such as the childcare and commuting costs required when both parents are working. From that point of view, many efforts have been made to estimate a sustainable income to cover basic human needs. One of these is the Basic Family Budget, developed by the Economic Policy Institute to cover basic needs of food, shelter, clothing, commuting and other basics – no savings, insurance, or eating out. [http://www.epi.org/content.cfm/datazone\\_fambud\\_budget](http://www.epi.org/content.cfm/datazone_fambud_budget) Here are EPI Basic Family Budgets for 2004:

Little Rock, Arkansas	\$36,264 (27% of Arkansans live below basic income)
Baton Rouge, Louisiana	\$37,200 (28% of Louisianans live below basic income)
New Orleans, Louisiana	\$38,136
Jackson, Mississippi	\$34,032 (30% of Mississippians live below basic income)
Beaumont, Texas	\$35,820 (35% of Texans live below basic income)

BLS consumer expenditure data confirm the need for at least \$34,000 a year to get by. In 2006, for example, the average household, with after-tax income of \$58,101, spent 83% of income; above \$70,000, averaging income of \$119,298, spent only 60%. But the group between \$30,000 and \$40,000, averaging income of \$33,916, spent 104% of income – at lower incomes, expenditures above income are even larger. BLS, Income before taxes: Average annual expenditures and characteristics, Consumer Expenditure Survey, 2006

Note that Basic Family Budgets in other parts of the country are considerably higher, *e.g.*, \$58,656 in New York City, 35% of residents of New York State live below basic income.

## Failure to Respond

Despite these appalling statistics, not enough is being done to ease the suffering, let alone to alleviate the conditions that cause poverty. For example:

- Welfare support has decreased in the past ten years in each of the Entergy states, most dramatically in Louisiana (84 percent), compared to the US average of a 62 percent decline.<sup>50</sup>
- Very few eligible customers receive fuel assistance for heating in the Entergy states (less than two percent in Texas, six percent in Louisiana, 19 percent in Mississippi and 30 percent in Arkansas).<sup>51</sup>
- The amount per household and the value of fuel assistance has declined dramatically in the past four years, falling as a percentage of home heating costs nationally between FY2003 and FY2007 from 58.2 percent to 37.6 percent for natural gas and from 50 percent to 37 percent for electricity.<sup>52</sup> Even after an emergency release of fuel assistance funding in the 2007-2008 heating season,<sup>53</sup> fuel assistance provided only about 73 percent as much fuel as it did two years before, when only 16 percent of eligible households could be helped.<sup>54</sup> For Arkansas, the total allocation is 41 percent less than two years before; Louisiana and Texas, 43 percent; Mississippi 44 percent.<sup>55</sup>
- Deaths from heat-related causes are rising. During a prolonged heat wave in August 2007 alone, in the central and southeastern US, more than 50 people died and many more suffered from heat exhaustion, often due to inadequate air conditioning.<sup>56</sup> National Weather Service data show that “[i]ntense heat is the most dangerous extreme weather condition facing low-income Americans when measured in terms of individual deaths and injuries.”<sup>57</sup>
- Except for Arkansas, which has set a state minimum wage that is \$0.40 per hour higher than the federal minimum, none of the Entergy states exceeds the federal minimum wage of \$5.85 per hour,<sup>58</sup> thus setting the income from working at below the poverty line. (The minimum are scheduled to rise to \$6.55 and \$7.25 on

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<sup>50</sup> US Department of Health and Human Services (HHS), [www.HHS.gov](http://www.HHS.gov).

<sup>51</sup> [http://www.neada.org/publications/issuebriefs/LIHEAP\\_Issue\\_Brief\\_2007-11-26.pdf](http://www.neada.org/publications/issuebriefs/LIHEAP_Issue_Brief_2007-11-26.pdf), Table 6. Numbers of households eligible for cooling assistance are not available.

<sup>52</sup> “Providing Heating and Cooling Assistance to Low Income Families,” The Low Income Home Energy Assistance Program (LIHEAP), National Energy Assistance Directors’ Association (NEADA) Issue Brief at 11 and 12 (Nov. 26, 2007). [http://www.neada.org/publications/issuebriefs/LIHEAP\\_Issue\\_Brief\\_2007-11-26.pdf](http://www.neada.org/publications/issuebriefs/LIHEAP_Issue_Brief_2007-11-26.pdf) (“NEADA Issue Brief Nov. 26, 2007”).

<sup>53</sup> US Department of Health and Human Services, ACF Press Office, “HHS Provides \$450 Million in Energy Assistance to Low-Income Families” (Jan. 16, 2008), [www.hhs.gov/news](http://www.hhs.gov/news).

<sup>54</sup> National Community Action Foundation, “Community Action Agencies Welcome Low-Income Heating Assistance” (Jan. 16, 2008), [www.ncaf.org/liheap](http://www.ncaf.org/liheap) (NCAF on Emergency Release, Jan. 16, 2008).

<sup>55</sup> National Community Action Foundation, “FY2008 LIHEAP Allocations Including Tribal Allotments, 1-16-08” (Jan. 16, 2008), [www.ncaf.org/liheap](http://www.ncaf.org/liheap) (FY 2008 allocation chart, Jan. 16, 2008).

<sup>56</sup> “August 2007 Heat Wave Summary,” National Climatic Data Center, US Dept. of Commerce.

<sup>57</sup> National Fuel Funds Network, “When Weather Kills: Heat Response Plans and the Low-Income Need for Home Cooling” at 1 (May 2002), [www.nationalfuel Funds.org/toolkit.pdf](http://www.nationalfuel Funds.org/toolkit.pdf).

<sup>58</sup> [www.dol.gov/esa/minwage/america.htm](http://www.dol.gov/esa/minwage/america.htm), 11/28/2007.

July 24, 2008, and July 24, 2009, respectively.) A person would need to work 57 hours a week at \$7.25 just to reach the federal poverty level for a family of four (\$20,650).

- Unemployment hits Arkansas and Mississippi particularly hard among the Entergy states, putting them at numbers 45 and 49, respectively, among the states. Louisiana’s jobless rate actually decreased by almost a percentage point between November 2006 and November 2007, while employment levels increased by over two percent there, but this is probably a result of Hurricane Katrina-related displacement and reconstruction.<sup>59</sup>

<sup>59</sup> US Department of Labor Bureau of Labor Statistics (BLS), Local Area Unemployment Statistics (LAUS) Current Unemployment Rates for States and Historical Highs/Lows, Oct. 2007 (seasonally adjusted). BLS data show that unemployment rates would be about one percentage point higher if they counted those who want and are available for a job, have searched for work, but are not currently considered in the labor force. [ftp://ftp.bls.gov/pub/special.requests/lf.aat1.txt](http://ftp.bls.gov/pub/special.requests/lf.aat1.txt); “Alternative measures of Labor underutilization,” [www.bls.gov/news.release/empsit.t12.htm](http://www.bls.gov/news.release/empsit.t12.htm). Adding underemployed (defined to only include those working part-time when they want and are available for full-time work) adds about three-and-a-half to four percentage points. ; “Alternative measures of Labor underutilization,” [www.bls.gov/news.release/empsit.t12.htm](http://www.bls.gov/news.release/empsit.t12.htm). The duration of unemployment is also increasing. See note 164.

The official unemployment rate (the BLS LAUS), based on the Current Population Survey (CPS), also undercounts unemployment when compared with the Census Bureau’s relatively new American Community Survey (ACS). The Census Bureau says “Because of its large sample size, the ACS will have advantages over the CPS in producing estimates [in certain circumstances].” [www.census.gov/hhes/www/laborfor/laborguidance082504.html](http://www.census.gov/hhes/www/laborfor/laborguidance082504.html). Here is a comparison of the ACS and BLS LAUS unemployment reports for the year 2006, the last period for which ACS results are published. The ACS reports unemployment rates that are 31-95% higher than the official BLS LAUS rates:

2006	ACS	BLS LAUS	ACS/BLS
US	6.4%	4.6%	1.39
ARK	7.0%	5.3%	1.32
LA	7.8%	4.0%	1.95
NO	12.0%	NA	
NO MSA	7.9%	4.8%	1.65
MS	8.9%	6.8%	1.31
TX	7.0%	4.9%	1.43
Beaumont MSA	8.0%	6.0%	1.33

[http://factfinder.census.gov/servlet/DatasetMainPageServlet?\\_program=ACS&\\_submenuId=&\\_lang=en&\\_ts=;www.bls.gov/lau/lastrk06.htm;www.bls.gov/lau/lamtrk06.htm](http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ACS&_submenuId=&_lang=en&_ts=;www.bls.gov/lau/lastrk06.htm;www.bls.gov/lau/lamtrk06.htm)

## IV. A GREAT AFFORDABILITY GAP REMAINS

### National Reports

With the cost of oil well over \$100 a barrel, the cost of gasoline over \$4.00 a gallon, and the cost of emitting carbon dioxide from burning fossil fuels on track to rise dramatically, the energy burden faced by low-income families will only grow. Energy is already beyond the reach of many households during cold winters and hot summers, and families are faced with stark choices: whether to pay their utility bills or buy food or medicine or other household necessities.<sup>60</sup>

The National Energy Assistance Directors' Association (NEADA) – the state LIHEAP directors – reports on some of the consequences of energy bills that have become unaffordable to more and more families across America:<sup>61</sup>

- Some households respond to high bills and arrearages by not heating their homes adequately in winter or cooling them during the summer, or by using unsafe means to heat or light their homes (for example, heating with a kitchen oven or barbeque grill or lighting with candles).
- In one recent NEADA survey of low-income clients, 44 percent said that they skipped paying or paid less than their entire home energy bill in the past year. Households with children (67 percent) and those with income below 50 percent of the federal poverty level (62 percent) were more likely to do so.
- In the same study, NEADA found that 13 percent reported that broken air conditioners or termination of electric service prevented them from using their air conditioner. Households with a disabled member (19 percent) and households with children (19 percent) were somewhat more likely to report this problem.
- Many purchase heat or electricity for air-conditioning instead of food or medications. Poor seniors in the north are also more likely to go hungry in late winter and early spring, while seniors in the south, where energy bills for air-conditioning can be high, are 27 percent more likely to go hungry in the summer.<sup>62</sup>

Others report similar consequences:

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<sup>60</sup> For example, “[poor American families with children] increase home fuel expenditures at the cost of expenditures on food and nutritional well-being. [P]oor parents are only imperfectly able to protect their children from the effects of cold weather.” J. Bhattacharya, *et al.*, “Heat or Eat? Cold Weather Shocks and Nutrition in Poor American Families” (National Bureau of Economic Research, 2002). More than one-in-six households with children under age six (16.7%) go without medical care in order to pay their heat bills – for low-income seniors, it is nearly one-in-five (19.1%). More than one-quarter (27.2%) of wage earner households forego medical care in order to pay their heating bill. Mercier Associates, “Iowa’s Cold Winters: LIHEAP Recipient Perspective” (2000). Energy prices have increased considerably since the times these studies were performed.

<sup>61</sup> NEADA Issue Brief Nov. 26, 2007.

<sup>62</sup> Mark Nord and Linda S. Kantor, “Seasonal Variation in Food Insecurity Is Associated with Heating and Cooling Costs among Low-Income Elderly Americans,” American Society for Nutrition (2006).

- Many elderly do not ask for assistance even when it is available to them. A 90-year-old Vicksburg, Michigan, woman died on December 17, 2007, and her mentally disabled daughter suffered frostbite and exposure injuries, after their electricity was shut off for non-payment.<sup>63</sup>
- “Inability to pay utilities is second only to inability to pay rent as a reason for homelessness,” reports the director of the Colorado Energy Assistance Foundation.<sup>64</sup>
- People on Medicaid do not have as high survival rates for cancer as those with employer-provided insurance, often becoming eligible for Medicaid only after becoming too sick to work and too late for treatment to do much good.<sup>65</sup>
- The current administration in Washington is imposing more restrictions on the ability of states to determine for themselves who will have access to Medicaid. Louisiana tried to raise the income eligibility level for the State Children’s Health Insurance Program to 300 percent of the FPL from 200 percent but was denied approval. Other states have faced similar roadblocks on Medicaid eligibility.<sup>66</sup>
- Children in low-income families with high utility heating costs are at greater nutritional risk in the winter and early spring than at other times of the year. At those times, children “go hungry or fill their stomachs with nutrient deficient fillers such as diluted juice, oatmeal made with only water or inexpensive high fat, sweetened foods.”<sup>67</sup>
- Young children from families that are eligible for but not enrolled in energy assistance are more likely than children from families receiving LIHEAP to be small for their age (underweight) and more likely to need hospital admission on the day of a health care visit.<sup>68</sup>
- “Babies and toddlers who live in energy insecure households are more likely to be in poor health; have a history of hospitalization; be at risk of developmental problems and be food insecure.”<sup>69</sup>
- In 2005, USDA reported that 38 million Americans lived in food insecure households, meaning they did not have the resources to purchase an adequate diet.<sup>70</sup>
- The inflation rate in 2007, 4.3 percent, was the highest in 17 years. Food prices rose 4.9 percent; energy prices spiked 17.4 percent. The pace of overall price

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<sup>63</sup> “Utility looks into death of Vicksburg woman, 90, after power shut off,” *Battle Creek Enquirer* (Jan. 2, 2008).

<sup>64</sup> C. Umbrell, “LIHEAP: Real Help for Real People,” *American Gas* t 18, 19 (quoting Karen Brown) (July 2002).

<sup>65</sup> “The Cost of No Coverage,” *The Boston Globe* (Dec. 12, 2007).

<sup>66</sup> Robert Pear, “U.S. Curtailing Bids to Expand Medicaid Rolls,” *NY Times* (Jan. 4, 2008).

<sup>67</sup> Cook, John T. and Deborah A. Frank, “Hunger filled with dire consequences,” *Seattle Post-Intelligencer* (March 21, 2004).

<sup>68</sup> Deborah A. Frank, MD, et al., “Heat or Eat: The Low Income Home Energy Assistance Program and Nutritional and Health Risks Among Children Less Than 3 Years of Age,” *Pediatrics* (Nov. 1, 2006).

<sup>69</sup> Researchers from the Children’s Sentinel Nutrition Assessment Program (C-SNAP) at the Boston Medical Center, as quoted in “NEADA Issue Brief Nov. 26, 2007.

<sup>70</sup> “Heat and Eat: Using Federal Nutrition Programs to Cushion the Shock of Skyrocketing Heating Bills” at 5, Food Research and Action Center (Nov. 2005).

increases is accelerating, reaching 5.6 percent in the fourth quarter.<sup>71</sup> In the first third of 2008 (through April), the pace of food price inflation rose to 6.9 percent; gasoline and heating oil prices jumped to record levels.<sup>72</sup> The average share of income required to pay energy bills has hit six percent, the highest since the 1980s<sup>73</sup> (For the typical low-income household, the average share of income going to utilities is 15 percent.<sup>74</sup>) But wages dropped in 2007, for the fourth time in five years,<sup>75</sup> and median household income is less now than in 1999.<sup>76</sup>

- Since the 1980's, the benefits of economic growth in the US have favored the wealthiest Americans, while the incomes of the poorest have remained substantially stagnant.<sup>77</sup> Factory and other skilled jobs paying \$15-\$30 an hour are being replaced by \$7 or \$8 retail jobs. "If you don't work at Wal-Mart, the only job you can get around here is in fast food," says a mother of four in Wellston, Ohio.<sup>78</sup> Consumer bankruptcies jumped nearly 40 percent in 2007 and are expected to increase further in 2008.<sup>79</sup> One survey found 48 percent expecting their children to be worse off than they are.<sup>80</sup>

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<sup>71</sup> Bureau of Labor Statistics, "Consumer Price Index: December 2007" (Jan. 16, 2008), [www.bls.gov/cpi](http://www.bls.gov/cpi); Associated Press, "Gas and food costs drive inflation up 4.1% in 2007," *Boston Globe* at D2 (Jan. 17, 2008).

<sup>72</sup> Bureau of Labor Statistics, "Consumer Price Index: April 2008" (May 14, 2008), [www.bls.gov/cpi](http://www.bls.gov/cpi); Associated Press, "Cost of oil falls after government demand report/Dollar holds gains against euro, price of gas passes \$4.04 a gallon," <http://www.msnbc.msn.com/id/12400801/> (June 10, 2008); Anon., "Crude Prices Rally; Heating Oil Hits Record," <http://www.thestreet.com/story/10416511/2/crude-prices-rally-heating-oil-hits-record.html> (May 13, 2008); Anon., "UPDATE 1-U.S. retail heating oil price [\$3.30] rises to record -EIA," <http://uk.reuters.com/article/oilRpt/idUKN2742223920071227> (Dec. 27, 2007). By mid-March, heating oil had risen further, to \$3.85. <http://www.mass.gov/doer/fuels/pricing.htm#oilsurvey> (March 18, 2008), [http://tonto.eia.doe.gov/dnav/pet/pet\\_pri\\_wfr\\_dcus\\_nus\\_w.htm](http://tonto.eia.doe.gov/dnav/pet/pet_pri_wfr_dcus_nus_w.htm) (March 17, 2008). As this is written, it is now \$4.59. <http://www.mass.gov/doer/> (June 10, 2008).

