

The 60 Plus Association

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Energy Bills Challenge Alabama's Senior Citizens

Overview

Energy, like food and housing, is an indispensable necessity of life. In Alabama's hot climate, air conditioning is essential to the survival of many elderly and infirm citizens. Rising electricity and gasoline prices are disproportionately impacting Alabama's senior citizens today. Alabama has 447,000 households aged 65 or more ("65+). Future energy cost increases, driven in large measure by petroleum supply and demand trends and by current and pending U.S. EPA regulations, are likely to outstrip real household incomes among the 70% of Alabama's 65+ households with gross annual incomes less than \$50,000. EPA's newest proposal to regulate greenhouse gas emissions from existing power plants will further strain the budgets of low- and fixed-income seniors who are among the most vulnerable to electric rate and other energy price increases.

This energy brief outlines current demographic and economic characteristics of Alabama's senior population, and highlights recent and prospective energy cost trends impacting elderly Alabama households. It also reviews recent economic analyses of EPA's pending Clean Power Plan and other environmental regulations impacting energy prices. Key findings include:

- ✓ The average pre-tax household income of 65+ households in Alabama was \$46,141 in 2012, 20% below the average Alabama household income of \$57,372, and 34% below the national average gross household income of \$69,677.
- ✓ For Alabama's 447,000 65+ households, electricity represents 74% of total residential utility bills.
- ✓ The price of electricity per kilowatt-hour (kWh) in Alabama has increased by 41% since 2005, more than twice the 19% rate of inflation in the Consumer Price Index, due in part to higher fuel costs and the costs of compliance with EPA regulations.
- ✓ The modest Cost of Living Adjustments (COLA) received by Alabama's Social Security recipients, representing more than one-third of all Alabama households in 2012, do not keep pace with inflation.
- ✓ U.S. DOE's projection for Henry Hub wellhead natural gas prices calls for a 3.7% annual real increase from 2012 to 2040. These price increases do not account for the increase in natural gas demand expected to result from EPA's proposed Clean Power Plan ("CPP") for reducing CO₂ emissions from existing power plants.
- ✓ EPA's CPP will increase electric prices for Alabama's 65+ households. The proposed rule sets forth "building blocks" of options for reducing emissions in Alabama, focused on decreasing the use of coal in favor of natural gas, while increasing energy efficiency and renewable energy resources.
- ✓ Since 2005, Alabama's fossil-fueled electric utilities have reduced emissions of carbon dioxide by 19%, measured both in tons of CO₂ emitted and in pounds of CO₂ per Megawatt-hour of electric generation. EPA's proposed CPP does not give credit for these reductions. It requires Alabama to achieve an overall 27% reduction from 2012 measured in emissions of CO₂ per Megawatt-hour of electricity.
- ✓ EPA's proposed plan for Alabama compliance calls for 30% of the target reduction to be achieved by additional renewable energy, with 24% of the reduction coming from increased energy efficiency measures among consumers and industry. Another 27% is projected from switching from low-cost coal generation to higher-cost natural gas, with 12% from improvements in efficiency at existing coal generation plants. Alabama will have flexibility in choosing among the measures it adopts, but the target emission reduction of 27% is federally enforceable under the Clean Air Act.

