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Submitted electronically through the Federal eRulemaking Portal on September 30, 2014

Environmental Protection Agency
EPA Docket Center (EPA/DC)
Mail Code 28221T
Attn: Docket ID No. EPA-HQ-OAR-2013-0602-001
1200 Pennsylvania Ave. NW.
Washington, DC 20460

RE: Comments on the Proposed Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units
Docket ID No. EPA-HQ-OAR-2013-0602

To Whom It May Concern:

Arkansas Electric Cooperative Corporation ("AECC") respectfully submits these comments on the proposed Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units (also "the proposed Rule" or "the Clean Power Plan"). AECC is submitting this set of comments early in the comment period as requested by the Administrator for the U.S. Environmental Protection Agency ("EPA"), which noted the importance of quickly identifying errors in the proposed Rule for EPA's consideration and correction. AECC will continue to review the proposed Rule and comments already and to be submitted in the future, and respectfully reserves the right to supplement these comments prior to the December 1, 2014 public comment deadline, if deemed necessary.

Together, the following attachments to this letter comprise AECC's current comments:

- AECC's Clean Power Plan Comments
  - These comments address issues concerning compliance with the proposed Rule as well as inherent miscalculations or errors underlying the proposed Rule's assumptions or mandates.
- Appendix A to AECC's Clean Power Plan Comments – Letter from AECC to Gina McCarthy dated September 26, 2014.
  - This letter is a follow up to a conversation between AECC staff and Administrator McCarthy at the Aspen Energy Institute earlier this year.

- Appendix B to AECC's Clean Power Plan Comments – Increased Costs
  - Appendix B is a series of slides describing the anticipated increase in costs stemming from compliance with the proposed Rule to AECC and its members.
- Appendix C to AECC's Clean Power Plan Comments – Economic Inequities
  - Appendix C is information detailing Arkansas' per capita income rankings in the United States, which is one of the lowest in the country.

In addition, AECC is aware, generally speaking, of the contents of public comments to be submitted in advance of the December 1, 2014 deadline by certain of AECC's associations and partners. As a result, and given AECC shares many of those organizations' concerns, AECC's comments herein incorporate by reference the comments on the proposed Rule to be submitted by the following organizations:

- National Rural Electric Cooperative Association
- Class of '85 Regulatory Response Group
- Electric Power Research Institute
- Partnership for a Better Energy Future

Should any of what is included in our comments, including the appendices attached hereto, require additional explanation, my staff and I would be happy to meet at your convenience to discuss those matters more fully. Also, I appreciate your consideration and incorporation of these comments in preparing the final version of the Clean Power Plan ("the final Rule").

Sincerely,

Duane D. Highley
President and CEO

Comments on the proposed Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units

provided by

Arkansas Electric Cooperative Corporation

Arkansas Electric Cooperative Corporation ("AECC") respectfully submits these comments on the proposed Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units (also "the proposed Rule" or "the Clean Power Plan").

AECC's comments are organized as follows:

INTRODUCTION

The proposed Rule delineates the following four (4) building blocks for setting state carbon dioxide ("CO_2") emission goals and requiring compliance:

- Building Block 1 – Heat rate efficiency improvements on existing fossil-fired units
- Building Block 2 – Increased Natural Gas Combined Cycle ("NGCC") usage through redispatch
- Building Block 3 – Nuclear and increased renewable energy usage
- Building Block 4 – Additional energy efficiency implementation

The language of the proposed Rule asserts that it is "flexible" because if a state cannot achieve a stated goal in one building block, it can capture greater CO_2 reductions in a different building block to make up for any anticipated shortfalls. As demonstrated below, AECC, and Arkansas as a whole, will more than likely be unable to achieve compliance with any of the four building blocks in their own right. As a result, there is no real possibility that shortfalls in one building block can be satisfied or negated by overachieving in other building blocks. Thus, the Clean Power Plan, as drafted, provides no actual flexibility for Arkansas or AECC.

COMPLIANCE ISSUES WITH BUILDING BLOCK 1

1. **The proposed Rule's assumption that coal-fired power plants can improve heat rate efficiency by 6% is wrong and greatly overstated.**

   AECC's non-profit business model is based upon fulfillment of its mission to provide safe, affordable and reliable electricity to its members. Part of AECC satisfying its mission to provide affordable utility service requires AECC to ensure its generating units are operating at optimum efficiency. Thus, AECC has already captured most, if not all, of the cost-effective heat rate efficiency in its units possible. That said, with significant additional capital expenditures, perhaps it is possible to squeeze some additional efficiency in certain—but not all—of AECC's generating units, but the highest achievable efficiency improvement is actually a small fraction of the proposed 6%, and that is assuming a best-case scenario.

   In addition to cost considerations, which are paramount in AECC's non-profit business, given the historical interpretations by EPA staff AECC has faced with such improvement projects, AECC has refrained from undertaking such efficiency improvements due to the uncertainty of triggering New Source Review ("NSR").

2. **The final Rule should include an explicit NSR exemption for heat rate efficiency improvements made at electricity generating units ("EGUs") that are undertaken specifically to comply with the proposed Rule.**

   Several heat rate improvements have been made over the years at coal-fired units; however, some of these improvements have been challenged by EPA staff, individuals and non-governmental organizations claiming that the EPA's existing NSR procedures were not followed.

   If the proposed Rule's and EPA's objectives are to improve heat rate efficiency to reduce CO_2 emissions, then legal impediments to heat rate efficiency improvements in the form of NSR standards, and any others, should be removed. In fact, rather than creating barriers to such improvements, EPA should create incentives for EGU operators by specifically exempting heat rate efficiency improvement projects from NSR.