For the year ended April 2008, dairy prices have jumped 11.8 percent while household energy prices are up 9.4 percent, including fuel oil at 42.8 percent. Transportation prices have risen 7.2 percent, including motor fuel at 21.1 percent. Bureau of Labor Statistics, "Table 1. Consumer Price Index for All Urban Consumers" (May 14, 2008), [www.bls.gov/cpi](http://www.bls.gov/cpi).

<sup>73</sup> US Department of Commerce in S. Patterson, "Energy's Expanding Chunk of Household Budgets," *Wall St. Journal* at C1 (Oct. 24, 2007).

<sup>74</sup> Mark Wolfe, NEADA Testimony on LIHEAP before the Subcommittee on Children and Families, Committee on Health, Education, Labor and Pensions, U.S. Senate (March 5, 2008).

<sup>75</sup> Bureau of Labor Statistics, "Real Earnings in December 2007" (Jan. 16, 2008), [www.bls.gov/ces](http://www.bls.gov/ces); Associated Press, "Gas and food costs drive inflation up 4.1% in 2007," *Boston Globe* at D2 (Jan. 17, 2008).

<sup>76</sup> US Census CPS, [www.census.gov/hhes/www/income/histinc/h08.html](http://www.census.gov/hhes/www/income/histinc/h08.html). Median family income is less than in 2000. J Bernstein, "The Recession Analysis I Haven't Seen, Or Why We May be About to Make Economic History" (Dec. 2, 2007), [http://www.epi.org/printer.cfm?id=2850&content\\_type=1&nice\\_name=webfeatures\\_viewpoints\\_recession\\_analysis](http://www.epi.org/printer.cfm?id=2850&content_type=1&nice_name=webfeatures_viewpoints_recession_analysis).

<sup>77</sup> "Pulling Apart: A State-by State Analysis of Income Trends," Center on Budget and Policy Priorities (Jan. 2006).

<sup>78</sup> E. Eckholm, "Blue-Collar Jobs Disappear, Taking Families' Way of Life Along," *New York Times* (Jan. 16, 2008).

<sup>79</sup> American Bankruptcy Institute, "Consumer Bankruptcy Filings Up Nearly 40 Percent in 2007" (National Bankruptcy Research Center data) (Jan. 3, 2008), Anon., "Consumer Bankruptcy Filings Rose 40% in '07," *Wall St. Journal* at A4 (Jan. 4, 2008).

<sup>80</sup> C. Lake *et al.*, "Analysis of 2008 Swing Voters and the American Dream," Lake Research Partners (survey of swing voters, about a third of voting population) (Dec. 10, 2007), [www.lake-research.com](http://www.lake-research.com).

## Entergy States

Remarkably, despite all these hardships, Entergy's low-income customers are actually more consistent than others in paying their bills. Entergy's "low-income customers, especially the elderly, had BETTER PAYMENT RECORDS and FEWER UNCOLLECTIBLES than other residential customer segments." In fact, "most of those [uncollectibles] are attributable to small business customers."<sup>81</sup>

In addition to the overall picture of poverty painted above, each of the Entergy states has its own particular characteristics.

### Arkansas

- In the early 2000's, the richest 20 percent of Arkansans had average incomes 6.9 times higher than the poorest 20 percent, up from 5.4 times in the 1980's. During that same time period, the income of the lowest 20 percent rose an average of \$135 per year, while that of the richest 20 percent rose \$1,740 per year.<sup>82</sup>
- More than 40 percent of children aged birth-to-17 live in a household where someone smokes; over 16 percent of children have been uninsured during the past year; and fewer than 50 percent had both a medical and dental preventive screening during the year.<sup>83</sup>
- Over 14 percent of Arkansans go hungry, about one in seven, 44<sup>th</sup> in the nation.<sup>84</sup>
- On any given night, an estimated 7400 Arkansans are homeless.<sup>85</sup>
- 5.7 percent of Arkansans were "officially" unemployed as of October 2007, not counting all of those who were "underemployed."<sup>86</sup>

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Changetowin.org/fileadmin/pdf/amerdream-dec2007-memo.pdf; Change to Win (partnership of Service Employees International Union, Teamsters, United Farm Workers, and four other unions), "New Analysis from Lake Research Partners Shows 2008 Could be Watershed Election," [www.changetowin.org/for-the-media/press-releases-and-statements/new-analysis-from-lake-research-partners-shows-2008-could-be-watershed-election.html](http://www.changetowin.org/for-the-media/press-releases-and-statements/new-analysis-from-lake-research-partners-shows-2008-could-be-watershed-election.html); Bob Herbert, "Nightmare Before Christmas," *New York Times* (Dec. 22, 2007). This fear may already be coming true – the inflation-adjusted median income for a man in his 30s (a good predictor of lifetime earnings) is twelve percent less than 30 years ago. J. Morton *et al.*, "Economic Mobility: Is the American Dream Alive and Well?" at 5-6 (Economic Mobility Project [Pew Charitable Trusts, American Enterprise Institute, Brookings Institution, Heritage Foundation, Urban Institute], 2007), [www.economicmobility.org/reports\\_and\\_research/?id=0001](http://www.economicmobility.org/reports_and_research/?id=0001).

<sup>81</sup> Wally Nixon, "Affordable Service and Utility Profit – What Utilities Don't Know Can Hurt Them" at 6, 7 (presentation to Mid-America Regulatory Conference, Little Rock, 2005; citing research at Louisiana State University; emphasis in original).

<sup>82</sup> "Pulling Apart: A State-by State Analysis of Income Trends," Center on Budget and Policy Priorities (Jan. 2006).

<sup>83</sup> Child and Adolescent Health Measurement Initiative (2005); 2003 National Survey of Children's Health, Data Resource Center on Child and Adolescent Health, [www.childhealthdata.org](http://www.childhealthdata.org).

<sup>84</sup> M. Nord *et al.*, "Household Food Security in the United States, 2006" at Table 7 (USDA Economic Research Service, 2007). (2004-2006 average, includes District of Columbia).

<sup>85</sup> Arkansas Human Services, Office of Community Services, <http://www.arkansas.gov/dhs/dco/ocs/>.

<sup>86</sup> BLS, LAU Current Unemployment Rates for States and Historical Highs/Lows, Oct. 2007 (seasonally adjusted).

- 45 percent of Arkansans live on incomes that are below 200 percent of the federal poverty level (“FPL”), and the median household income is only 76 percent that of the US.<sup>87</sup>
- 15 percent of Arkansans live in a home with no telephone – nearly twice the number in the US as a whole.<sup>88</sup>
- The average LIHEAP heating grant in 2007 was \$111; a client could receive up to \$300 in crisis money for cooling assistance.<sup>89</sup>

## **Louisiana**

- In the early 2000’s, the richest 20 percent of Louisianans had average incomes 7.6 times higher than the poorest 20 percent, up from 6.3 times in the 1980’s. During that same time period, the income of the lowest 20 percent rose an average of \$70 per year, while that of the richest 20 percent rose \$1,220 per year.<sup>90</sup>
- While the overall poverty rate in the state is 19 percent (49<sup>th</sup> in the US),<sup>91</sup> the rate in rural, as opposed to urban, Louisiana parishes is over 24 percent.<sup>92</sup>
- More than one quarter of all Louisiana children (under 18 years old) lived in poverty in 2003, with more than half of those living in extreme poverty (defined as income below 50 percent of the poverty level).<sup>93</sup>
- Louisiana ranked in the bottom 20 percent of the states in a number of child health-related measures: number 49 in percent of low-birth-weight babies; 48 in infant mortality; and 47 in the child death rate (33 per 100,000).<sup>94</sup>
- While the LIHEAP income threshold is the highest at 60 percent of state median income, less than six percent of eligible customers received heating assistance in 2006.<sup>95</sup>
- There were nearly 7000 homeless people at any given day in Louisiana in 2006; of those, 981 were chronically homeless, and 1256 were severely mentally ill.<sup>96</sup>
- The homeless population in parts of Louisiana outside of New Orleans has risen since Hurricanes Katrina and Rita and is expected to rise further once all FEMA payments for hotels and trailers end.<sup>97</sup>
- “Second Harvest Food Bank of Greater New Orleans and Acadiana continues to experience an 80 percent increase in need in its 23 south Louisiana parishes for

<sup>87</sup> US Census, [www.factfinder.census.gov](http://www.factfinder.census.gov).

<sup>88</sup> US Census, [www.factfinder.census.gov](http://www.factfinder.census.gov).

<sup>89</sup> LIHEAP Clearinghouse, [www.liheapch.acf.hhs.gov/profiles/Arkansas.htm](http://www.liheapch.acf.hhs.gov/profiles/Arkansas.htm).

<sup>90</sup> “Pulling Apart: A State-by State Analysis of Income Trends,” Center on Budget and Policy Priorities (Jan. 2006).

<sup>91</sup> Annie E Casey Foundation, “Kids Count.”

<sup>92</sup> “Louisiana’s Rural Poverty,” Louisiana State University Agricultural Center, [www.lsuagcenter.com](http://www.lsuagcenter.com).

<sup>93</sup> “Louisiana Solutions to Poverty: Engaging Ideas, Empowering People, Enhancing Lives” at 8, Governor’s Summit STOP Report (2005).

<sup>94</sup> “Louisiana Solutions to Poverty: Engaging Ideas, Empowering People, Enhancing Lives” at 8, Governor’s Summit STOP Report (2005).

<sup>95</sup> [http://www.neada.org/publications/issuebriefs/LIHEAP\\_Issue\\_Brief\\_2007-11-26.pdf](http://www.neada.org/publications/issuebriefs/LIHEAP_Issue_Brief_2007-11-26.pdf).

<sup>96</sup> HUD’s 2006 Continuum of Care Homeless Assistance Programs: Homeless Populations and Subpopulations, [http://170.97.67.13/offices/cpd/homeless/local/la/reports/2006\\_la\\_pop\\_sub.pdf](http://170.97.67.13/offices/cpd/homeless/local/la/reports/2006_la_pop_sub.pdf).

<sup>97</sup> “Louisiana: Katrina Shifts Homeless Population,” <http://www.drug-rehabs.org/con.php?cid=3154&state=Louisiana>.

food since the landfalls of Hurricanes Katrina and Rita due to the number of people in need for the first time and the complete disruption of the infrastructure of south Louisiana....” Yet “The federal nutrition assistance to the state of Louisiana has been cut by 30 percent based on suspect population numbers.”<sup>98</sup> More than 14 percent of Louisianans – about one in seven – go hungry, 45<sup>th</sup> in the nation.<sup>99</sup>

## ***New Orleans***

Although a city of Louisiana, New Orleans has characteristics unlike any other city in the entire United States. The catastrophic effects of Hurricane Katrina in 2005 have radically changed the portrait of this unique world.

- While Louisiana as a whole has a poverty rate of 19 percent, New Orleans’ rate was over 22 percent in 2006; in 2004, before Katrina, the poverty rate was 27 percent,<sup>100</sup> showing that it was the poor who were disproportionately affected by displacement.
- After Hurricane Katrina, only 56 percent of the population that had lived there in 2000 had returned by July 2007; but the return rate was very uneven, ranging from 93 percent of the Garden District residents to only seven percent of those in the Lower Ninth Ward.<sup>101</sup>
- Before Katrina, 59 percent of residents of the predominantly Black Lower Ninth Ward owned their own homes, even though 40 percent did not have a high school diploma or GED.<sup>102</sup>
- In the school year after Katrina, 2005-2006, 20,000 to 30,000 K-12 students from New Orleans did not attend school at all; up to 15,000 missed school the following year; Katrina did \$6.2 billion damage to K-12 schools; and two dozen colleges and universities were closed.<sup>103</sup>
- Pre-Katrina, most three- and four-year-old children were in some form of child care, nursery or pre-school; after Katrina, only one-third of the city’s licensed child care centers had re-opened, and they served only 27 percent of the pre-hurricane number of children. The federal government’s response has been to commit only \$2.5 billion through the beginning of the 2007-2008 school year – about what it spends on the Iraq war every 10 days.<sup>104</sup>

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<sup>98</sup> “LFBA seeking state help to stave off looming hunger crisis,” *The Louisiana Weekly* (April 23, 2007).

<sup>99</sup> M. Nord *et al.*, “Household Food Security in the United States, 2006” at Table 7 (USDA Economic Research Service, 2007). (2004-2006 average, includes District of Columbia).

<sup>100</sup> US Census CPS; [factfinder.census.gov](http://factfinder.census.gov).

<sup>101</sup> GCR & Associates, Inc., “Population Estimates for Orleans Parish, July 2007, presented at the Entergy New Orleans 2007 Low-Income Summit, “New Orleans Revival” (Oct. 2007).

<sup>102</sup> Peter Wagner and Susan Edwards, “New Orleans by the Numbers,” *Dollars and Sense*, Economic Affairs Bureau (2007).

<sup>103</sup> “Education after Katrina: Time for a New Federal Response” at 3-4, Southern Education Foundation (2007).

<sup>104</sup> “Education after Katrina: Time for a New Federal Response” at 15, Southern Education Foundation (2007).

- Even after losing many of its poor, the median income in New Orleans in 2006, \$35,859, put the city among the ranks of the poorest in the country.<sup>105</sup>
- Before Hurricane Katrina, most people in New Orleans were renters, but over 50,000 rental units were destroyed, while rents in the remaining units shot up by almost 50 percent. Over 27,500 live in government issued trailers throughout the state, while perhaps thousands are homeless<sup>106</sup>
- Vacancy rates in blue-collar jobs in post-Katrina New Orleans have risen (cleaning and maintenance up from 4.1 percent to 13.1 percent; restaurant sector jobs from 3.6 percent to 13.4 percent; other services from 6.3 percent to 16.7 percent) because workers cannot afford to live in the City.<sup>107</sup>
- While in the US as a whole ten percent of households do not own a car, in the Lower Ninth Ward, that figure was 32 percent pre-Katrina.<sup>108</sup>

## **Mississippi**

- In the early 2000's, the richest 20 percent of Mississippians had average incomes 7.1 times higher than the poorest 20 percent, up from 5.8 times in the 1980's. During that same time period, the income of the lowest 20 percent rose an average of \$115 per year, while that of the richest 20 percent rose \$1,480 per year.<sup>109</sup>
- Mississippi is the poorest state in the nation, with over 20 percent of its population living below the federal poverty line, including 30 percent of its children, and a median income below \$35,000 a year.<sup>110</sup>
- Nearly 23 percent of elderly Mississippians live in poverty, despite receiving Social Security income.<sup>111</sup>
- 14 percent of Mississippi children under 17 are uninsured,<sup>112</sup>
- Over 18 percent of its people – nearly one in five – are hungry at any given time, the second highest rate of “food insecurity” in the country, including more than 226,000 children under 18.<sup>113</sup>
- Only 77.9 percent of Mississippians had a high school diploma in 2006, putting it last in the nation; only 18.8 percent had a bachelor's degree or higher.<sup>114</sup>
- Mississippi's unemployment rate is just over six percent, the highest in any of the Entergy states.<sup>115</sup>

<sup>105</sup> US Census, [www.factfinder.census.gov](http://www.factfinder.census.gov).

<sup>106</sup> Leslie Eaton, “So Many Places to Live, But So Far Out of Reach”, NY Times National at 17 (Jan. 27, 2008).

<sup>107</sup> John Moreno Gonzales, “New Orleans working class hit by cost squeeze: Wages up, but so are rent, utilities,” Boston Sunday Globe at A8 (Jan. 27, 2008).

<sup>108</sup> Peter Wagner and Susan Edwards, “New Orleans by the Numbers,” Dollars and Sense, Economic Affairs Bureau (2007).

<sup>109</sup> “Pulling Apart: A State-by State Analysis of Income Trends,” Center on Budget and Policy Priorities (Jan. 2006).

<sup>110</sup> US Census, [www.factfinder.census.gov](http://www.factfinder.census.gov); Annie E. Casey Foundation, “Kids Count”.

<sup>111</sup> Center on Budget Policy and Priorities (CBPP) from US Census

<sup>112</sup> Annie E. Casey Foundation, “Kids Count”.

<sup>113</sup> M. Nord *et al.*, “Household Food Security in the United States, 2006” at Table 7 (USDA Economic Research Service, 2007). (2004-2006 average, includes District of Columbia).; Patti Drapala, “Students bag sweet potatoes for MSU hunger campaign” at 30, MSU Ag Communications (Nov. 1, 2007).

<sup>114</sup> US Census, [factfinder.census.gov/servlet/ACS](http://factfinder.census.gov/servlet/ACS) 2006.