- ✓ **EPA's proposed "building blocks" for state emission reductions contain unrealistic assumptions on the potential for large-scale renewable energy and energy efficiency development within the short timetable of the EPA rule, and untenable projections of the potential for power plant efficiency improvements.** The high level of efficiency improvements that EPA projects at coal-based power plants may not be feasible because the coal generating fleet is being retrofitted with emission controls to comply with EPA's 2011 Mercury and Air Toxics Standards, in many instances leading to decreased plant efficiency. Additional major investments in these plants are unlikely because EPA projects that the Clean Power Plan will lead to significant reductions in electric generation at coal-based facilities, thus reducing the opportunity to recover investment costs. (EPA CPP RIA Table 3-11).
- ✓ EPA's Regulatory Impact Analysis ("RIA") for the CPP projects national costs of \$5.4 to \$7.4 billion annually in 2020. EPA's projections assume billions of dollars of annual savings from reductions of electric demand through widespread investments in energy efficiency measures.
- ✓ **EPA projects a modest 3.4% retail electric price increase in Alabama for the proposed Clean Power rule in 2020** (EPA CPP RIA Table 3-21, Region SRSE). This increase will follow those anticipated due to compliance with EPA's 2011 Mercury and Air Toxics Standards rule. EPA projects that this rule will cost an average of \$9.6 billion annually, and will increase regional retail Alabama electricity prices by 3.1% in 2015 (EPA MATS RIA, December 2011, Table 3-12, Region STV).
- ✓ **A March 2014 analysis by National Economic Research Associates of a CO2 reduction proposal very similar to the EPA Clean Power rule estimated national average residential electricity price increases of 3.0% to 11.4% over 2018-2033,** depending upon the degree of flexibility in implementation. Average electricity prices in Alabama over 2018-2033 were estimated at 15% to 20% above baseline levels in a "maximum flexibility" scenario similar to a national cap-and-trade program (NERA/ACCCE, March 2014).
- ✓ The CPP will lead Alabama to greater dependence on natural gas as a main source of electric generation. U.S. DOE projects that the price of natural gas delivered to electric utilities will increase at a compound annual rate of 3.1% above the rate of inflation between 2012 and 2040, the highest rate of real price increase for any delivered fuel in any sector of the economy (DOE Annual Energy Outlook 2014). **EPA projects that the Clean Power Plan will lead to further increases in delivered natural gas prices of 7.5% to 11.5% in 2020** (EPA CPP RIA, June 2014).
- ✓ The prospective reduction of fuel diversity in Alabama's electric generating fleet due to greater dependence on natural gas creates additional risks of electric price volatility and higher costs for elderly consumers. A recent analysis by IHS examined alternative scenarios of electric supply diversity and found that **household disposable incomes could be reduced by more than \$2,000 annually where electric fuel supply choices are constrained.**
- ✓ **A new ozone standard could dramatically increase energy costs for all Alabama consumers and industries.** EPA plans to revise the 2008 National Ambient Air Quality Standard for ozone, currently set at a level of 75 parts per billion (ppb), in late 2015. A July 2014 analysis by National Economic Research Associates of a potential new ozone standard set at a level of 60 ppb indicates that such a standard could impose \$348 billion in annual compliance costs across the nation. NERA projects that national average residential electricity prices would increase by 3.3% to 15%, while residential natural gas prices would rise by up to 32% (NERA/NAM July 2014).
- ✓ Average retail gasoline prices per gallon have increased by 55% since 2005, a rate nearly three times greater than the 19% rate of inflation measured by the Consumer Price Index.
- ✓ Gasoline is the largest energy expenditure for most American households. U.S. DOT's 2009 National Household Travel Survey (2012) shows that 65+ seniors have increased their average vehicle miles traveled (VMT) since 1983.
- ✓ The future stability of the Social Security income that most seniors depend upon cannot be assured. The Congressional Budget Office ("CBO") reports that in 2010, for the first time since the enactment of the Social Security Amendments of 1983, annual outlays for the program exceeded annual tax revenues. In 2012, outlays exceeded noninterest income by about 7 percent, and CBO projects that the gap will average about 12 percent of tax revenues over the next decade.

Just maintaining the energy budget status quo for Alabama's 65+ fixed income population requires stable electricity and other energy prices that do not increase above the rate of inflation. Lower-income seniors are among those least likely to make major investments in new energy efficiency programs with long investment payback times, as envisioned by EPA's Clean Power Plan. The suite of new regulations EPA is now pursuing inevitably will lead to ever-higher utility prices for Alabama's elderly population, exceeding the modest cost-of-living (COLA) adjustments that many 65+ retirees depend upon just to keep up with inflationary pressures.

Demographic Facts

- ✓ In 2012, seniors 65 and older accounted for 24% of Alabama's 1.8 million households.
- ✓ More than one-third of Alabama households received Social Security benefits in 2012.
- ✓ The average pre-tax household income of 65+ households in Alabama was \$46,141 in 2012, 20% below the average Alabama household income of \$57,372, and 34% below the national average gross household income of \$69,677.

Alabama Household Income, 2012

Annual gross income	<\$30K	\$30-<\$50K	<\$50K	All households
All AL H/Hs (000)	682	370	1,052	1,845
Pct. of H/Hs	37%	20%	57%	100%
Avg. gross income	\$15,540	\$39,632	\$24,015	\$57,372
AL 65+ H/Hs (000)	209	102	311	447
Pct of 65+ H/Hs	47%	23%	70%	100%
Avg. 65+ gross income	\$16,337	\$39,412	\$23,911	\$46,141

Source: U.S. Bureau of the Census, American Community Survey (2014).