- Less than 20 percent of eligible customers received LIHEAP assistance in 2006, and the average benefit was only \$250.<sup>116</sup>

### **Texas (Beaumont)**

- In the early 2000's, the richest 20 percent of Texans had average incomes 8.1 times higher than the poorest 20 percent, up from 6.2 times in the 1980's. During that same time period, the income of the lowest 20 percent rose an average of \$70 per year, while that of the richest 20 percent rose \$3,830 per year.<sup>117</sup>
- In 2006, 20 percent of Beaumont residents lived below the FPL, including eleven percent of the elderly<sup>118</sup> and over 30 percent of children under 18.<sup>119</sup>
- The poverty rate in Jefferson County, of which Beaumont is the County Seat, rose ten percent between 2000 and 2007, to 18.7 percent.<sup>120</sup>
- In Southeast Texas, a family of four would need to earn almost \$12,000 above the federal poverty level to afford the basics of housing, food, child care, health care and transportation. Without employer-provided health insurance, that family would need an annual income of at least \$45,000.<sup>121</sup>
- The median household income in Beaumont in 2006 was \$40,072, compared with that of Texas generally of \$44,922.<sup>122</sup>
- Nearly 18 percent of Beaumont residents over 25 did not have a high school diploma in 2006, ranking it second to the bottom nationally, and 21 percent had a bachelor's degree or higher.<sup>123</sup>

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<sup>115</sup> Bureau of Labor Statistics, LAU Current Unemployment Rates for States and Historical Highs/Lows, Oct. 2007 (seasonally adjusted).

<sup>116</sup> [http://www.neada.org/publications/issuebriefs/LIHEAP\\_Issue\\_Brief\\_2007-11-26.pdf](http://www.neada.org/publications/issuebriefs/LIHEAP_Issue_Brief_2007-11-26.pdf).

<sup>117</sup> "Pulling Apart: A State-by State Analysis of Income Trends," Center on Budget and Policy Priorities (Jan. 2006).

<sup>118</sup> US Census ACS, <http://factfinder.census.gov>.

<sup>119</sup> CityBloc.com, Beaumont Data, Statistics, Facts and Figures.

<sup>120</sup> Rose Ybarra, "Number of Child deaths on the rise in Jefferson County," The Beaumont Enterprise (Dec. 10, 2007).

<sup>121</sup> Dan Wallach, "How much does a Southeast Texas family need to live on?" The Beaumont Enterprise (Aug. 31, 2007).

<sup>122</sup> US Census ACS, <http://factfinder.census.gov>.

<sup>123</sup> US Census ACS, <http://factfinder.census.gov>.

<b>Measures of Poverty in the Entergy States and the United States</b>						
	<b>U.S.</b>	<b>Arkansas</b>	<b>Louisiana</b>	<b>New Orleans</b>	<b>Mississippi</b>	<b>Texas (Beaumont)</b>
Median Household Income 2006	\$ 48,451	\$ 36,599	\$ 39,337	\$35,859	\$ 34,473	\$ 40,072
% people living below 100% FPL in 2006	13.3%	17.30%	19.0%	22.2%	21.1%	18.5%
Children under 18 below 100% FPL	18.3%	24.3%	28%	41.9%	30%	28%
Children under 18 below 150% FPL	29.0%	37%	39%	NA	44%	37% (1)
% People living below 200% FPL in 2006	36%	45%	39%	NA	49%	43% (1)
Elderly Poor (over 65 below 100% FPL)	13.0%	15.0%	14.0%	12.2%	23.0%	18% (1)
Working parents without health insurance (2003)	24.8%	16.2%	22.6%	NA	27.5%	34.7% (1)
Children under 17 without health insurance (2005)	11%	9%	10%	NA	14%	20% (1)
Food Insecurity (Hunger) 2004-2006	11.30%	14.3%	14.4%	NA	18.1%	15.9% (1)
% Children in low-income families with no telephone (2005)	9%	15%	12%	15%	18%	11% (1)
Unemployment levels (Oct. 2007)	4.4%	5.7%	3.3%	3.1%	6.1%	4.9%
% over 25 with high school diploma	84.1%	80.5%	79.4%	81.6%	77.9%	81.4%
Low-income renters with housing costs over 50% of household income	38.3%	32.4%	37.7%	NA	38.5%	38.1%
% of people living below EPI Basic Family Budget	NA	27%	28%	28%	30%	35%
% Eligible receiving LIHEAP heating assistance	23%	30.4%	5.7%	NA	19.1%	1.9% (1)
Leveraged energy funds per person	\$ 5.97	\$ 0.58	\$ 0.19		\$ 0.13	\$ 0.17
% leveraged by state vs US		10%	3%		2%	3%

(1) State of Texas

Sources: US Census, [factfinder.census.gov/home](http://factfinder.census.gov/home), <http://www.census.gov/hhes/www/saipe/index.html>;  
LIHEAP Issue Brief <http://www.neada.org/>; BLS, LAU Current Unemployment Rates for States;  
US Dept. of Labor, [www.dol.gov/esa/minwage/america.htm](http://www.dol.gov/esa/minwage/america.htm), 11/28/2007; Center on Budget and Policy Priorities  
Economic Policy Institute, [www.epi.org/content.cfm/datazone\\_dzlocal](http://www.epi.org/content.cfm/datazone_dzlocal)

## V. PUBLIC POLICY CAN MAKE A DIFFERENCE

### What Public Policy Can Do to Foster Energy Affordability

Low-income energy affordability is one of the most potent tools states have to stimulate the economy and soften income disparities, while providing to everyone benefits that far exceed the investment. Across the Entergy jurisdictions, investments in low-income energy efficiency would produce an economic impact that is *more than 23 times the original investment*. Much of the economic impact is driven by the creation of jobs throughout the region – **216 jobs for every million dollars of investment**.

Eliminating or diminishing the energy crisis of poor people is an extremely cost-effective way to fight poverty and move people toward self-sufficiency. When people can meet their essential energy needs, they can then address other fundamental problems, such as hunger, education, health care and employment. Such investments can lower the burdens currently placed on charitable resources, and support federal and state anti-poverty efforts. It is impossible to address poverty without addressing energy use and costs.

Anti-poverty investments such as energy efficiency can also help attack the hopelessness that may underlie a “generational poverty gap.” Research has shown that individuals trapped in poverty for two or more generations live by rules that are often misunderstood by those who design programs to help alleviate that poverty.<sup>124</sup> By partnering with community action agencies that understand these “rules”, state public utility policy can be a force for breaking through the despair and establishing new behavior patterns that will better serve the participating families and the community as a whole. Meeting energy problems with energy efficiency, for instance, teaches the ability to make choices that make a difference and the value of planning for the future. Saving for homeownership or higher education through an Individual Development Account while learning financial management skills can be a first step on the road to self-sufficiency. “[M]aybe the best way to break the cycle of poverty is to raise the hopes and expectations of the poor by putting them closer to the goal line.”<sup>125</sup>

Despite the gloomy statistics cited above, there are glimmers of hope in the Entergy states. A majority of young children in each state attend pre-school, including kindergarten, Head Start, or Early Start programs.<sup>126</sup> Prior research we did showed that a high-quality pre-school education could return at least nine dollars to society for every

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<sup>124</sup> Kerri McCormick, “Fact Sheet: *Generational vs. Situational Poverty and the Hidden Rules*” (West Virginia University 2003), [www.ext.wvu.edu/cyfar/rut/hiddenrules.htm](http://www.ext.wvu.edu/cyfar/rut/hiddenrules.htm).

<sup>125</sup> S. Pearlstein, “On Poverty, Maybe We’re All Wrong,” *Washington Post* at D1 (Aug. 29, 2007), citing philosophy professor C. Karelis (George Washington University), *The Persistence of Poverty*.

<sup>126</sup> Child and Adolescent Health Measurement Initiative (2005); 2003 National Survey of Children’s Health, Data Resource Center on Child and Adolescent Health, [www.childhealthdata.org](http://www.childhealthdata.org).

dollar spent.<sup>127</sup> Over 90 percent of children between the ages of one and 17 have medical insurance in each of the states except Texas (where the figure is 83 percent).<sup>128</sup>

## ***Success Begins in Arkansas***

In Arkansas, in a process sponsored by the Arkansas Public Service Commission, Entergy took a lead role, along with the Arkansas Community Action Agency Association (ACAAA), Arkansas Western Gas and others, to develop and implement the Arkansas Weatherization Program (AWP). While homeowners of all income levels are eligible for the AWP, it is implemented through the network of agencies that implement the US Department of Energy Weatherization Assistance Program (DOE WAP) and is free to qualifying low-income customers.<sup>129</sup> The AWP follows the protocols of the DOE WAP, a program which has made a real difference in the lives of program recipients. For example:<sup>130</sup>

- An 81-year-old Entergy customer in Little Rock was able to stay in his home due to the weatherization program. A widower, father of two daughters, and retired gardener for a dairy, said his energy savings after weatherization by the Central Arkansas Development Council (CADC) enabled him to pay for needed improvements, including storm doors, a driveway and sidewalk, and trimming of trees. “I wouldn’t even have a house...I couldn’t afford to live, pay my bills” if it weren’t for the weather stripping, caulking, replacing of windows, insulation of walls and ceiling and other work, he said, adding that he pays a third less for energy now.
- An 81-year-old woman in Arkansas wrote a letter of gratitude to the local community action agency after it had weatherized her home and provided safety equipment, including smoke and carbon monoxide detectors. She mentioned that on a cold April night, an alarm went off and a woman’s voice screamed “Warning! Carbon Monoxide!” about every 20 seconds after she had tried to heat her house by lighting flames on her kitchen stove. She went on to say that “I have no doubt that without the installation of the alarm by the weatherization people, our 9-1-1 emergency service and our on-the-ball firemen, I would not be among the living today.” She went on to say, “Thank you. I had a chance to benefit from many of the weatherization people’s efforts...the carbon monoxide detector saved my life, and I’m certainly grateful for that; thank you.”
- Two letters to the Ozark Opportunities, Inc., community action agency are typical of many received:

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<sup>127</sup> J. Oppenheim and T. MacGregor, “The Economics of Education: Public Benefits of High-Quality Preschool Education for Low-Income Children” at 1 (Entergy Corp., n.d. [2002]), <http://www.democracyandregulation.com/detail.cfm?artid=37&row=5>.

<sup>128</sup> Child and Adolescent Health Measurement Initiative (2005); 2003 National Survey of Children’s Health, Data Resource Center on Child and Adolescent Health, [www.childhealthdata.org](http://www.childhealthdata.org).

<sup>129</sup> The 50 percent co-payment of the AWP is, for low-income customers, paid by the DOE WAP.

<sup>130</sup> Our thanks to Ludwik Kozlowski, Energy Coordinator of ACAA, who gathered these stories (Jan. 2008).

- “I’m writing you to let you know how pleased I am with the work that was done to my home. The windows and new front door stopped air leaks, and the insulation under my floors has made my floors stay warm. I use less heat, and I’m sure I will see a BIG difference in my cooling bills. I’m so elated with it all! And the workers were so pleasant. Thank you so very much for the help in weatherizing! I’m deeply grateful!”
- “I want to thank you for the blessings you have given us a few weeks ago. We received all-new windows, a wood stove and new storm door. Our home for the first time is so comfortable. No unwanted air coming in. We aren’t burning half the wood we used to and we’re staying warm. What a blessing. We could not have done any of this on our own. God bless.”

### ***And in Texas***

There are signs in Southeast Texas that the economy may be about to improve. A group called the “Industrial Workforce Alliance,” composed of businesses (including Entergy), non-profits and other faith-based organizations, colleges and universities, has begun work on recruiting, training, and hiring workers to meet a growing economy over the next three years. Jobs in manufacturing and other industry, construction and engineering, medical and healthcare fields, logistics and distribution, retail, hospitality, call centers, financial services and hurricane repair will require up to 28,500 new workers by the end of 2010, also taking into account the retirement of many of the baby boomers during that time period. The area faces challenges in meeting its employment goals, including a housing shortage, lack of adequate transportation services for many new workers, and young people leaving Southeast Texas or not staying in school to receive a diploma or to go on to higher education. The Alliance has a strategy for overcoming these obstacles and is moving forward with funding, education and training sessions in order to meet these ambitious targets for Southeast Texas.<sup>131</sup>

But for the Southeast Texas low-income population, the outlook is still bleak. Many low-income people want to improve their homes and save money on utilities, but they simply do not know where to turn. They carry an enormous energy burden and must choose between utilities, groceries and medicine. The partnership of Entergy and the DOE WAP, with implementation by agencies such as Programs for Human Services in Southeast Texas, seeks to eliminate, or at least reduce, these kinds of burdens for clients. The Weatherization Program offers Entergy customers long-term solutions to their high energy consumption and financial burdens, enabling them to maintain their sense of responsibility and independence while keeping their homes temperate, especially during the summers when cooling is needed so badly.<sup>132</sup>

What follows is a sampling of Entergy customers who have been helped by the Weatherization Program:

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<sup>131</sup> Presentation on the Industrial Workforce Alliance by the Southeast Texas Workforce Development Board (Oct. 25, 2007).

<sup>132</sup> Our thanks to Connie Gray, Housing & Energy Coordinator, Program for Human Services, Inc., Orange, TX, who gathered these stories (Jan. 2008).

A disabled 84-year-old woman received weatherization services that allowed her and three great grandchildren to stay at home without fearing for their health and safety. A new front door, oversize peep sight, and deadbolt and entry lock keep them sleeping soundly at night knowing that they are secure. And replacing their inefficient air conditioner and heater, adding attic and wall insulation, and repairing holes in walls and ceilings lowered their utility bills.

One customer wrote: "...[W]e ... wish to express our heart-felt gratitude to each and every one of you for whatever role that you played in replacing our central unit and providing the weatherization services. Again, thank you and may God's grace be upon each and every one of you, forever and ever, Amen. Our family will continue to pray that your organization will continue to prosper, in order to be there for others, as you were for us. Thank you, again."

*Entergy and its partners in the community, including community action and other service agencies, churches, Habitat for Humanity, local and state lawmakers, the American Red Cross, the Salvation Army, Councils on Aging, and others, have been addressing the problem of energy affordability for some time. Entergy has looked for ways to work together with others to develop effective solutions to the problem.<sup>133</sup> Entergy has committed to making energy more affordable for its low-income customers. To that end, Entergy has instituted Low-Income Summits in all of its jurisdictions, developed information and education programs, and participated in employee voluntary weatherization programs. Entergy has been especially active in providing energy education to its low-income customers.<sup>134</sup>*

- *In Texas, Entergy instituted its "Coffee Breaks" program to provide educational materials to advocates working together;*
- *In Louisiana, after Hurricanes Katrina and Rita, Entergy held six regional summits to assess needs and disseminate information;*
- *Entergy distributes the "Advocate Power" newsletter to 20,000 low-income advocates, providing information and references; and*
- *Entergy partners with faith-based organizations to share information and recruit volunteers for weatherization projects.*

*Entergy also provides grants primarily to support weatherization activities such as the Entergy Charitable Foundation for non-profit conservation funding; grants to low-income champions within each service territory that are dispersed to local CAPs; and a revolving loan fund in Louisiana for new home construction.<sup>135</sup>*

These are laudable efforts but, as Entergy recognizes and is committed to addressing, much more needs to be done to begin to make energy affordable. But there is only so

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<sup>133</sup> Linda Barnes, "Entergy reaches out to those hardest to reach," presentation to Chartwell's Audio Conference on Best Practices in Reaching Low-Income Customers with Energy Efficiency Programs (Oct. 18, 2006).

<sup>134</sup> Barnes (2006).

<sup>135</sup> Barnes (2006).

much one corporation can accomplish; scale is needed for impact. These efforts point the direction for public policy and represent an excellent point from which to begin to break the poverty cycle. Public utilities such as Entergy generally have excellent relationships with their customers and with stakeholders interested in moving programs forward to help low-income customers afford their energy bills. In addition, there is a foundation infrastructure in place already, including federal fuel assistance and weatherization programs, that can be used as a springboard from which to launch partnership programs established by public policy and funded by ratepayers. Most importantly, the design and testing of successful programs has already been done, both in other states and in Entergy's own service territories in Arkansas and Texas, as described above.<sup>136</sup>

The most effective models include a well-trained, highly qualified, stable staff and infrastructure to deliver services, and implementers trusted by the community. Several states have chosen to implement state-wide programs, so that consistent, comprehensive, well-coordinated energy efficiency and education services are available to all low-income citizens within the states, through coordinated, but decentralized, delivery. The AWP in Arkansas, described above, is open to all qualifying residential customers – not simply low-income customers. The customers in all of Entergy's other service territories deserve access to similar programs. In Appendix C, we discuss some successful payment affordability and energy efficiency program designs. As shown in Section II above, both affordability and energy efficiency programs are extremely cost-effective ways from a societal point of view to reduce the energy burden faced by low-income customers.

## Historic Trends

Historic poverty trends with and without public policy targeted at poverty shows that public policy, including low-income efficiency and assistance investments, can dramatically reduce poverty. “The relative decline in [even] the median income in the US is a problem. ... [Reversing this decline] needs to be underpinned by two legs: programmes that help individuals make employment transitions, and solid safety nets and assured access to basic services such as education and healthcare. ... To have an open economy we may need a more protective one than we have had in the recent past.”<sup>137</sup>

The U.S. Census has tracked the incidence of the American population with incomes below the Federal Poverty Line (FPL) since 1959, when almost a quarter of Americans (22.4 percent) were classified as poor. It is therefore possible to track this one statistic across the varying policy approaches to poor people, from the War on Poverty to periods of what could be charitably described as benign neglect.<sup>138</sup> The reality of poverty is

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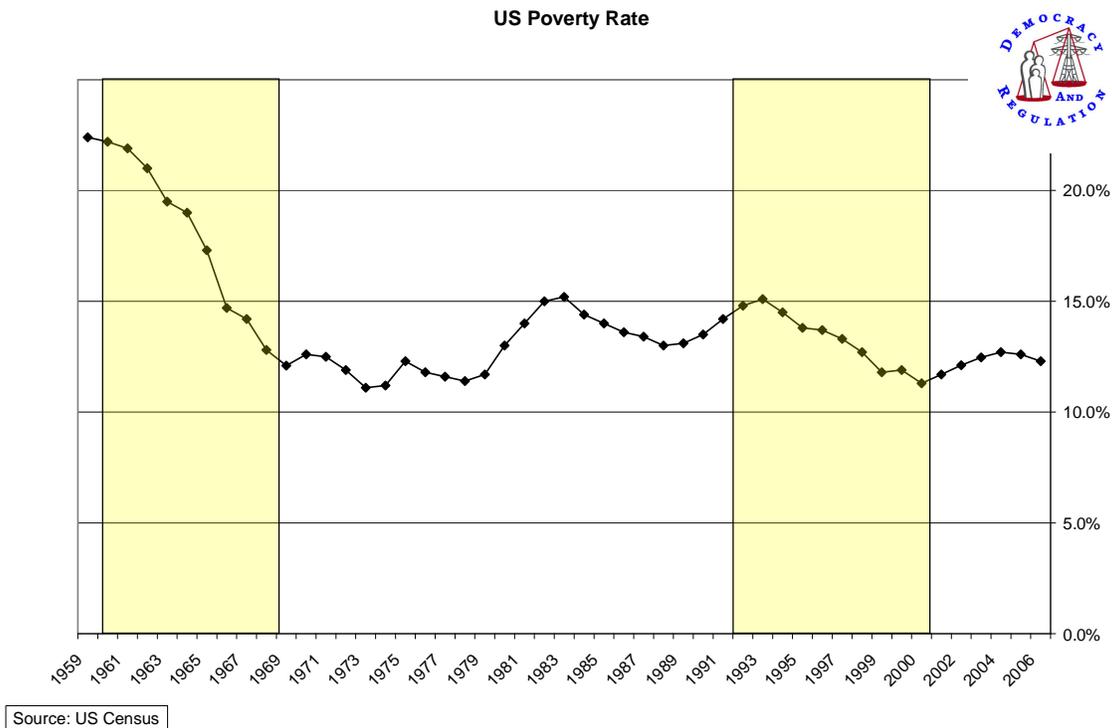
<sup>136</sup> The Entergy Texas program has been temporarily suspended and is expected to resume.

<sup>137</sup> D. Leipziger (vice president, World Bank) and M. Spence (senior fellow, Hoover Institution), “Globalisation’s losers need support,” *Financial Times* at 11 (May 15, 2007).

<sup>138</sup> The data have been collected in 35 tables, covering everything from poverty to health insurance to regional, gender, and age differences, by the Center on Budget and Policy Priorities (CBPP). [www.cbpp.org/10-19-05pov.htm](http://www.cbpp.org/10-19-05pov.htm). Since it is FPL data that are published, it is the assumption of this section that the trends are substantially the same at true levels of poverty (but not the absolute numbers, of course).

worse than pictured by these data, since the FPL in fact has increasingly understated poverty as time has passed.<sup>139</sup>

The federal War on Poverty itself dramatically slashed official poverty rates, from 22.1 percent in 1960 to 12.1 percent in 1969 – a drop of 10 percentage points, or 46 percent of the starting poverty rate. Similarly, federal policies in the 1990s of economic expansion and reducing inequality saw official poverty reduced from 15.1 percent in 1993 down to 11.7 percent in 2001 – a drop of 3.4 percentage points, or a 22.5 percent improvement. In contrast, the federal neglect of the poor for many of the years between 1969 and 1993 increased the official poverty rate from 12.1 percent to 15.1 percent and similar federal neglect after 1993 brought the official rate from 11.7 percent to 13.3 percent.



While it is obvious that public policy thus makes a difference in the poverty rate, it is much more difficult to quantify the difference made by a particular set of public policies. Further, it is probable that defeating poverty becomes more difficult as success brings the poverty rate down. It is not difficult to imagine, however, that an eight-year set of public policies directed toward eradicating poverty could be at least as successful as the more general growth and equality policies of the 1990s, *i.e.*, an improvement of at least 22.5 percent -- perhaps more in the states and cities with above-average poverty rates. If 22.5 percent improvement were achieved from the base year of 2006, the resulting poverty rates would be as follows:

<sup>139</sup> The reasons for this are described in footnote 50.

	<u>2006</u>	<u>22.5% lower</u>
US	13.3%	10.3%
Arkansas	17.3%	13.4%
Louisiana	19.0%	14.7%
New Orleans	22.2%	17.2%
Mississippi	21.1%	16.4%
Beaumont area, Texas	18.5%	14.3%

This would certainly leave much more to be done to eradicate poverty, but it would achieve the lowest national poverty rate recorded and thus be a very good start.

## Current Anti-Poverty Programs

An important part of anti-poverty public policy since the energy crises of the 1970s has been energy-related – the federal Low-Income Home Energy Assistance Program,<sup>140</sup> the federal Weatherization Assistance Program,<sup>141</sup> and state-mandated assistance and efficiency programs.<sup>142</sup> As shown in Section II of this report, low-income energy programs not only help reduce poverty, but are also immensely cost-effective for the entire economy.

Another low-income program with a very large pay-off for both low-income households and the society at large is education. We have shown, for example, that investments in pre-school education of three- and four-year old children from low-income families returns more than \$9 for every dollar spent.<sup>143</sup> Early education increases learning ability, which increases high school and college graduation rates, which results in better jobs at higher salaries. Full-time, year-round workers without a high school diploma earn more than 30 percent less than those with a diploma. In the period 2000-2005, only those with doctorates or the equivalent (including MBAs) enjoyed income increases that outpaced inflation.<sup>144</sup> In addition to the obvious benefit for the children who are educated, society reaps rewards in the form of lower welfare and unemployment payments, lower public and private medical costs, higher income and other tax revenue, reduced burdens on the

<sup>140</sup> First enacted in 1974 as Project Fuel (Office of Economic Opportunity).

[www.acf.hhs.gov/programs/liheap/library/history.html#74-79](http://www.acf.hhs.gov/programs/liheap/library/history.html#74-79). LIHEAP was first enacted by P.L. 96-223 in 1981. *Id.*; <http://www.liheapch.acf.hhs.gov/Funding/lhhist.htm>.

<sup>141</sup> First enacted in 1975 as Emergency Energy Conservation Program (Community Services Administration). [www.acf.hhs.gov/programs/liheap/library/history.html#74-79](http://www.acf.hhs.gov/programs/liheap/library/history.html#74-79). WAP was enacted in 1977. <http://www.liheapch.acf.hhs.gov/Funding/lhhist.htm>. It is codified at 42 USC sec. 6861. *See* [www.eere.energy.gov/weatherization](http://www.eere.energy.gov/weatherization), [www.waptac.org/sp.asp?id=1437](http://www.waptac.org/sp.asp?id=1437).

<sup>142</sup> LIHEAP Clearinghouse, State Leveraging FY 2006 (May 2007), <http://liheap.ncat.org/tables/FY2006/06stlvb.htm>.

<sup>143</sup> J. Oppenheim and T. MacGregor, “The Economics of Education: Public Benefits of High-Quality Preschool Education for Low-Income Children” (Energy Corp., n.d. [2002]), <http://www.democracyandregulation.com/detail.cfm?artid=37&row=5>.

<sup>144</sup> D. Wessel, “Why It Takes a Doctorate to Beat Inflation,” *Wall St. Journal* at A2 (Oct. 19, 2006) (based on US Census CPS).

criminal justice and special education systems, and multiplier effects of all these benefits. Later on, job training can also be important.

Individual Development Accounts (IDAs) are another important strategy to help families escape poverty.<sup>145</sup> In 2002, Entergy partnered with the Foundation for the Mid South (FMS) to develop the first multi-state initiative to foster IDA's in Arkansas, Louisiana, Mississippi, and later Southeast Texas.<sup>146</sup> Arkansas had enacted an IDA program by statute in 1999, funded by federal Temporary Assistance for Needy Families (TANF) dollars through the Arkansas Department of Workforce Services.<sup>147</sup>

It is very difficult for low-income families, who do not have sufficient income for essentials, to escape poverty by saving. So IDAs provide matching funds (usually a 100-300 percent match, but sometimes more)<sup>148</sup> as an incentive to working low-income families to set aside savings for specific asset-building purposes, such as owning or repairing a home, obtaining an education, or establishing a business. Financial and other counseling is usually part of the program. The first careful evaluation of the IDA approach found that the program made a significant contribution to narrowing the home-ownership gap between Blacks and whites; Black home-ownership (compared to controls) rose by ten percentage points. Other participants "experienced a substantial increase in business equity relative to controls." For those who were already homeowners, education was often a priority: "the likelihood of taking non-degree classes rose sharply" and computer purchases rose by 30 percentage points, even though they were not covered by matching funds.<sup>149</sup>

Through April 2006, the state-funded Arkansas IDA program helped 570 families build assets, including 117 who purchased homes, 228 who renovated homes, 154 who attended institutions of higher learning, and 71 who invested in new or existing businesses. "Beyond helping low-income families acquire tangible assets, [participants experienced] increased self-sufficiency, or in other words, less use of public assistance of various sorts. ... 55 percent of program graduates who had previously received public assistance no longer receive such assistance. ... More funding for IDAs needs to be provided so that IDAs are available in every county of the state."<sup>150</sup> In Louisiana, 1029 completed financial education programs; 895 completed asset training, 300 purchased homes, and 157 started or expanded a small business with help from IDA's.<sup>151</sup> However,

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<sup>145</sup> See e.g., US HHS, "Assets for Independence Program," <http://www.acf.hhs.gov/programs/ocs/afi/>.

<sup>146</sup> "Changing Lives: An Investment in the Mid South," at 1 (Foundation for the Mid-South, 2008), [http://www.fndmidsouth.org/Documents/IDA\\_Changing\\_Lives\\_report.pdf](http://www.fndmidsouth.org/Documents/IDA_Changing_Lives_report.pdf).

<sup>147</sup> Arkansas Act 1217 of 1999, the Family Savings Initiative Act.

<sup>148</sup> Such matches are a much stronger incentive to save than are conventional tax deductions (e.g., for Individual Retirement Accounts), especially since low-income tax rates are low or zero.

<sup>149</sup> W. G. Gale, "What Do Individual Development Accounts Do? Evidence from a Controlled Experiment" (Brookings Institution 2006), [http://www.brookings.edu/papers/2006/071housing\\_gale.aspx](http://www.brookings.edu/papers/2006/071housing_gale.aspx) (program in Tulsa 1998-2003).

<sup>150</sup> "Arkansas' Individual Development Account (IDA) Program: Survey Shows Broad Impact," Policy Points at 1, 4, 5 (Southern Good Faith Fund, vol. 28, Oct. 2006); see Annual Report of the Arkansas Department of Health and Human Services Individual Development Account Program, for State Fiscal Year 2005 (Aug. 2005).

<sup>151</sup> IDA Collaborative of Louisiana Program Highlights, <http://idacola.tulane.edu/program/highlights>.

there has been only occasional state funding by Louisiana and Texas; none in Mississippi.<sup>152</sup> State funding is essential because “The primary obstacle to the continued growth of IDAs in the region is obtaining financial support. . . . State funding and policies provide stability, allowing IDA programs to provide services on an ongoing (and ultimately permanent) basis.”<sup>153</sup> Entergy contributed \$1.6 million to the Mid-South IDA initiative, the largest fraction of the \$15 million raised so far;<sup>154</sup> the number of IDA accounts there has almost doubled in five years.<sup>155</sup>

Altogether, low-income programs have prevented poverty in America from being even worse than it is. One estimate is that low-income programs have reduced the incidence of poverty by as much as 47 percent, particularly among the elderly.<sup>156</sup> In addition to energy and education programs, most anti-poverty programs focus on health, nutrition, housing, or income.<sup>157</sup>

Health programs include Medicaid and the State Children’s Health Insurance Program (SCHIP). They have reduced infant and childhood mortality, by 8.5 percent and 5.1 percent, respectively, as well as increased treatment and screening – yet reduced preventable hospitalization -- for such adult problems as cancer and chronic diseases. About 70 percent of Medicaid funds care for seniors and the disabled. Uninsured adults who become insured by Medicare at age 65 regain half their health deficit by the time they reach 70.<sup>158</sup>

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<sup>152</sup> <http://gwbweb.wustl.edu/csd/policy/states/Louisiana.html>, <http://gwbweb.wustl.edu/csd/policy/states/Mississippi.html>, <http://gwbweb.wustl.edu/csd/policy/states/Texas.html>; see

R, Miller, “Individual Development Accounts and Banks: A Solid ‘Match,’” at Table 1, [FDIC Quarterly](http://www.fdic.gov/bank/analytical/quarterly/2007_vol1/IDAs-and-banks.html), [www.fdic.gov/bank/analytical/quarterly/2007\\_vol1/IDAs-and-banks.html](http://www.fdic.gov/bank/analytical/quarterly/2007_vol1/IDAs-and-banks.html).

<sup>153</sup> “Changing Lives: An Investment in the Mid South,” at 2, 17 (Foundation for the Mid-South, 2008), [http://www.fndmidsouth.org/Documents/IDA\\_Changing\\_Lives\\_report.pdf](http://www.fndmidsouth.org/Documents/IDA_Changing_Lives_report.pdf). State funding includes tax credits, Community Development Block Grants, Temporary Assistance for Needy Families (TANF) allocations, and appropriations from general funds. *Id.* at 17.

<sup>154</sup> *Id.* at 6, 15.

<sup>155</sup> *Id.* at 12.

<sup>156</sup> A. Sherman, “Public Benefits: Easing Poverty and Ensuring Medical Coverage” at Table 2, p. 5 (Center on Budget and Policy Priorities, 2005), [www.cbpp.org/pubs/accomplishments.htm](http://www.cbpp.org/pubs/accomplishments.htm).

<sup>157</sup> Most of the foregoing (except where otherwise footnoted) is drawn from: Center on Budget and Policy Priorities, “What does the Safety Net Accomplish?” (News Release, 2005); S. Parrot *et al.*, “Selected Research Findings on Accomplishments of the Safety Net” (Center on Budget and Policy Priorities, 2005); A. Sherman, “Public Benefits: Easing Poverty and Ensuring Medical Coverage” (Center on Budget and Policy Priorities, 2005); all at [www.cbpp.org/pubs/accomplishments.htm](http://www.cbpp.org/pubs/accomplishments.htm); D. Rice and B. Sard, “The Effects Of The Federal Budget Squeeze On Low-Income Housing Assistance” (Center on Budget and Policy Priorities, 2007), [www.cbpp.org/2-1-07hous2.htm](http://www.cbpp.org/2-1-07hous2.htm); American Planning Association, “Policy Guide on Homelessness” (2003), [www.planning.org/policyguides/homelessness.htm](http://www.planning.org/policyguides/homelessness.htm); J. Oppenheim and T. MacGregor, “The Economics of Poverty: How Investments to Eliminate Poverty Benefit All Americans,” (Entergy Corp. n.d.[2006]), [www.democracyandregulation.com/detail.cfm?artid=99&row=0](http://www.democracyandregulation.com/detail.cfm?artid=99&row=0). See also sources cited in these summaries.

<sup>158</sup> J.M. McWilliams *et al.*, “Health of Previously Uninsured Adults After Acquiring Medicare Coverage,” 298 *Journal of the American Medical Association* 2886 (Dec, 2007), <http://jama.ama-assn.org/cgi/content/abstract/298/24/2886>; E. Cooney, “Insurance makes a difference,” *Boston Globe* at C2 (Dec. 31, 2007).

The American health insurance system has developed largely without public policy guidance, the only significant exceptions being Medicare and Medicaid as part of the War on Poverty in 1966. Although health insurance became available as early as 1847, it was not until the development of non-profit community hospital pre-payment systems (the precursor to Blue Cross) in 1929 that health insurance became broadly available. Non-profit associations of doctors followed in 1939 (later becoming Blue Shield), though mostly to prevent what doctors saw as possible encroachment by hospitals and national health insurance. The success of the Blues, together with World War II wage controls that encouraged employers' offers of health insurance in lieu of pay increases, led to rapid development of commercial health insurance, though with price discrimination among customers. By 1958, about 75 percent of Americans were thus covered by health insurance. But in 1962-63, only 62 percent of those 65 or over were covered – only 58 percent of those not working. More than 99 percent of those over 65 are now covered, leaving about 16 percent of the population, primarily lower-income, without health insurance.<sup>159</sup>

Nutrition programs include Food Stamps, Free and Reduced Price School Lunches (FRPL) and Breakfasts, and the Special Supplemental Program for Women, Infants, and Children (WIC). Not surprisingly, these programs have been demonstrated to improve health, especially in children, and school performance. WIC alone saves \$3.50 in health care costs for every dollar spent.

Housing programs also improve health (by freeing up family funds for food and medicine) and school performance and provide a foundation for steady employment. The programs include vouchers (“Section 8”), rent subsidies, project supports (including tax credits), and public housing. Most cost-effectively, especially in this era of rapidly rising rents, housing programs avoid homeless expenditures that are much higher -- \$15,000 per year for individuals or \$25,000 for families, as opposed to rent subsidies of \$4500-\$6000.