- ✓ Some 70% of Alabama's 65+ households had gross incomes below \$50,000 in 2012, with an average pre-tax income of \$24,293, or \$2,024 per month before state and federal taxes.
- ✓ Nearly one-half of Alabama's 65+ households had gross annual incomes below \$30,000 in 2012, with an average pre-tax household income of \$16,337, or \$1,361 per month.

Energy Facts

Electricity and motor gasoline are the principal energy expenditures for Alabama families, including 65+ households. Alabama's total energy consumption per capita ranked 12th highest in the nation in 2012, at 395 million BTUs per person, 31% above the national average. Alabama's per capita residential energy consumption in 2012 was 11% above the national average (U.S. DOE, State Energy Data 2012).

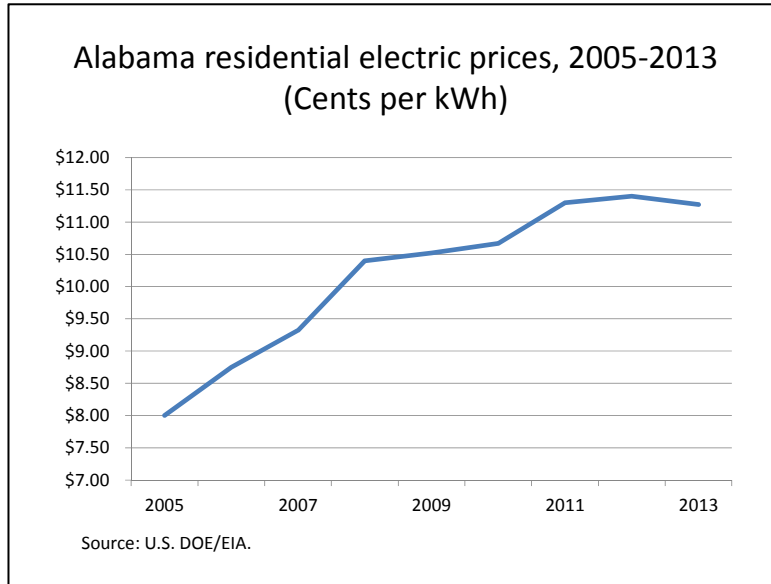
- ✓ Electricity accounts for an estimated 77% of average Alabama household residential energy expenditures. For Alabama's 447,000 65+ households, electricity represents 74% of their total residential bills, as shown in the table below:

Alabama annual residential energy expenditures, 2009

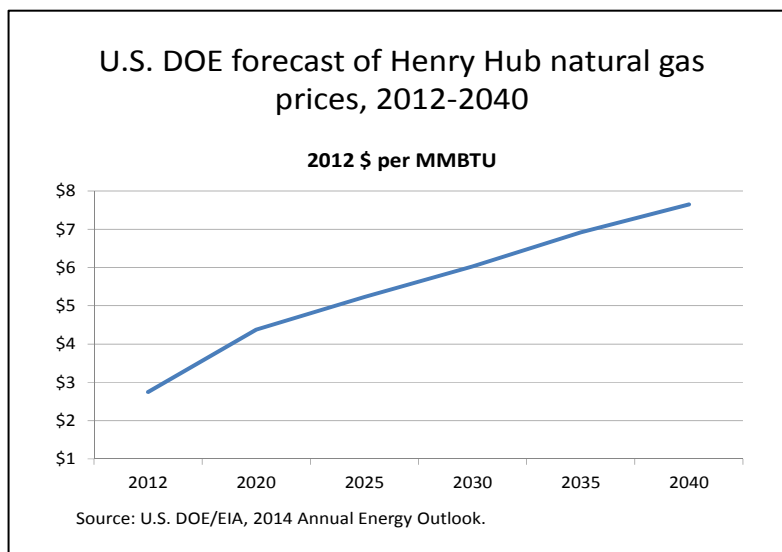
	Avg. energy expenditures	Electricity	Other	Electricity pct. of total expends.
All H/Hs	\$2,048	\$1,586	\$462	77%
65+ H/Hs	\$1,781	\$1,314	\$467	74%

Source: U.S. DOE/EIA 2009 Residential Energy Consumption Survey (2012); Alabama data provided by EIA.