Income supports for low-income people include some programs that also benefit others – Social Security and unemployment insurance, and worker's compensation – as well as the targeted programs of Supplemental Security Income (SSI), the Earned Income Tax Credit (EITC), and Temporary Assistance for Needy Families (TANF, the successor to Aid for Families with Dependent Children and welfare). Income supports have been especially effective at combatting poverty among the elderly, reducing the incidence of

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<sup>159</sup> M. Thomason (Miami University), “Health Insurance in the United States,” <http://eh.net/encyclopedia/article/thomasson.insurance.health.us>, G. Gleeson “Hospital and Surgical Insurance Coverage, United States - 1968 (National Center for Health Statistics (NCHS) 1972); P. Ahmed, “family Hospital and Surgical Insurance Coverage, United States - July 1962-June 1963” (NCHS 1967); “Hospital and Surgical Insurance Coverage, United States – 1974” (NCHS 1977). NCHS documents available at [www.cdc.gov/nchs/products/pubs/pubd/series/ser.htm#sr10](http://www.cdc.gov/nchs/products/pubs/pubd/series/ser.htm#sr10). M Broadbuss et al, “Poverty, Income, and Health Insurance Coverage Tables” at Table 31 (Center on Budget and Policy Priorities 2005), [www.cbpp.org/10-19-05pov.htm](http://www.cbpp.org/10-19-05pov.htm), from US Census, and subsequent Census data. The Census began collecting health insurance data in 1987; before this time, data are incomplete and inconsistent.

elderly poverty by more than 80 percent. (For one thing, between Medicare and Medicaid, virtually all Americans over age 65 now have health insurance.) The incidence of poverty among children has also been cut, although the percentage of children in deep poverty (families with income below half the FPL) has risen to almost a third (31 percent) from less than a quarter (23 percent). The EITC rewards work at low wages, helping to lift a minimum wage job towards the poverty line and encouraging more than a half million families to go to work.

The minimum wage has been a tool for supporting the lowest incomes since 1938, although only in 1968 did a full-time job at the federal minimum wage reach 90 percent of the poverty level.<sup>160</sup>



As shown in this chart, most of the inflation-adjusted increases in the minimum wage have occurred in the periods 1960-1969 and 1993-2001.<sup>161</sup>

<sup>160</sup> <http://oregonstate.edu/instruct/anth484/minwage.html>. Shown in 2007 dollars and a 2000 hour work year.

<sup>161</sup> Data from [www.epionline.org/mw\\_statistics\\_annual.cfm](http://www.epionline.org/mw_statistics_annual.cfm).

Tax policy, including the EITC mentioned above, has also been used, to a limited extent, to support those at the economic bottom. For example, since 1960, Federal tax rates for the bottom 40 percent (including payroll and other taxes) have dropped from about 14 percent to about ten percent. More significant have been much larger decreases at the top, particularly for the top one percent, partly reversed at the end of the 1960-1969 period and the beginning of the 1993-2001 period. Since 1960, the tax rate for the top one percent has fallen from 44.0 percent to 30.4 percent and the rate for the top 0.1 percent from 71.4 percent to 34.2 percent. The most recent tax cuts have been sharper at the top than at the bottom.<sup>162</sup> However, a consensus may be emerging that tax policy should be used more forcefully to support those struggling at the bottom.<sup>163</sup>

The ability of the economy to provide jobs is another important measure of how successful the economy is at preventing poverty. Long-term unemployment (six months or more) is particularly painful and here again the periods 1960-1969 and 1993-2001 have been among the most successful at avoiding long-term unemployment:<sup>164</sup>

Benefits often leave families still in poverty, and funding is often inadequate to cover all those eligible for help. For some programs, already inadequate funding has been reduced. In some cases, most notably non-elderly individuals without children, there is very little help available. One result is that American poverty rates are higher than others in the industrialized world and supports for the poor are weaker. For example, U.S. programs are sufficient to raise only one low-income child in nine to 50 percent of the nation's median income, compared to one child in three in Canada and more than one child in two in Belgium, Germany, the Netherlands, the United Kingdom, and elsewhere. The inadequate U.S. investment is difficult to understand since, as we have shown,

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<sup>162</sup> A. Aron-Dine, "New Study Finds 'Dramatic' Reduction Since 1960 in the Progressivity of the Federal Tax System: Largest Reductions in Progressivity Occurred in 1980s and Since 2000" (Center on Budget and Policy Priorities 2007), [www.cbpp.org/3-29-07tax.htm](http://www.cbpp.org/3-29-07tax.htm); based on T. Piketty (Prof. of economics, Paris School of Economics and E. Saez (Prof. of economics, University of California at Berkeley), <http://elsa.berkeley.edu/~saez/jep-results-standalone.xls>.

<sup>163</sup> E.g., D. Wessel, "The Case for Taxing Globalization's Big Winners," *Wall St. Journal* at A2 (June 14, 2007) (citing the proposal of a former advisor to President George W. Bush to eliminate the payroll tax below \$33,000 and raise the tax on others); M. Whitehouse, "Why Americans Should Pay More Taxes: A Nobel Winner's View on Productive Economics," *Wall St. Journal* at A2 (Oct. 16, 2006) (interview with Edmund Phelps: "I think economic justice is all about pay rates at the low end relative to those in the middle. ...I've been advocating a solution: subsidies that would be paid to companies for the ongoing employment of low-wage workers. ... Our Earned Income Tax Credit is a step in the same direction, but it's aimed toward low-wage parents.")

<sup>164</sup> [www.bls.gov/webapps/legacy/cpsatab9.htm](http://www.bls.gov/webapps/legacy/cpsatab9.htm).

investments against poverty return at least four dollars for every dollar invested, and often more.<sup>165</sup>

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<sup>165</sup> J. Oppenheim and T. MacGregor, “The Economics of Poverty: How Investments to Eliminate Poverty Benefit All Americans,” (Entergy Corp. n.d. [2006]), [www.democracyandregulation.com/detail.cfm?artid=99&row=0](http://www.democracyandregulation.com/detail.cfm?artid=99&row=0).

## VI. CONCLUSION

The public record clearly shows that public policy is capable of substantially reducing poverty. The programmatic approach of the War on Poverty and the jobs and tax policies of the 1990s were especially effective.

Confronting the low-income energy crisis is an extremely cost-effective way to reduce poverty and thus support families' transition to self-sufficiency. Energy is such a significant part of a family's budget – government data show that some elderly recipients who live on fixed incomes pay as much as 35% of their annual incomes for energy bills – that it is impossible to address poverty without addressing energy use and costs. Helping families permanently reduce their energy bills also attacks the hopelessness that poverty imposes by teaching that one can overcome poverty by planning, rather than passing it on to one's children.

Manufacturing plants may be one of the more effective public economic development investments – and public investments may well influence a specific location decision once a decision has been made to locate in a particular region.<sup>166</sup> We do not necessarily suggest that energy efficiency vs. manufacturing is an either-or proposition, but efficiency investments could make tax subsidies for manufacturing less important and could thus save taxpayers from a portion of that expense while producing greater benefits. For example, a low-income program of one-third efficiency and two-thirds assistance would be at least 20 percent more economically productive than investments in manufacturing and create 50 percent more jobs.<sup>167</sup>

Utility contributions in the Entergy states to low-income efficiency and assistance are substantially below the national average.<sup>168</sup>

The way-above-average charitable contributions in Arkansas and Louisiana are impressive and laudable, but not sufficient to replace what government policy provides in other states in the form of state expenditures and utility mandates. State public energy policy is well-situated to help break the poverty cycle. State policy can build on the existing energy assistance infrastructure (federal fuel assistance and weatherization programs, and private fuel funds), as well as on utility customer relationships. State

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<sup>166</sup> Hill & Brahmst, "The Auto Industry Moving South: An Examination of Trends" (Center for Automotive Research, 2003).

<sup>167</sup> Five leading states in the Northeast, midWest, and West -- Connecticut, Iowa, Massachusetts, Montana, and Oregon – allocate 24-30% of their local low-income energy resources to utility-funded energy efficiency, the balance to other forms of utility, charitable and state-funded cash assistance. Computed from LIHEAP Clearinghouse, State Leveraging FY 2006 (May 2007), <http://liheap.ncat.org/tables/FY2006/06stlvb.htm>.

<sup>168</sup> Computed from LIHEAP Clearinghouse, 2006 State-by-State Supplements to Energy Assistance and Energy Efficiency (May 2007), <http://www.liheap.ncat.org/Supplements/2006/supplement06.htm>.

policy can facilitate public utility work with stakeholders to help poor families help themselves use energy more efficiently.

Low-income energy efficiency is not commonly seen as a tool for economic development, yet this investment to fight poverty creates a powerful engine of economic opportunity for all. Low-income energy efficiency and assistance is a large lost opportunity for broad economic development.

## APPENDIX A: ENTERGY JURISDICTIONS

### The Economic Benefits of Combatting Poverty with Low-Income Energy Efficiency in each Entergy Jurisdiction

#### ARKANSAS

Although in many respects better off than the other Entergy service territories, Arkansas still has a long way to go:

Measures of Poverty in Arkansas vs the United States	U.S.	Arkansas
Median Household Income 2006	\$ 48,451	\$ 36,599
Income rank among 50 states plus DC		49
% people living below 100% FPL in 2006	13.3%	17.30%
Children under 18 below 100% FPL	18.3%	24.3%
Children under 18 below 150% FPL	29.0%	37%
% People living below 200% FPL in 2006	36%	45%
Elderly Poor Despite Social Security	8.7%	11.8%
Working parents without health insurance (2003)	24.8%	16.2%
Children under 17 without health insurance (2005)	11%	9%
Food Insecurity (Hunger) 2004-2006	11.30%	14.3%
% Children in low-income families with no telephone (2005)	9%	15%
Unemployment levels (Oct. 2007)	4.4%	5.7%
% over 25 with high school diploma	84.1%	80.5%
Low-income renters with housing costs over 50% of household income	38.3%	32.4%
% of people living below EPI Basic Family Budget	NA	27%
% Eligible receiving LIHEAP heating assistance	23%	30.4%
Leveraged energy funds per person	\$ 5.97	\$ 0.58
% leveraged by state vs US		10%

LIHEAP Issue Brief <http://www.nead.org/>; BLS, LAU Current Unemployment Rates for States; US Dept. of Labor, [www.dol.gov/esa/minwage/america.htm](http://www.dol.gov/esa/minwage/america.htm), 11/28/2007; Center on Budget and Policy Priorities; Economic Policy Institute, [www.eoi.org/content.cfm/datazone\\_dzlocal](http://www.eoi.org/content.cfm/datazone_dzlocal)

As for state public policy supporting anti-poverty programs, a survey shows that:

- 90 percent of Arkansans feel it is important to fund programs to help poor families pay their utility bills,
- 77 percent say government should help, and

- 72 percent feel that a state program should include contributions from business as well as residential customers.<sup>169</sup>

### ***What more can be done?***

Arkansas has already adopted a low-income efficiency program, as described in the body of the paper. As this program develops, consideration should be given to ramping it up to full scale (approximately double or more). In addition, Arkansas waives the sales tax on the first 500 kWh of use for customers with less than \$12,000 of income. Sales tax in Arkansas is six percent state, up to 2.5 percent city, and up to 2.75 percent county.<sup>170</sup> Consideration should be given to a more generous discount, as well as to broadening eligibility to the same standard as is used for low-income efficiency programs or for LIHEAP.

Arkansas has also made excellent starts on non-energy anti-poverty programs such as pre-school education and Individual Development Accounts. Here again, additional funding is what is needed.

### ***The Economic Benefits of Low-income Efficiency and Assistance Investments***<sup>171</sup>

Investments in low-income efficiency, when multiplied through the Arkansas economy, yield *almost 28 (27.7) times* the investment, as well as 196 jobs for each million dollars invested. Public investments to attract high-paying manufacturing jobs also yield a positive benefit to the local economy – but, when analyzed in the same way, utility investment in low-income energy efficiency yields *well over quadruple* (4.6 times) the economic benefit and almost three-and-a-half (3.4) times as many jobs. Even a combination of one-third long-term energy efficiency investment and two-thirds short-term emergency assistance would be a cost-effective way to break the back of poverty in a way that benefits the entire economy – 89 percent more economically productive than public investment to attract manufacturing and generating 73 percent more jobs.

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<sup>169</sup> Flake-Wilkerson Marketing Insights, “Low Income Energy Study” (Entergy Corp., based on Oct. 2002 survey); Entergy Corp., “Arkansas Answers” (drawn from Flake-Wilkerson survey).

<sup>170</sup> [www.bankrate.com/brm/itax/edit/state/profiles/state\\_tax\\_Ark.asp](http://www.bankrate.com/brm/itax/edit/state/profiles/state_tax_Ark.asp),  
[www.state.ar.us/dfa/excise\\_tax\\_v2/et\\_su\\_rates\\_ct.html](http://www.state.ar.us/dfa/excise_tax_v2/et_su_rates_ct.html),  
[www.state.ar.us/dfa/excise\\_tax\\_v2/et\\_su\\_rates\\_co.html](http://www.state.ar.us/dfa/excise_tax_v2/et_su_rates_co.html).

<sup>171</sup> See Section II and Appendix B for methodology.

<b>Arkansas Multipliers</b>		
<b>For every \$1,000,000 in investment</b>	<b>Increased economic output</b>	<b>Jobs</b>
<b>ENERGY EFFICIENCY</b>		
Net effect of investment	\$349,729	9
Net effect of bill savings	\$8,963,639	68
Effect of environmental improvement	\$2,064,159	12
Effect of non-energy benefits	\$16,355,687	107
<b>TOTAL</b>	<b>\$27,733,214</b>	<b>196</b>
<b>ASSISTANCE</b>		
Net effect of investment	\$1,430,642	40
Effect of non-energy benefits	\$1,997,841	13
<b>TOTAL</b>	<b>\$3,428,483</b>	<b>54</b>
<b>MANUFACTURING PLANT</b>		
Net effect of investment	\$8,741,751	69
Effect of environmental detriment	-\$2,699,312	-10
<b>TOTAL</b>	<b>\$6,042,440</b>	<b>58</b>

## LOUISIANA

In most measures of poverty, Louisiana is near the bottom, not only compared to the rest of the United States, but compared to the other Entergy service territories. Louisiana has its own distinctive problems, as well, some due to the residual effects of the hurricanes of 2005, Katrina and Rita.

Measures of Poverty in Louisiana and the United States	U.S.	Louisiana
Median Household Income 2006	\$ 48,451	\$ 39,337
Income rank among 50 states plus DC		46
% people living below 100% FPL in 2006	13.3%	19.0%
Children under 18 below 100% FPL	18.3%	28%
Children under 18 below 150% FPL	29.0%	39%
% People living below 200% FPL in 2006	36%	39%
Elderly Poor Despite Social Security	8.7%	12.6%
Working parents without health insurance (2003)	24.8%	22.6%
Children under 17 without health insurance (2005)	11%	10%
Food Insecurity (Hunger) 2004-2006	11.30%	14.4%
% Children in low-income families with no telephone (2005)	9%	12%
Unemployment levels (Oct. 2007)	4.4%	3.3%
% over 25 with high school diploma	84.1%	79.4%
Low-income renters with housing costs over 50% of household income	38.3%	37.7%
% of people living below EPI Basic Family Budget	NA	28%
% Eligible receiving LIHEAP heating assistance	23%	5.7%
Leveraged energy funds per person	\$ 5.97	\$ 0.19
% leveraged by state vs US		3%

Sources: US Census, [factfinder.census.gov/home](http://factfinder.census.gov/home), <http://www.census.gov/hhes/www/saipe/index.html>; LIHEAP Issue Brief <http://www.neada.org/>; BLS, LAU Current Unemployment Rates for States; US Dept. of Labor, [www.dol.gov/esa/minwage/america.htm](http://www.dol.gov/esa/minwage/america.htm), 11/28/2007; Center on Budget and Policy Priorities; Economic Policy Institute, [www.eoi.org/content.cfm/datazone\\_dzlocal](http://www.eoi.org/content.cfm/datazone_dzlocal)

As for state public policy supporting anti-poverty programs, a survey shows that:

- 91 percent of Louisianans feel it is important to fund programs to help poor families pay their utility bills,
- 80 percent say government should help, and
- 72 percent feel that a state program should include contributions from business as well as residential customers.<sup>172</sup>

<sup>172</sup> Flake-Wilkerson Marketing Insights, “Low Income Energy Study” (Entergy Corp., based on Oct. 2002 survey); Entergy Corp., “Louisiana Answers” (drawn from Flake-Wilkerson survey).

## ***What more can be done?***

Louisiana has no state-mandated low-income efficiency program, nor does it have a low-income energy bill discount program. Both should be considered, with reasonable funding and eligibility to the same standard as is used for LIHEAP. A reasonable low-income energy efficiency program need not cost average residential customers more than a dollar a month.<sup>173</sup>

Similarly, Louisiana should consider reasonable and permanent funding for its non-energy anti-poverty programs such as pre-school education and Individual Development Accounts.