- ✓ The price of electricity per kilowatt-hour (kWh) in Alabama has increased by 41% since 2005, more than twice the 19% rate of inflation in the Consumer Price Index, due in part to higher fuel costs and the costs of compliance with EPA regulations. This has increased average annual electricity bills for 65+ households from \$1,314 in 2009 to an estimated \$1,419 in 2013. Recent trends in Alabama residential electric prices are shown in the chart below:



- ✓ DOE's projection for Henry Hub wellhead natural gas prices, a key indicator of future residential natural gas and electricity prices, calls for a 3.7% annual real increase from 2012 to 2040. **These price increases do not account for the substantial increase in natural gas demand expected to result from EPA's proposed regulations for reducing CO2 emissions from existing power plants:**



Electricity costs are straining elderly fixed-income household budgets

For Alabama's 311,000 senior households with pre-tax incomes of \$50,000 or less in 2012, and an average pre-tax income of \$23,911, electric price increases are burdening household budgets constrained by modest Social Security cost-of-living (COLA) increases that do not fully keep pace with the overall Consumer Price Index (US News & WR, Dec. 19, 2012).

- ✓ Projections of future residential electric price increases suggest that electric prices will increase at a rate well above the general rate of inflation in the economy, adversely impacting the hundreds of thousands of 65+ households in Alabama living on fixed sources of income. The table below summarizes recent forecasts of national residential electric prices for 2025 through 2040, expressed in real (after inflation) prices per kilowatt-hour:

Comparison of residential electric price forecasts
(In constant 2012 cents/kWh)

Source	2012	2025	2035	2040	Pct. Chg, 2012-2040
EIA AEO 2014	11.9	12.3	12.9	13.3	12%
IHSGI	11.9	13.6	14.4	14.5	22%
INFORUM	11.9	15.0	19.3	22.8	92%
Average	11.9	13.6	15.5	16.9	42%

Source: U.S. DOE/EIA Annual Energy Outlook 2014, Table CP4.

- ✓ The average of these three electricity price forecasts is a 42% overall increase in real (after inflation) residential electricity prices by the year 2040.

EPA Clean Power Plan Impacts

EPA's proposed Clean Power Plan (CPP) for reducing carbon dioxide emissions from the nation's existing fossil-fueled power plants will increase electric prices for Alabama's 65+ households. The proposed rule sets forth "building blocks" of options for reducing emissions in Alabama, focused on decreasing the use of coal in favor of natural gas, while increasing energy efficiency and renewable energy resources. EPA's goal is to reduce national CO2 emissions from electric utilities by 30% below 2005 levels.

The CPP proposal was issued In June 2014, just after EPA issued **proposed regulations that effectively bar the construction of new coal-based generation plants** (79 Fed. Reg. 1430, Jan. 8, 2014).

- ✓ In 2012, Alabama relied on coal and natural gas for two-thirds of its electricity fuel supply, with nuclear energy supplying most of the remainder. Hydro and other renewable energy supplied 5% of Alabama's electric generation fuel inputs (DOE/EIA 2012 State Energy Data).
- ✓ Since 2005, EPA data indicate that Alabama's fossil-fueled electric utilities have reduced emissions of carbon dioxide by 19%, measured both in tons of CO2 emitted and in pounds of CO2 per Megawatt-hour of electric generation. EPA's proposed CPP rule does not give credit for these reductions. It requires Alabama to achieve an overall 27% reduction from 2012 measured in emissions of CO2 per Megawatt-hour of electricity. Initial reductions are to occur by 2020, with the final goal achieved by 2030.
- ✓ EPA's proposed plan for Alabama compliance calls for 30% of the target reduction to be achieved by additional renewable energy, with 24% of the reduction coming from increased energy efficiency measures among consumers and industry. Another 27% is projected from switching from low-cost coal

generation to higher-cost natural gas, with 12% from improvements in efficiency at existing coal generation plants. The state will have flexibility in choosing among the measures it adopts, but the target emission reduction of 27% is federally enforceable under the Clean Air Act.

- ✓ **EPA's proposed "building blocks" for state emission reductions contain unrealistic assumptions on the potential for large-scale renewable energy and energy efficiency development within the short timetable of the EPA rule, and untenable projections of the potential for power plant efficiency improvements.** The high level of efficiency improvements that EPA projects at coal-based power plants may not be feasible because the coal generating fleet is being retrofitted with emission controls to comply with EPA's 2011 Mercury and Air Toxics Standards, in many instances leading to decreased plant efficiency. Additional major investments in these plants are unlikely because EPA projects that the Clean Power Plan will lead to significant reductions in electric generation at coal-based facilities, thus reducing the opportunity to recover investment costs. (EPA CPP RIA Table 3-11).
- ✓ EPA's Regulatory Impact Analysis for the CPP projects national costs of \$5.4 to \$7.4 billion annually in 2020. EPA's projections assume billions of dollars of annual savings from reductions of electric demand through widespread investments in energy efficiency measures.
- ✓ **EPA projects modest Alabama retail electric price increases for the proposed existing source rule, 3.4% in 2020** (EPA CPP RIA, Table 3-21, Region SRSE). **This projection is highly uncertain** because it assumes that Alabama will follow EPA's prescribed "building blocks" approach to emission reductions. If the flexibility measures in EPA's proposed rule prove unworkable, or are limited by judicial decisions, higher rate impacts could result.
- ✓ **A March 2014 analysis by National Economic Research Associates of a CO2 reduction proposal very similar to the EPA rule estimated national average residential electricity price increases of 3.0% to 11.4% over 2018-2033**, depending upon the degree of flexibility in implementation. Average electricity prices in Alabama over 2018-2033 were estimated at 15% to 20% above baseline levels in a "maximum flexibility" scenario similar to a national cap-and-trade program (NERA/ACCCE, March 2014).
- ✓ Both the timing and stringency of EPA's proposed reductions will challenge Alabama's electric utilities, and will lead Alabama to greater dependence on natural gas as a main source of electric generation. U.S. DOE projects that the price of natural gas delivered to electric utilities will increase at a compound annual rate of 3.1% above the rate of inflation between 2012 and 2040, the highest rate of real price increase for any delivered fuel in any sector of the economy (DOE Annual Energy Outlook 2014). **EPA projects that the Clean Power Plan will lead to further increases in delivered natural gas prices of 7.5% to 11.5% in 2020** (EPA CPP RIA, June 2014).

Fuel Diversity at Risk

The prospective reduction of fuel diversity in Alabama's electric generating fleet due to greater dependence on natural gas for compliance with the Clean Power Plan creates additional risks of electric price volatility and higher costs for elderly consumers. A recent special report by IHS examined alternative scenarios of electric supply diversity and found that household disposable incomes could be reduced by more than \$2,000 annually where electric fuel supply choices are constrained:

To illustrate the importance of power supply diversity at the national level, IHS compared a base case—reflecting the generation mix in regional US power systems during the 2010-2012 period—with a reduced diversity case (a generating mix without meaningful contributions from coal and nuclear power and with a smaller contribution from hydroelectric power along with an increased share of renewable power. The remaining three-quarters of generation in the scenario come from natural gas-fired plants).

In this comparison, IHS found that the cost of generating electricity in the reduced diversity case was more than \$93 billion higher per year and the potential variability of monthly power bills was 50 percent higher compared to the base case. As a consequence, the study calculates that the typical household's annual disposable income to be around \$2,100 less in the reduced diversity scenario, there would be around one million fewer jobs compared to the base case and US gross domestic product (GDP) would be

nearly \$200 billion less. Additional costs would arise if current trends lead to the retirement and replacement of existing power plants before it was economic to do so. See, <http://www.ihs.com/info/0714/power-diversity-special-report.aspx?ocid=uspowderv:pressrls:01>

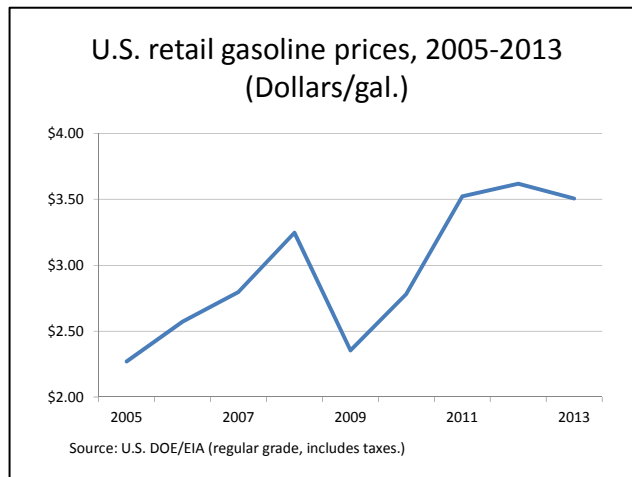
Additional Regulatory Impacts

Recent and pending U.S. EPA regulations will add further cost pressures to the electric generating sector over the next few years, directly impacting electric bills in Alabama.