## ***The Economic Benefits of Low-income Efficiency and Assistance Investments***<sup>174</sup>

Investments in low-income efficiency, when multiplied through the Louisiana economy (excluding New Orleans), yield *more than 20 times* the investment, as well as 223 jobs for each million dollars invested. Public investments to attract high-paying manufacturing jobs also yield a positive benefit to the local economy – but, when analyzed in the same way, utility investment in low-income energy efficiency yields *more than double* (2.3 times) the economic benefit and almost triple (2.8 times) the number of jobs. Even a combination of one-third long-term energy efficiency investment and two-thirds short-term emergency assistance would be a cost-effective way to break the back of poverty in a way that benefits the entire economy – five percent more economically productive than public investment to attract manufacturing and generating 35 percent more jobs.

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<sup>173</sup> J. Oppenheim and T. MacGregor, “The Economics of Low-Income Electricity Efficiency Investment” (Entergy Corp., 2001); J. Oppenheim and T. MacGregor, “Protecting Low-Income Consumers: Building on Two Decades of Lessons Learned” (Entergy Corp, 2000, updated 2001); J. Oppenheim and T. MacGregor, “Poverty in the Entergy Service Territories” (Entergy Corp., 2002).

<sup>174</sup> See Section II and Appendix B for methodology.

<b>Louisiana Multipliers</b>		
<b>For every \$1,000,000 in investment</b>	<b>Increased economic output</b>	<b>Jobs</b>
<b>ENERGY EFFICIENCY</b>		
Net effect of investment	\$1,838,048	19
Net effect of bill savings	\$3,718,703	70
Effect of environmental improvement	\$1,816,307	15
Effect of non-energy benefits	\$12,766,717	118
<b>TOTAL</b>	<b>\$20,139,775</b>	<b>223</b>
<b>ASSISTANCE</b>		
Net effect of investment	\$1,940,269	37
Effect of non-energy benefits	\$1,723,141	16
<b>TOTAL</b>	<b>\$3,663,410</b>	<b>53</b>
<b>MANUFACTURING PLANT</b>		
Net effect of investment	\$11,950,452	94
Effect of environmental detriment	-\$3,319,161	-13
<b>TOTAL</b>	<b>\$8,631,291</b>	<b>81</b>

## NEW ORLEANS

Although a city of Louisiana, New Orleans has characteristics unlike any other city in the entire United States. The catastrophic effects of Hurricane Katrina in 2005 have radically changed the portrait of this unique world.

Measures of Poverty in New Orleans and the United States	U.S.	New Orleans
Median Household Income 2006	\$ 48,451	\$35,859
Income rank among 50 states plus DC		NA
% people living below 100% FPL in 2006	13.3%	22.2%
Children under 18 below 100% FPL	18.3%	41.9%
Children under 18 below 150% FPL	29.0%	NA
% People living below 200% FPL in 2006	36%	NA
Elderly Poor Despite Social Security	8.7%	12.2%
Working parents without health insurance (2003)	24.8%	NA
Children under 17 without health insurance (2005)	11%	NA
Food Insecurity (Hunger) 2004-2006	11.30%	NA
% Children in low-income families with no telephone (2005)	9%	15%
Unemployment levels (Oct. 2007)	4.4%	3.1%
% over 25 with high school diploma	84.1%	81.6%
Low-income renters with housing costs over 50% of household income	38.3%	NA
% of people living below EPI Basic Family Budget	NA	28%
% Eligible receiving LIHEAP heating assistance	23%	NA

Sources: US Census, [factfinder.census.gov/home](http://factfinder.census.gov/home), <http://www.census.gov/hhes/www/saipe/index.html>;  
LIHEAP Issue Brief <http://www.neada.org/>; BLS, LAU Current Unemployment Rates for States;  
US Dept. of Labor, [www.dol.gov/esa/minwage/america.htm](http://www.dol.gov/esa/minwage/america.htm), 11/28/2007; Center on Budget  
and Policy Priorities; Economic Policy Institute, [www.eoi.org/content.cfm/datazone\\_dzlocal](http://www.eoi.org/content.cfm/datazone_dzlocal)

### ***What can be done?***

New Orleans has no city-mandated low-income efficiency program, nor does it have a low-income energy bill discount program. Both should be considered, with reasonable funding and eligibility to the same standard as is used for LIHEAP. A reasonable low-income energy efficiency program need not cost average residential customers more than a dollar a month.<sup>175</sup>

<sup>175</sup> J. Oppenheim and T. MacGregor, “The Economics of Low-Income Electricity Efficiency Investment” (Entergy Corp., 2001); J. Oppenheim and T. MacGregor, “Protecting Low-Income Consumers: Building on Two Decades of Lessons Learned” (Entergy Corp, 2000, updated 2001); J. Oppenheim and T. MacGregor, “Poverty in the Entergy Service Territories” (Entergy Corp., 2002).

Similarly, New Orleans should consider reasonable and permanent funding for its non-energy anti-poverty programs such as pre-school education and Individual Development Accounts. The latter are especially important to hurricane recovery efforts.

### ***The Economic Benefits of Low-income Efficiency and Assistance Investments<sup>176</sup>***

Investments in low-income efficiency, when multiplied through the New Orleans economy, yield *more than 22 (22.2) times* the investment, as well as 250 jobs for each million dollars invested. Public investments to attract high-paying automobile manufacturing jobs also yield a positive benefit to the local economy – but, when analyzed in the same way, utility investment in low-income energy efficiency yields *more than two-and-a-half (2.6) times* the economic benefit and more than triple (3.1 times) the number of jobs. Even a combination of one-third long-term energy efficiency investment and two-thirds short-term emergency assistance would be a cost-effective way to break the back of poverty in a way that benefits the entire economy – 13 percent more economically productive than public investment to attract auto manufacturing and generating 46 percent more jobs.

<b>New Orleans Multipliers</b>		
<b>For every \$1,000,000 in investment</b>	<b>Increased economic output</b>	<b>Jobs</b>
<b>ENERGY EFFICIENCY</b>		
Net effect of investment	\$1,838,048	19
Net effect of bill savings	\$4,472,901	85
Effect of environmental improvement	\$1,816,307	15
Effect of non-energy benefits	\$14,083,501	130
<b>TOTAL</b>	<b>\$22,210,758</b>	<b>250</b>
<b>ASSISTANCE</b>		
Net effect of investment	\$1,940,269	37
Effect of non-energy benefits	\$1,712,397	16
<b>TOTAL</b>	<b>\$3,652,667</b>	<b>53</b>
<b>MANUFACTURING PLANT</b>		
Net effect of investment	\$11,950,452	94
Effect of environmental detriment	-\$3,319,161	-13
<b>TOTAL</b>	<b>\$8,631,291</b>	<b>81</b>

<sup>176</sup> See Section II and Appendix B for methodology.

## MISSISSIPPI

- The problem of energy affordability in all of the Entergy service territories, including Mississippi, runs deep. In a number of measures of poverty, residents of Mississippi remain at or near the economic bottom compared to the rest of the US.

Measures of Poverty in Mississippi and the United States	U.S.	Mississippi
Median Household Income 2006	\$ 48,451	\$ 34,473
Income rank among 50 states plus DC		51
% people living below 100% FPL in 2006	13.3%	21.1%
Children under 18 below 100% FPL	18.3%	30%
Children under 18 below 150% FPL	29.0%	44%
% People living below 200% FPL in 2006	36%	49%
Elderly Poor Despite Social Security	8.7%	15.8%
Working parents without health insurance (2003)	24.8%	27.5%
Children under 17 without health insurance (2005)	11%	14%
Food Insecurity (Hunger) 2004-2006	11.30%	18.1%
% Children in low-income families with no telephone (2005)	9%	18%
Unemployment levels (Oct. 2007)	4.4%	6.1%
% over 25 with high school diploma	84.1%	77.9%
Low-income renters with housing costs over 50% of household income	38.3%	38.5%
% of people living below EPI Basic Family Budget	NA	30%
% Eligible receiving LIHEAP heating assistance	23%	19.1%
Leveraged energy funds per person	\$ 5.97	\$ 0.13
% leveraged by state vs US		2%

Sources: US Census, [factfinder.census.gov/home](http://factfinder.census.gov/home), <http://www.census.gov/hhes/www/saipe/index.html>; LIHEAP Issue Brief <http://www.neada.org/>; BLS, LAU Current Unemployment Rates for States; US Dept. of Labor, [www.dol.gov/esa/minwage/america.htm](http://www.dol.gov/esa/minwage/america.htm), 11/28/2007; Center on Budget and Policy Priorities; Economic Policy Institute, [www.eoi.org/content.cfm/datazone\\_dzlocal](http://www.eoi.org/content.cfm/datazone_dzlocal)

As for state public policy supporting anti-poverty programs, a survey shows that:

- 90 percent of Mississippians feel it is important to fund programs to help poor families pay their utility bills,
- 82 percent say government should help, and
- 75 percent feel that a state program should include contributions from business as well as residential customers.<sup>177</sup>

<sup>177</sup> Flake-Wilkerson Marketing Insights, “Low Income Energy Study” (Entergy Corp., based on Oct. 2002 survey); Entergy Corp., “Mississippi Answers” (drawn from Flake-Wilkerson survey).

## ***What can be done?***

Mississippi has no state-mandated low-income efficiency program, nor does it have a statewide low-income energy bill discount program.<sup>178</sup> Both should be considered, with reasonable funding and eligibility to the same standard as is used for LIHEAP. A reasonable low-income energy efficiency program need not cost average residential customers more than a dollar a month.<sup>179</sup>

Similarly, Mississippi should consider reasonable and permanent funding for its non-energy anti-poverty programs such as pre-school education and Individual Development Accounts. The latter are especially important to hurricane recovery efforts.

## ***The Economic Benefits of Low-income Efficiency and Assistance Investments<sup>180</sup>***

Investments in low-income efficiency, when multiplied through the Mississippi economy, yield *more than 19 (19.1) times* the investment, as well as 213 jobs for each million dollars invested. Public investments to attract high-paying manufacturing jobs also yield a positive benefit to the local economy – but, when analyzed in the same way, utility investment in low-income energy efficiency yields *almost triple (2.8 times)* the economic benefit and almost quadruple (3.5 times) the number of jobs. Even a combination of one-third long-term energy efficiency investment and two-thirds short-term emergency assistance would be a cost-effective way to break the back of poverty in a way that benefits the entire economy – 21 percent more economically productive than public investment to attract manufacturing and generating 62 percent more jobs.

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<sup>178</sup> Mississippi Power Co. does have a tariffed discount which could serve as a model for a statewide mandated program if it were made more generous and eligibility were broader. This Mississippi Power discount is 55 cents per day (about 14 percent of the average bill) and limited to recipients of Supplemental Security Income or Aid to Families with Dependent Children (or, presumably, its successor, Transitional Assistance for Needy Families). Mississippi Power tariff, Schedule 37, Residential Base Charge Waiver Rider Schedule SSI-1. Value of discount computed from tariff and Energy Information Administration data for average bill, at [www.eia.gov/cneaf/est/esr\\_sum.html](http://www.eia.gov/cneaf/est/esr_sum.html) at Table 6.

<sup>179</sup> J. Oppenheim and T. MacGregor, “The Economics of Low-Income Electricity Efficiency Investment” (Entergy Corp., 2001); J. Oppenheim and T. MacGregor, “Protecting Low-Income Consumers: Building on Two Decades of Lessons Learned” (Entergy Corp, 2000, updated 2001); J. Oppenheim and T. MacGregor, “Poverty in the Entergy Service Territories” (Entergy Corp., 2002).

<sup>180</sup> See Section II and Appendix B for methodology.

<b>Mississippi Multipliers</b>		
<b>For every \$1,000,000 in investment</b>	<b>Increased economic output</b>	<b>Jobs</b>
<b>ENERGY EFFICIENCY</b>		
Net effect of investment	\$844,300	8
Net effect of bill savings	\$4,290,544	76
Effect of environmental improvement	\$1,526,111	13
Effect of non-energy benefits	\$12,439,817	116
<b>TOTAL</b>	<b>\$19,100,772</b>	<b>213</b>
<b>ASSISTANCE</b>		
Net effect of investment	\$1,544,420	28
Effect of non-energy benefits	\$1,551,689	14
<b>TOTAL</b>	<b>\$3,096,109</b>	<b>43</b>
<b>MANUFACTURING PLANT</b>		
Net effect of investment	\$9,810,011	73
Effect of environmental detriment	-\$2,896,173	-12
<b>TOTAL</b>	<b>\$6,913,837</b>	<b>61</b>

## TEXAS (Beaumont)

Even in the Beaumont-Port Arthur area of Texas, the problem of energy affordability runs deep.

Measures of Poverty in Beaumont, Texas and the United States	U.S.	Texas (Beaumont)
Median Household Income 2006	\$ 48,451	\$ 40,072
Income rank among 50 states plus DC		32 (1)
% people living below 100% FPL in 2006	13.3%	18.5%
Children under 18 below 100% FPL	18.3%	31%
Children under 18 below 150% FPL	29.0%	37% (1)
% People living below 200% FPL in 2006	36%	43% (1)
Elderly Poor Despite Social Security	8.7%	11.0%
Working parents without health insurance (2003)	24.8%	34.7% (1)
Children under 17 without health insurance (2005)	11%	20% (1)
Food Insecurity (Hunger) 2004-2006	11.30%	15.9% (1)
% Children in low-income families with no telephone (2005)	9%	11% (1)
Unemployment levels (Oct. 2007)	4.4%	4.9%
% over 25 with high school diploma	84.1%	82.4%
Low-income renters with housing costs over 50% of household income	38.3%	38.1%
% of people living below EPI Basic Family Budget	NA	35%
% Eligible receiving LIHEAP heating assistance	23%	1.9% (1)
Leveraged energy funds per person	\$ 5.97	\$ 0.17
% leveraged by state vs US		3%

(1) State of Texas

Sources: US Census, [factfinder.census.gov/home](http://factfinder.census.gov/home), <http://www.census.gov/hhes/www/saipe/index.html>; LIHEAP Issue Brief <http://www.neada.org/>; BLS, LAU Current Unemployment Rates for States; US Dept. of Labor, [www.dol.gov/esa/minwage/america.htm](http://www.dol.gov/esa/minwage/america.htm), 11/28/2007; Center on Budget and Policy Priorities; Economic Policy Institute, [www.eoi.org/content.cfm/datazone\\_dzlocal](http://www.eoi.org/content.cfm/datazone_dzlocal)

As for state public policy supporting anti-poverty programs, a survey shows that:

- 89 percent of Texans feel it is important to fund programs to help poor families pay their utility bills,
- 75 percent say government should help, and
- 74 percent feel that a state program should include contributions from business as well as residential customers.<sup>181</sup>

<sup>181</sup> Flake-Wilkerson Marketing Insights, “Low Income Energy Study” (Entergy Corp., based on Oct. 2002 survey); Entergy Corp., “Arkansas Answers” (drawn from Flake-Wilkerson survey).

## ***What more can be done?***

Texas has already adopted a low-income efficiency program, as described above. As this program develops further, consideration should be given to ramping it up to a fuller scale. Texas also has a low-income discount program with automatic enrollment from designated income-screened programs. The size of the discount has varied from year to year; currently it is a 12 percent discount only in four summer months. In addition, Entergy has a low-income discount tariff under which it waives the customer charge, which amounts to an additional average discount of 2.7 per cent; a ten percent discount is pending in a rate case, to offset a proposed rate increase.<sup>182</sup> Consideration should be given to a larger discount and to automatic enrollment for all discounts.

Similarly, Texas should consider reasonable and permanent funding for its non-energy anti-poverty programs such as pre-school education and Individual Development Accounts. The latter are especially important to hurricane recovery efforts.

## ***The Economic Benefits of Low-income Efficiency and Assistance Investments***<sup>183</sup>

Investments in low-income efficiency, when multiplied through the Beaumont-Port Arthur area economy, yield *more than 33(33.5) times* the investment, as well as 284 jobs for each million dollars invested. Public investments to attract high-paying manufacturing jobs also yield a positive benefit to the local economy – but, when analyzed in the same way, utility investment in low-income energy efficiency yields *more than triple (3.2 times)* the economic benefit and more than triple (3.1 times) the number of jobs. Even a combination of one-third long-term energy efficiency investment and two-thirds short-term emergency assistance would be a cost-effective way to break the back of poverty in a way that benefits the entire economy – 30 percent more economically productive than public investment to attract manufacturing and generating 48 percent more jobs.

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<sup>182</sup> Personal communication, R. Chapman, Texas Legal Services Center (Dec. 2007). Value of customer charge waiver computed from FERC Form 1 average bill data.

<sup>183</sup> See Section II and Appendix B for methodology.