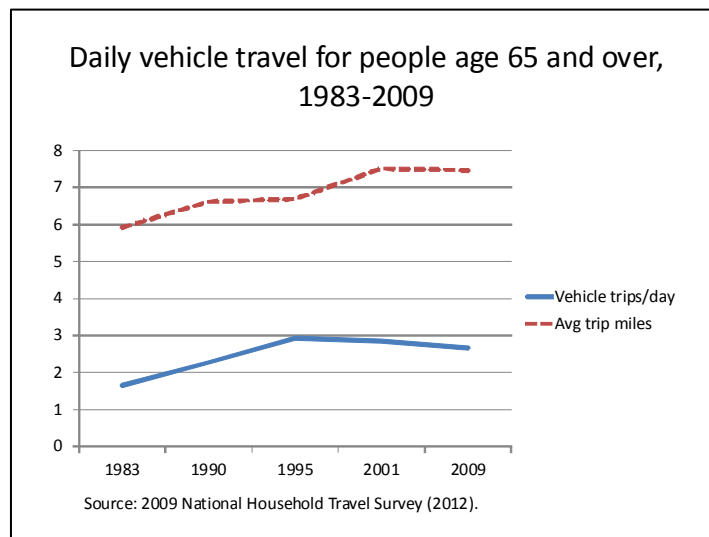
- ✓ EPA's Regulatory Impact Analysis for its 2011 Mercury and Air Toxics Standards projects that this rule will cost an average of \$9.6 billion annually, and will increase Alabama retail electricity prices by 3.1% in 2015 (EPA MATS RIA, Table 3-12, Region STV).
- ✓ **A new ozone standard could dramatically increase energy costs for all Alabama consumers and industries.** EPA plans to revise the 2008 National Ambient Air Quality Standard for ozone, currently set at a level of 75 parts per billion (ppb), in late 2015. A July 2014 analysis by National Economic Research Associates of a potential new ozone standard set at a level of 60 ppb indicates that such a standard could impose \$348 billion in annual compliance costs across the nation. NERA projects that national average residential electricity prices would increase by 3.3% to 15%, while residential natural gas prices would rise by up to 32% (NERA/NAM July 2014).

Gasoline costs remain high

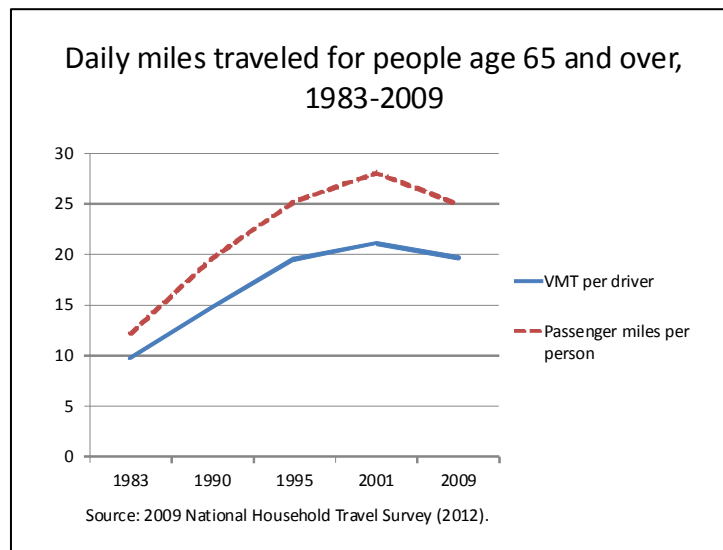
For most American households, gasoline is the largest single consumer energy expenditure. Gasoline prices have remained stubbornly high despite major recent increases in domestic oil production due to technological advances in drilling technology.



- ✓ Average retail gasoline prices per gallon have increased by 55% since 2005, a rate nearly three times greater than the 19% rate of inflation measured by the Consumer Price Index.
- ✓ Seniors 65+ drive fewer miles annually than younger people, since most are not commuting to work or school. Gasoline costs nevertheless account for a significant annual energy expense for most senior citizens.
- ✓ U.S. DOT's 2009 National Household Travel Survey (2012) shows that 65+ seniors have increased their average vehicle miles traveled (VMT) since 1983, through a combination of more daily vehicle trips per driver and longer average vehicle trip lengths:



- ✓ The average number of daily vehicle trips per 65+ driver increased by 61% from 1983 to 2009, while average trip length increased by 26%, from 5.9 miles in 1983 to 7.5 miles in 2009.
- ✓ Average daily vehicle miles traveled per 65+ driver more than doubled between 1983 and 2009, from 9.8 miles to 19.7 miles, as shown in the chart below:



- ✓ The vast majority of 65+ citizens are drivers. Some 91% of persons aged 60 to 69 are drivers, while 83% of those aged 70 to 79 drive. More than 60% of the 80+ population also drive (2009 NHTS, 2012).
- ✓ With an expected 60% increase in the number of 65+ persons over the next 15 years, the proportion of 65+ drivers on the road will increase from 15% in 2009 to 20% by 2025 (AARP Public Policy Institute, 2011).
- ✓ Assuming an average of 19.7 miles driven per day for 65+ drivers, and 17 miles per gallon for the average fuel economy of light duty vehicles now on the road, Alabama's 65+ drivers will each spend approximately \$1,500 annually with gasoline prices of \$3.50 per gallon.

Social Security Is At Risk

Social Security is a principal source of income for Alabama's senior citizens. In 2012, 34% of Alabama households received Social Security benefits averaging \$16,250 per household (Bureau of the Census, 2012 American Community Survey, 2014). The future stability of this income, however, cannot be assured due to the rapidly changing dynamics of the U.S. population, and the projected increase in Social Security recipients. The Congressional Budget Office's latest assessment of the health of the Social Security system reveals the extent of these risks:

In calendar year 2010, for the first time since the enactment of the Social Security Amendments of 1983, annual outlays for the program exceeded annual tax revenues (that is, outlays exceeded total revenues excluding interest credited to the trust funds). In 2012, outlays exceeded noninterest income by about 7 percent, and CBO projects that the gap will average about 12 percent of tax revenues over the next decade. As more members of the baby-boom generation retire, outlays will increase relative to the size of the economy, whereas tax revenues will remain at an almost constant share of the economy. As a result, the gap will grow larger in the 2020s and will exceed 30 percent of revenues by 2030.

CBO projects that under current law, the DI (Disability Insurance) trust fund will be exhausted in fiscal year 2017, and the OASI (Old Age and Survivors) trust fund will be exhausted in 2033. If a trust fund's balance fell to zero and current revenues were insufficient to cover the benefits specified in law, the Social Security Administration would no longer have legal authority to pay full benefits when they were due. In 1994, legislation redirected revenues from the OASI trust fund to prevent the imminent exhaustion of the DI trust fund. In part because of that experience, it is a common analytical convention to consider the DI and OASI trust funds as combined. Thus, CBO projects, if some future legislation shifted resources from the OASI trust fund to the DI trust fund, the combined OASDI trust funds would be exhausted in 2031. See, <http://www.cbo.gov/publication/44972>.

Conclusion

Low- and fixed-income seniors are among the most vulnerable to electric rate and other energy price increases. Current and pending U.S. EPA regulations will increase the price of electricity in Alabama at rates above the general rate of inflation. Rising oil and natural gas prices will add further pressure on residential natural gas and gasoline prices. The 70% of Alabama's 65+ households with gross incomes less than \$50,000 annually will be among those least able to afford these energy price increases.

Just maintaining the energy budget status quo for Alabama's 65+ fixed income population requires stable electricity and other energy prices that do not increase above the rate of inflation. Lower-income seniors are among those least likely to make major investments in new energy efficiency programs with long investment payback times, as envisioned by EPA's Clean Power Plan. The suite of new regulations EPA is now pursuing inevitably will lead to ever-higher utility prices for Alabama's elderly population, exceeding the modest cost-of-living (COLA) adjustments that many 65+ retirees depend upon just to keep up with inflationary pressures.

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Acknowledgment: This paper was prepared for the 60 Plus Association by Eugene M. Trisko, an independent energy economist and attorney (B.A., Economics and Politics, NYU, 1972; J.D., Georgetown University Law Center, 1977). Mr. Trisko has served as an expert economic witness before state public utility commissions, and as an attorney in the Federal Trade Commission Bureau of Consumer Protection. He may be contacted at emtrisko@earthlink.net.