<b>Beaumont, Texas area Multipliers</b>		
<b>For every \$1,000,000 in investment</b>	<b>Increased economic output</b>	<b>Jobs</b>
<b>ENERGY EFFICIENCY</b>		
Net effect of investment	\$6,108,142	52
Net effect of bill savings	\$7,588,607	86
Effect of environmental improvement	\$2,004,475	14
Effect of non-energy benefits	\$17,830,893	133
<b>TOTAL</b>	<b>\$33,532,117</b>	<b>284</b>
<b>ASSISTANCE</b>		
Net effect of investment	\$1,891,109	50
Effect of non-energy benefits	\$2,131,603	16
<b>TOTAL</b>	<b>\$4,022,712</b>	<b>66</b>
<b>MANUFACTURING PLANT</b>		
Net effect of investment	\$14,253,191	106
Effect of environmental detriment	-\$3,645,585	-13
<b>TOTAL</b>	<b>\$10,607,606</b>	<b>93</b>

## APPENDIX B: METHODOLOGY

### QUANTIFYING THE ECONOMIC BENEFITS OF LOW-INCOME ENERGY EFFICIENCY

Our analysis is based on the Regional Input-Output Modeling System (RIMS II) industry multiplier tables maintained by the U.S. Department of Commerce Bureau of Economic Analysis (BEA).<sup>184</sup> The latest regional data are based on industry linkages in 2005, and are thus affected in unknown ways by Hurricane Katrina.<sup>185</sup> However, the impacts of the hurricane were focused on New Orleans and parts of Louisiana and Mississippi; the results of the analysis are reasonably stable across states and, in fact, show less economic impacts of investments in the Entergy region than the nation at large.

We conservatively report this impact net of the impact of transferring the funds necessary for the investments from taxpayers or ratepayers. The funds so transferred would themselves have had a multiplier effect in the absence of the transfer, so we subtract that baseline impact in order to compute the net impact of transferring the funds to support energy efficiency, energy assistance, or a manufacturing plant. In the case of manufacturing plants, we track only the public investment and assume, based on historic experience, that it leverages out-of-region investment of 4.3 times the public investment.<sup>186</sup>

We computed the impacts of investments in efficiency improvements with a weighted average 19.25-year life.<sup>187</sup> We assumed a 20-year life for the manufacturing plant. Since we assumed a 20-year life for the plant, we also assumed that the employment impact would last 20 years. However, a 20-year plant life is considerably less certain than the lifetime of a permanently installed efficiency improvement. Some manufacturing plants are not economically stable – a typical product model may only be built for five years, after which a plant must be temporarily closed for re-tooling or even permanently closed.<sup>188</sup>

It is also noteworthy that low-income households pump proportionately more money into the economy than average households<sup>189</sup> – they cannot afford to save – so the multiplier

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<sup>184</sup> <http://www.bea.gov/regional/rims/index.cfm>.

<sup>185</sup> See e.g., [www.bea.gov/katrina/index2.htm](http://www.bea.gov/katrina/index2.htm).

<sup>186</sup> Computed from Hill & Brahmst, “The Auto Industry Moving South: An Examination of Trends” (Center for Automotive Research, 2003).

<sup>187</sup> Efficiency measure lives range from 7 years for water heater wraps to 30 for attic insulation.

<sup>188</sup> Hill & Brahmst, “The Auto Industry Moving South: An Examination of Trends” at 13 (Center for Automotive Research, 2003). The economics of existing plants do not necessarily favor keeping them open. E.g., E. Eckholm, “Blue-Collar Jobs Disappear, Taking Families’ Way of Life Along” *New York Times* (Jan. 16, 2008).

<sup>189</sup> P. R. Tcherneva, “Missouri’s Cost of Unemployment” (University of Missouri – Kansas City Department of Economics, Center for Full Employment and Price Stability, Special Report 0502, 2002). Also see BLS consumer expenditure data: in 2006, for example, the average household, with after-tax

effect of lowering their bills with energy efficiency measures is particularly strong. This is partially offset by reductions in utility revenue (the utility multiplier is lower than that of low-income households), though this effect is attenuated somewhat by utility benefits that lower utility costs: lower arrears,<sup>190</sup> lower collection costs,<sup>191</sup> and lower disconnection-reconnection costs.<sup>192</sup>

## Environmental impacts

In determining the economic value of energy efficiency, we have taken into account the economic impact of avoiding property and health damage from environmental pollutants, mostly carbon dioxide. Conversely, we account for the environmental costs of manufacturing.<sup>193</sup>

The damage caused by increasing concentrations of carbon dioxide is their tendency to increase the overall temperature of the planet. Adverse impacts in the US include:

- more intense storms (Boston, for example, has been subjected to two “100-year storms” and three “fifty-year storms” in the last decade; Hurricanes Rita and Katrina may also be examples of this phenomenon);
- coastal flooding;
- urban heat-related mortality (including deteriorated air quality, *i.e.*, smog);
- increases in allergic reactions;
- reduced winter recreation;
- increased competition for fresh water;
- increased damage to forests from fires, pests, and disease; and
- drought in the Southwest.<sup>194</sup>

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income of \$58,101, spent 83% of income; above \$70,000, averaging income of \$119,298, spent only 60%, but the group between \$30,000 and \$40,000, averaging income of \$33,916, spent 104% of income – at lower incomes, expenditures above income are even larger. Income before taxes: Average annual expenditures and characteristics, Consumer Expenditure Survey, 2006

<ftp://ftp.bls.gov/pub/special.requests/ce/standard/2006/income.txt>

<sup>190</sup> Based on research by National Grid USA (formerly Massachusetts Electric) and used in its energy efficiency cost-effectiveness analysis.

<sup>191</sup> Based on Entergy costs of calls and disconnect notices. Customer service time based on research set out in J. Oppenheim & T. MacGregor, “All-Ratepayers Test of Cost-Effectiveness of DCEO Low-Income Utility Efficiency Program,” in DC PSC Formal Case No. 945 (August 2004), [http://www.democracyandregulation.com/columns.cfm?subject\\_id=16&subject\\_name=Cost%20Effectiveness](http://www.democracyandregulation.com/columns.cfm?subject_id=16&subject_name=Cost%20Effectiveness) (hereinafter “DCEO Cost-Effectiveness Report”); cost thereof based thereon and service territory average income compared to national average income.

[census.gov/hhes/www/income/income06/statemhi2.html](http://census.gov/hhes/www/income/income06/statemhi2.html).

<sup>192</sup> Based on Entergy costs of disconnection and reconnection. Incidence of low-income disconnection and reconnection based on research set out in DCEO Cost-Effectiveness Report.

<sup>193</sup> For purposes of calculating environmental impacts, we looked specifically at automobile manufacturing. [www.energystar.gov/ia/business/industry/Auto\\_EPI.xls](http://www.energystar.gov/ia/business/industry/Auto_EPI.xls). There may be additional societal costs of a manufacturing plant, such as the need to build infrastructure and the increase in traffic congestion; however, these are not quantified.

<sup>194</sup> The Intergovernmental Panel on Climate Change (IPCC) of the United Nations (UN), Fourth Assessment Report, [www.ipcc.ch](http://www.ipcc.ch); Nicholas Stern, *The Economics of Climate Change: The Stern Review* (Cambridge University Press, 2007), <http://www.hm->

It is often pointed out in response that an extended US growing season would offset the adverse economic effects of such impacts.<sup>195</sup> However, this short-run benefit will be offset by high temperatures and water shortages in the longer run.<sup>196</sup> “High temperature episodes can reduce yields by up to half.”<sup>197</sup> Another pressure on food supplies, and thus prices, is the sharply increased use of corn to produce the gasoline substitute ethanol – the fraction of the corn crop devoted to ethanol has gone from three percent to 20 percent in five years while the price of corn has about doubled in two.<sup>198</sup>

In the rest of the world, particularly the less developed world, impacts also include:

- drought,
- heat-related mortality,
- increased cardio-respiratory disease caused by increased ground level ozone,
- additional stress on water resources (including hydroelectricity) from both reduced snow melt and pollution such as algae and salinization,
- flash floods,
- decreased ability to grow food (including aquaculture),
- stress on fisheries,
- flooding (to the point of overwhelming some small South Pacific islands) and erosion,
- increased insect-borne disease, and
- pressure to migrate.<sup>199</sup>

These impacts translate to national security concerns in the US as pressure mounts for aid and conflict resolution.<sup>200</sup> Changes in ocean temperatures and melting ice sheets also

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[treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/stern\\_review\\_report.cfm](http://treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm) (October 2006). Supporting documents are located at [http://www.hm-treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/stern\\_review\\_supporting\\_documents.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_supporting_documents.cfm) (Stern Review).

<sup>195</sup> *E.g.*, R. Mendelsohn and J. Neumann, eds., The Impact of Climate Change on the United States Economy (Cambridge Univ. Press 1999). “The research provides repeated support of the importance of adaptation. Adaptation mitigates the impacts of environmental damage in every sector studied. The research also demonstrates that modest warming will entail benefits for the United States in some sectors. The U.S. agriculture, forestry, and outdoor recreation sectors are all projected to benefit from a *slightly* warmer, wetter, CO<sub>2</sub>-enriched world. These benefits outweigh the damages measured in the coastal, water, and energy sectors, suggesting *small* amounts of warming could be good for the U.S. economy. The research, however, does not measure all relevant nonmarket [costs and] benefits such as health effects, species loss, and human amenity impacts, so nothing definitive can be said about the net effect of climate change on the quality of life in the United States. The research also does not extend beyond U.S. borders.” (Introduction, p. 15, emphasis added)

<sup>196</sup> Stern Review at 71, 80.

<sup>197</sup> Stern Review at 80.

<sup>198</sup> *E.g.*, Anon., “Very, Very Big Corn,” Wall St. Journal at A8 (Jan. 27, 2007).

<sup>199</sup> IPCC; Stern Review.

<sup>200</sup> A. Revkin (New York Times), “UN: Poor nations unprepared for global warming,” Boston Globe at A5 (April 1, 2007) (referring to IPCC Fourth Assessment, vol II); B. Bender, “Bill ties climate to national security/Seeks assessments by CIA, Pentagon,” Boston Globe at A1 (April 9, 2007).

have an impact on US Navy operations.<sup>201</sup> Also of concern is that economic pressures on other nations reduce their ability to export to, or import from, the US.

We did not attempt to evaluate the cost of this damage from carbon dioxide. As a conservative proxy for this health, property, and economic damage, we use the cost of control, which is approximated by the projected market price for an allowance for carbon dioxide emission.<sup>202</sup> The cost of damage is very much greater than the cost of control,<sup>203</sup> so our use of the cost of control is very conservative. Avoiding these costs is a benefit of energy efficiency; incurring them is a cost of manufacturing.

Environmental costs of manufacturing include, for example, jobs lost due to damaged machines and hours of employment lost due to damaged health. Of course these costs can be mitigated and this additional cost creates jobs and economic output, albeit at lower economic multipliers than a manufacturing plant. However, such environmental mitigation also requires investment. Our analysis compares \$1 million of public investment in low-income energy efficiency against the same investment to attract a manufacturing plant. The latter requires investment in environmental mitigation, which must be netted against the manufacturing investment in order to maintain the comparison at \$1 million each. Since the multipliers for environmental mitigation are less than those for manufacturing, the net economic impact of an efficiency investment remain superior to manufacturing with environmental mitigation. As an additional conservatism, we do not account for this in our results.

We also accounted for criteria air pollutants – oxides of sulphur (SO<sub>x</sub>)<sup>204</sup> and nitrogen (NO<sub>x</sub>),<sup>205</sup> as well as mercury (Hg)<sup>206</sup> – but not carbon monoxide (CO), fine particulates

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<sup>201</sup> B. Bender, "Bill ties climate to national security/Seeks assessments by CIA, Pentagon," Boston Globe at A1 (April 9, 2007); S. Hargreaves, "Ex-CIA chief spooked by fossil fuels/R. James Woolsey says the switch to renewables must be made to head off global warming and terrorism," CNN. Com (March 8, 2007).

<sup>202</sup> See [cbo.gov/ftpdoc.cfm?index=2876&type=0&sequence=3](http://cbo.gov/ftpdoc.cfm?index=2876&type=0&sequence=3). J. K Boyce et al., "Cap and Rebate: How to Curb Global Warming while Protecting the Incomes of American Families" Table 7 (University of Massachusetts at Amherst Political Economy Research Institute, Oct. 2007).. This exercise assumed a consensus estimate of carbon price of \$200 per ton (about \$55 per ton of CO<sub>2</sub>) The price of CO<sub>2</sub> in Europe has already reached an average of \$22.89 in 2007. Computed from L. Abboud, "Hot Carbon Market Signals New Interest," *Wall St. Journal* at A6 (Jan. 18, 2007).

Pollution emission rates from Entergy, from [eia.doe.gov/cneaf/pubs\\_html/rea/tablefe2.htm](http://eia.doe.gov/cneaf/pubs_html/rea/tablefe2.htm), and from [netl.doe.gov/energy-analyses/technology.html](http://netl.doe.gov/energy-analyses/technology.html).

<sup>203</sup> IPCC; Stern Review.

<sup>204</sup> [ccfe.com/education\\_ccfe/SO2\\_Background\\_Drivers\\_Pricing\\_PDF.pdf](http://ccfe.com/education_ccfe/SO2_Background_Drivers_Pricing_PDF.pdf), <http://ferc.gov/market-oversight/otr-mkts/emiss-allow/2007/archives/09-2007-otr-emns-no-so-pr.pdf>.

<sup>205</sup> [netl.doe.gov/publications/proceedings/02/scr-sncr/farrellsummary.pdf](http://netl.doe.gov/publications/proceedings/02/scr-sncr/farrellsummary.pdf),

[eia.doe.gov/cneaf/pubs\\_html/rea/tablefe2.htm](http://eia.doe.gov/cneaf/pubs_html/rea/tablefe2.htm).

<sup>206</sup> "Mercury Trading Takes Form", Evolution Markets, October 2006, <http://new.evomarkets.com/>, [cleanerandgreener.org/resources/emission\\_reductions.htm](http://cleanerandgreener.org/resources/emission_reductions.htm).

or volatile organic compounds (VOCs),<sup>207</sup> which have no consensus value. We also accounted for water savings.<sup>208</sup>

## Other benefits<sup>209</sup>

We also computed other benefits that multiply through the economy,<sup>210</sup> including (conservatively estimated):<sup>211</sup>

\* Societal and taxpayer benefits, such as avoided fire damage,<sup>212</sup> reduced costs of homeless shelters,<sup>213</sup> the cost of crime avoided by reducing poverty, and the reduced costs of healthcare as a result of reducing poverty.<sup>214</sup>

\* Savings to program participants, including bill savings,<sup>215</sup> the reduced costs of moving (due to termination for non-payment) and resulting lost education,<sup>216</sup> the value of

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<sup>207</sup> [cleanerandgreener.org/resources/emission\\_reductions.htm](http://cleanerandgreener.org/resources/emission_reductions.htm), [mainegreenpower.org/calculator/residential-1.shtml](http://mainegreenpower.org/calculator/residential-1.shtml).

<sup>208</sup> "The California Low Income Public Purpose Test, TecMRKT Works (April 2001); [mainegreenpower.org/calculator/residential-1.shtml](http://mainegreenpower.org/calculator/residential-1.shtml) (households); R. Hornsby *et al*, Synapse Energy Economics Inc., "Avoided Energy Supply Costs in New England", 2007 Final Report (Aug 10, 2007) at pg 7-18, Exhibit 7-14; P. Freedman and J. Wolfe, LimnoTech, "Thermal Electric Power Plant Water Uses" (October 2, 2007) (plants).

<sup>209</sup> Multiplier analysis was also conducted for assistance programs. The benefits described here were also computed for assistance programs, except refrigerator purchase deferral and comfort.

<sup>210</sup> We accounted for the different multiplier effects of benefits to utilities, low-income customers, and society generally.

<sup>211</sup> Discounted at 20-year (approximate life of measure) Treasury bond rate, minus inflation.

[http://online.wsj.com/mdc/public/page/2\\_3020-treasury.html?mod=2\\_0031](http://online.wsj.com/mdc/public/page/2_3020-treasury.html?mod=2_0031).

<sup>212</sup> [http://firechief.com/health\\_safety/firefighter-injuries-cost032505/](http://firechief.com/health_safety/firefighter-injuries-cost032505/), "The Total Cost of Fire in the United States", J. Hall, Jr., Fire Analysis & Research Division, National Fire Protection Association, Dec. 2006 "Trends & Patterns of U.S. Fire Losses", Marty Ahrens, Fire Analysis & Research Division, National Fire Protection Association, Sept. 2007

<http://www.nfpa.org/newsReleaseDetails.asp?categoryID=488&itemID=37090>. Avoided costs are divided between savings to participants and savings to taxpayers and society at large from a reduction in fire losses. Avoided costs include deaths and injuries as well as property damage and firefighting costs.

<sup>213</sup> Cost of homelessness derived from Millennial Housing Commission. "Meeting Our Nation's Housing Challenges. Washington", D.C.: U.S. Government Printing Office, 2002,

<http://www.planning.org/policyguides/homelessness.htm> and U.S. Census Bureau, [www.census.gov](http://www.census.gov); percentage of homeless derived from the foregoing applied to population of disconnected customers (developed in DCEO Cost-effectiveness Report. *See also* [planning.org/policyguides/homelessness.htm](http://www.planning.org/policyguides/homelessness.htm)).

<sup>214</sup> Avoided costs derived from J. Oppenheim and T. MacGregor, "The Economics of Poverty" (Entergy Corp., 2006), [democracyandregulation.com/detail.cfm?artid=99&row=0](http://democracyandregulation.com/detail.cfm?artid=99&row=0). One-third of factor applied to estimated participant savings to conservatively account for failure to eradicate poverty (as assumed in referenced study).

<sup>215</sup> Laitner, Eldridge, Elliott, "The Economic Benefits of an Energy Efficiency and Onsite Renewable Energy Strategy to Meet Growing Electricity Needs in Texas" (ACEEE Report Number E076, Sept., 2007); L. Berry, M. Brown, L. Kinney, "Progress Report of the National Weatherization Assistance Program," (DOE Metaevaluation, Sept 1997) at pg. ii; <http://www.waptac.org/si.asp?id=1097>. *Also see* DCEO Cost-effectiveness Report.

<sup>216</sup> Based on time to move, computed at minimum wage. "The California Low Income Public Purpose Test," TecMRKT Works (April 2001). *Also see* DCEO Cost-effectiveness Report.

deferring the purchase of a refrigerator,<sup>217</sup> the value of not losing utility service, the value of increased comfort,<sup>218</sup> the value of spending less time on the phone with the utility,<sup>219</sup> the reduced costs of poor health,<sup>220</sup> and the increase in property value.<sup>221</sup>

Many benefits are not quantified here, including increased property tax payments, energy price reductions caused by lower demand, or energy rate reductions caused by retained sales.<sup>222</sup>

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<sup>217</sup> Efficiency programs typically replace inefficient refrigerators where it is cost-effective to do so. Based on program experience, assumed five-year deferral was discounted at 20-year (life of measure) Treasury bond rate, minus inflation. [http://online.wsj.com/mdc/public/page/2\\_3020-treasury.html?mod=2\\_0031](http://online.wsj.com/mdc/public/page/2_3020-treasury.html?mod=2_0031).

Penetration rate and cost based on program experience. DCEO Cost-effectiveness Report.

<sup>218</sup> These subjective estimates are based on survey research. DCEO Cost-effectiveness Report.

<sup>219</sup> Telephone time at federal minimum wage., based on "The California Low Income Public Purpose Test," TecMRKT Works (April 2001) and research set out in DCEO Cost-effectiveness Report.

<sup>220</sup> Cost of ill health measured as carbon monoxide deaths and cost of healthcare caused by carbon monoxide injury. Vicusi, *et.al.*, "Pricing Environmental Health Risks: survey assessments of risk-risk and risk-dollar trade offs for chronic bronchitis", 21 Journal of Environmental Economics and Management 32-51(issue 1, 1991); Goldstein, "The California Low Income Public Purpose Test," (TecMRKT Works, April 2001), at Tab-9GNEBsParticH&S-CO, cell P52 (illness cost default set as \$50,000 adjusted for inflation); L. Skumatz & Gardner, PA Government Services, "State of Wisconsin Department of Administration, Division of Energy Low Income Public Benefits Evaluation" (Nov 9, 2005) at pp.10-22, Tables 1-2 and 4-1 (number and cost of CO illness of crises); Berry, Brown & Kinney, "Progress Report of the National Weatherization Assistance Program" (Oak Ridge National Laboratory, ORNL/CON-450, September 1997) at pg.44.

<sup>221</sup> Research set out in DCEO Cost-effectiveness Report.

<sup>222</sup> See generally DCEO Cost-effectiveness Report.

## APPENDIX C:

### Successful Low-Income Programs

There are two broad categories of energy assistance programs for utility low-income customers that can enhance and complement the federally funded LIHEAP and DOE WAP: affordability and efficiency and weatherization.<sup>223</sup>

- Affordability programs provide direct assistance in paying energy bills, through fuel funds, a fixed or percentage discount on the utility bill, a percentage of income payment plan (PIPP), and/or a credit re-establishment incentive program. All of these affordability programs are funded by all non-low-income ratepayers based on the premise that keeping paying customers on the system provides an economic benefit to the utility and all of its ratepayers.<sup>224</sup> Contributing to the efficacy of these types of programs are consumer protections such as winter or summer moratoria; installment billing; choice of payment date; protection against disconnects for infants, elderly or disabled; and reduced or waived late or disconnect fees. These programs, combined with consumer education on budgeting and efficient energy use, can act as short-term solutions to energy unaffordability.
- Efficiency and weatherization programs to reduce energy usage and lower bills are long-term solutions to unaffordable energy bills. Combined with education programs which teach customers about prudent energy use and budgeting, such as those already provided by Entergy, these programs actually reduce the amount of energy used by consumers and can lower energy bills substantially.

### **Affordability Programs**

#### **Discounts**

While there are many variations in discount design among states and utilities, there are three basic discount program types:

- Fixed percent of bill;
- Fixed dollar discounts; and
- Discounts that vary with usage

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<sup>223</sup> Ratepayers contribute about two-thirds of all state and local funding for low-income energy assistance programs. LIHEAP Clearinghouse, State Leveraging FY 2006 (May 2007), <http://liheap.ncat.org/tables/FY2006/06stlvtb.htm>. The balance is funded by charitable and taxpayer contributions.

<sup>224</sup> The economics are described in detail in Section II of this paper, above.

Each state or utility has assessed the needs and circumstances of its customers, the number of affected customers, the effect on other customers, and the political will to provide relief before designing its chosen program.<sup>225</sup>

The fixed percent of bill design has resulted in discounts ranging from seven percent to 40 percent, depending on the state and utility company. Some states waive the tax on energy,<sup>226</sup> which is by nature a fixed percent of the bill, and in a small number of states, the discounts apply only during the costliest part of the year.<sup>227</sup> Discounts that vary seasonally recognize the sharp differences in consumption that exist in certain climates and are thus designed to contribute to simplifying low-income budgeting.

A fixed dollar discount, for example waiving the customer charge for low-income customers, can be enough of a discount to make energy bills affordable in some cases. In others, a fixed credit amount is determined in a rate case to be sufficient to a state's purposes.<sup>228</sup>

Fixed percentage and fixed dollar discounts are simple for the utility to administer and for customers to understand. Some states have chosen to vary the discount with a customer's usage, such as a lifeline rate for a fixed block of kWh determined to be essential to life, then the regular residential rate for all other uses, or higher rates for succeeding blocks – an inverted block rate. A discount that varies with usage is preferred by some because it encourages conservation.

Different discount strategies tend to target different sectors of the low-income population. A fixed dollar discount, and discounts that vary directly with usage, tend to benefit most those electricity customers with the lowest incomes, to the extent that electricity consumption is correlated with income.<sup>229</sup> Fixed percentage discounts better serve low-income households with high consumption that is not within their control, such as those with electric heat, cooling needs, large families, or exceptionally wasteful appliances.

There is probably little difference among all these discount strategies in the predictability of their financial impact on all other ratepayers since the number of low-income customers and their consumption tend to be similarly stable. The least predictable

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<sup>225</sup> J. Oppenheim and T. MacGregor, "Low-Income Consumer Utility Issues: A National Perspective" at 11 (2000).

<sup>226</sup> Arkansas waives the sales tax on the first 500 kWh of electricity usage per month for customers with annual income less than \$12,000. LIHEAP Clearinghouse, [www.arkansas.gov/dfa/income\\_tax/tax\\_general\\_excise\\_questions.html](http://www.arkansas.gov/dfa/income_tax/tax_general_excise_questions.html), [www.energys-arkansas.com/your\\_home/special\\_needs.aspx](http://www.energys-arkansas.com/your_home/special_needs.aspx), [www.liheap.ncat.org/Supplements/2006/arstfd.htm](http://www.liheap.ncat.org/Supplements/2006/arstfd.htm).

<sup>227</sup> J. Oppenheim and T. MacGregor, "Low-Income Consumer Utility Issues: A National Perspective" at 11 (2000).

<sup>228</sup> Note that, where customer charges are very low, waiver of the customer charge would have little benefit, and a larger fixed dollar amount is therefore more appropriate. J. Oppenheim and T. MacGregor, "Low-Income Consumer Utility Issues: A National Perspective" at 11 (2000).

<sup>229</sup> The correlation between income and gas usage is smaller than that for electricity usage because many low-income families live in substandard, poorly weatherized homes that require excessive consumption of gas to heat. J. Oppenheim and T. MacGregor, "Low-Income Consumer Utility Issues: A National Perspective" at 13 (2000).

variable is usually the penetration of the rate; *i.e.*, how successful outreach efforts are. This is often correlated with the penetration of a state's federally-funded Low Income Home Energy Assistance Program (LIHEAP) (shown for heating assistance for the Entergy states in the Table at the end of the second section), the penetration of other benefit programs, the fraction of low-income consumers in master-metered buildings or group living situations (group homes, nursing homes, and the like), the nature of the low-income population, the nature and extent of outreach efforts, and the presence of automatic sign-up mechanisms.

Low-income discounts are usually recovered from other ratepayers on a per-kWh basis, such as through a system benefits fund, or embedded in non-low-income customer rates. Generally, rates are established on the basis of a predicted cost based on historical experience and other known parameters, and are reviewed periodically as part of general rate cases. Costs are usually recovered from all non-low-income customers, on the principle that all customers benefit from the consequent cost reductions and that all customers share the social obligation to assist low-income families.

### ***Percentage of Income Payment Plans (PIPP)***

This type of program directly takes into account the energy burden on individual low-income households and structures a payment program such that the burden faced by these customers will be no higher than a predetermined percentage of their income. The average electric energy burden on a non-low-income Entergy customer is 3.8 percent;<sup>230</sup> the burden on a low-income customer can be up to three times as high or more. A PIPP could bring that burden down to the same or nearly the same as that for an average residential customer.

PIPP designs vary by state and utility. To simplify administration, some use income brackets to determine the percentage; others use income brackets and levels of consumption. In some cases, the fraction of income paid depends on the level of poverty. PIPPs are often coupled with a credit re-establishment incentive program (described below), with a fractional forgiveness of amounts due for each month of successful participation in the PIPP.

PIPP programs are based on the premise that, although low-income customers cannot afford to pay the entire energy bill, they can pay (and are willing to pay) something toward their bill each month. The amount may be negotiated and based on what the customer agrees is affordable, based on an analysis of income and expenses. PIPPs obviously require an additional commitment of administrative resources, but by allowing low-income customers to do what they want to do -- pay their bills -- PIPPs have succeeded in reducing arrearages and consequent collection and termination costs.<sup>231</sup>

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<sup>230</sup> Weighted average computed from Entergy FERC Forms 1 and US Census. Energy burden is the fraction of income required to pay for home energy (heat and electricity). Electricity burden is the fraction required for electricity alone.

<sup>231</sup> Columbia Gas in Ohio, for example, found reduced arrearages and improved payments. West Penn Power also found reduced arrearages and confirmed that participants paid more than their variable costs so they contributed to fixed costs. Pennsylvania Power & Light found improvements in payment frequency

### ***Credit Re-establishment Incentive Programs***<sup>232</sup>

An important component of many discount and PIPP programs is an incentive program that offers low-income customers in arrears an opportunity to earn their way back to good credit through good payment behavior. Low-income customers are usually in arrears because they cannot afford to pay their bills -- not because they do not want to pay.<sup>233</sup> Early studies showed that half of all customers fell behind on utility bills because they did not have enough money to pay them, due to such causes as unemployment and medical bills.<sup>234</sup> Since then, utility bills have risen sharply and thus become much less affordable for low-income customers. If the bills are made more affordable, experience demonstrates that low-income customers in general will pay more of their bill. As arrearages grow, low-income customers are apt to become fearful of ever getting out from under their debt. Thus, increasing the late payment penalty, disconnecting the customer and then charging a reconnection fee, or setting a payment plan in place that requires more than the customer is able to pay, are unlikely to generate much incremental revenue from the low-income customer with a high arrearage. In fact, that customer is likely to become discouraged and to stop making any payments at all.

Credit re-establishment programs are directed to the relatively small fraction of low-income customers who have resources to pay (and are willing to pay) their bill each month, but are unable to manage their arrears. A payment amount may be negotiated and based on what the customer agrees is affordable, based on an analysis of income and expenses. The customer must sign an agreement with the utility, or with a community action agency acting on the utility's behalf, in which, in exchange for a reduction over time in the arrearage amount owed to the utility, the customer agrees to make regular, timely payments; participate in budget counseling if deemed appropriate and helpful; take advantage of all monetary assistance available, such as LIHEAP, discounts, and other assistance; and participate in a utility's weatherization and efficiency program to the degree that customer is eligible.

“Successful arrears forgiveness programs are designed to target customers who, with the right training, assistance and support, can move from needing some sort of assistance to self-sufficiency. These programs are comprehensive and cost-effective, offering budget counseling, payment plans, arrears forgiveness, energy efficiency and links to other financial grants and assistance. Customers benefit from a reduction in their electric and/or gas bill arrearage, with the ultimate goal of independently managing bill payments more effectively.”<sup>235</sup>

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and decreased account management costs. All studies found no increase in consumption. J. Oppenheim and T. MacGregor, “Low-Income Consumer Utility Issues: A National Perspective” at 15 (2000).

<sup>232</sup> Sometimes known as “arrears management” or “arrears forgiveness” programs.

<sup>233</sup> E.g., Ron Grosse, “Win-Win Alternatives to Credit & Collections”, Wisconsin Public Service Co., 1997.

<sup>234</sup> Matousek and Radue, “Wisconsin Public Services Corp. Lifestyles II” at 25 (Matousek & Assocs. 1993).

<sup>235</sup> Penni McLean-Conner, vice president, customer care, NSTAR (the electric and gas utility serving a large portion of Metropolitan Boston), “The New Age of Arrears Forgiveness Programs, Electric Light & Power (Sept. 2006).

Credit re-establishment programs have been used by Brooklyn Union Gas (now KeySpan, a subsidiary of National Grid) and all of the investor-owned utilities in Massachusetts as an entrée to providing direct services, or as a referral source for customers to other service providers, to help customers become energy self-sufficient. Services include utility discount programs; energy audits, weatherization and energy efficiency services; heating system repairs or replacement; refrigerator/freezer replacement; assistance from FEMA; income tax preparation in order to claim the EITC; legal services; budget and credit counseling; Medicaid and state health insurance; GED preparation, ESL courses and adult education; employment training and referrals; child care; Food Stamps and other food resources; transportation; homelessness prevention; and others.<sup>236</sup> A preliminary independent evaluation of the Massachusetts program has shown that the number of customers in arrears dropped by 13 percent in one year, the number who had skipped a meal to pay a utility bill had been cut in half, and clients reported increases in their food, nutrition and housing security, as well as in energy self-sufficiency.<sup>237</sup>

### ***Energy Efficiency Programs***

Comprehensive energy efficiency, education, and weatherization services lower customer bills, enabling low-income customers to better manage their usage and thus empowering them to take better control of their finances. The low-income population faces unique barriers to participation in energy efficiency programs, so a program must be designed to minimize barriers and facilitate participation. It is equally important to standardize a set of measures and auditing tools for the chosen implementers in order to reduce training needs and speed installation time.

In the early years of utility companies' providing energy efficiency services to low-income customers, the "neighborhood blitz" approach was widely used. Savings from measures installed in the blitz were often small and difficult to evaluate; there was no education provided; and no follow-up was conducted.

For the past decade or more, the trend has been to provide customized audits in previously scheduled visits, along with education, refrigerator metering (to determine energy use for possible replacement), and installation of all measures that can be installed at the time, with appointments scheduled for any further work necessary (such as ceiling, wall or floor insulation). A blower door test is conducted to determine the need for insulation and/or air sealing. Energy efficient lighting, including fluorescent torchieres, high efficiency water heaters, refrigerators and air conditioners can provide extremely cost-effective savings while lowering utility bills.

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<sup>236</sup> Jim Yardley, "The Gas Company as Social Worker; Brooklyn Utility Tries Softer Approach to Pursue Unpaid Bills," NY Times (Jan. 17, 1999); Residential Energy Assistance Challenge (REACH) Option Program: Annual Program Progress Report, 2005-2008 Massachusetts LASER Project (Oct. 2007).

<sup>237</sup> "8<sup>th</sup> Quarterly Evaluation Report for the REACH (LASER) Project, University of Massachusetts Donahue Institute (Oct. 2007).

To maximize efficiencies and minimize costs of service delivery, the efficiency program should be "piggy-backed" onto a previously existing network of experienced administrators. Indeed, an important feature of most successful programs is to coordinate (piggyback) among all resources available to a particular home, including electric and gas utilities, the U.S. Department of Energy Weatherization Assistance Program (DOE WAP), and state funds. A comprehensive program would provide an audit, a detailed appliance survey with usage data, detailed energy education about energy use, and opportunities for saving energy tailored to each household's practices. Because low-income customers have no spare resources for efficiency improvements, all cost-effective efficiency measures should be installed at no direct cost to the low-income building occupant, including attic and floor insulation, pipe and duct insulation, lighting, new refrigerators, air conditioners, water heaters, programmable thermostats, and low-flow showerheads and faucet aerators. Carbon monoxide detectors should be installed for health and safety purposes.

Electric utility companies usually do not offer measures that are mainly designed to save resources other than electricity. However, where natural gas companies also implement energy efficiency programs and pay for gas-saving measures, electric companies should provide electricity-saving measures in gas-heated homes, such as energy efficient lightbulbs and appliances. By coordinating both the electric and natural gas utility programs with the DOE WAP program, even more cost and delivery efficiencies can be realized.