3. **Another compliance hurdle with the proposed Rule is that the addition of environmental controls on an existing EGU increases that unit's heat rate.**

   Over the past decade, many EGU operators have added environmental controls on EGUs to comply with new local, state, and federal environmental regulations, just as AECC is in the process of doing on one of its coal-fired power plants. These controls – such as selective catalytic reduction for control of oxides of nitrogen and flue gas desulfurization for control of sulfur dioxide – are parasitic loads on the EGU, meaning their installation

draws power and efficiency from the unit, once installed. As a result, the energy to operate an environmental control lowers the overall generation output of the EGU. In other words, addition of environmental controls on an EGU lowers the efficiency of the EGU.

Many more environmental controls are expected to be implemented on existing EGUs due to compliance with rules already promulgated, such as the Regional Haze Rule, the Mercury and Air Toxics Standards, and any future regional transport rule. Therefore, AECC believes that EPA must take into account that even if an existing EGU's heat rate can be reduced slightly with capital-intensive improvements, that efficiency enhancement may be lowered or negated entirely with the addition of environmental controls for other reasons.

COMPLIANCE ISSUES WITH BUILDING BLOCK 2

4. **The proposed Rule suggests there was NGCC capacity for Arkansas of 5,588 MW in 2012; the NGCC capacity number in 2012 was actually 4,661 MW.**

In developing the estimates of energy to be redispatched under Block 2, the proposed Rule assumed NGCCs could be dispatched up to a 70% annual capacity factor as a means to displace coal-fired units. However, that number is based on the wrong NGCC rating. For example, the proposed Rule shows Arkansas' NGCC capacity to be 5,588 MW in 2012. This is based on the installed nameplate capacity of each unit. The actual tested, rated capacity should be used in lieu of the nameplate capacity to determine the number of MWh to be redispatched, as that is what can actually be dispatched and used to serve customers.

An electrical generator is generally rated at a higher capacity than the prime mover in the generating unit (e.g. combustion turbine, boiler, etc.). Therefore, the actual NGCC output is less than the nameplate capacity of the generator(s). Also, NGCC capability is highly dependent on site conditions including altitude and weather. Regional Transmission Organizations ("RTOs"), which are responsible for operating the electric grid in a safe and reliable manner, have very detailed procedures under which NGCCs are to be tested to develop these ratings. The units are dispatched based on their tested and proven ratings, and not on their nameplates as the ability to maintain reliability mandates the use of numbers that can actually be called upon to serve customer demand, not aspirational numbers. Thus, the actual tested ratings of NGCCs – and not the nameplate ratings – should be used to determine a state's NGCC capacity under the proposed Rule.

The table below shows the NGCC units in Arkansas with the nameplate ratings, the actual tested ratings and the difference between the two numbers.

Plant Name	Nameplate Rating (MW, rounded)	Actual Tested Rating (MW)[1]	Difference between the Proposed Rule's assumption and Actual Dispatchability (MW)
Thomas B. Fitzhugh Gen. Station (AECC-owned)	185	165	-20
Harry L. Oswald Gen. Station (AECC-owned)	599	548	-51
Magnet Cove Gen. Station (AECC-owned)	746	642	-108
Hot Spring Energy Facility	715	630	-85
Dell Power Station	679	464	-215
Pine Bluff Energy Center	236	192	-44
Union Power Partners LP	2,428	2,020	-408
TOTALS	**5,588**	**4,661**	**-927**

In summary, there was not 5,588 MW of NGCC capacity in Arkansas in 2012 – there was, at most, 4,661 MW of NGCC capacity. As described in the following comment, the magnitude of this difference seriously undermines Arkansas' ability to meet its proposed 44% emissions reduction target, which was overly ambitious anyway.

5. **Although the proposed Rule relied on a 70% NGCC capacity factor to calculate the state goals, Arkansas NGCC operators actually must operate the units at a much higher annual capacity factor than 70% to meet the redispatched NGCC generation goals.**

In the state goal computations, EPA calculated that 34,361,954 MWh were needed to be generated from Arkansas NGCC units to meet a 70% capacity factor. As discussed immediately above, this calculation is based on using the total of the nameplate ratings – or 5,588 MW. When the total of the actual tested ratings is used, in reality, Arkansas NGCCs must operate at an annual capacity factor of 83.9% to achieve 34,361,954 MWh.

As discussed in additional comments below, AECC believes that it would be very difficult, and in some cases impossible, to meet an annual capacity factor of 70% for some NGCC units. This is due to the fact that annual capacity factors must include planned and unplanned outages. Based on historical operations, during years when

[1] From EIA-860 data at http://www.eia.gov/electricity/data/eia860/

major maintenance is required on NGCC units, the planned outage factor alone could approach 15%. In addition, unplanned outages typically range from 2%- 5%. If 70% is nearly impossible, then operating at a capacity factor of 83.9% is flat out of the question.

In sum, the state goal computations need to be recalculated in the final rule using (1) each unit's actual tested NGCC capacity as opposed to the unrepresentative nameplate capacity; and (2) a lower NGCC capacity factor than 70% - such as 60% or even lower, based upon industry average performance data.

6. Maximum annual NGCC capacity can be limited by natural gas curtailments, transmission constraints, and/or air permit requirements, which provide additional compliance hurdles with the proposed Rule.

Setting aside general efficiency limitations inherent in large scale electric generation, there are several other factors that affect an NGCC unit's annual capacity factor.

a. Natural Gas Constraints affect NGCC Unit Production.

The information below details events that occurred for four continuous months which limited operation of two AECC-owned natural gas fired facilities during some of the coldest days of the year.

The winter of 2013 – 2014 presented many challenges to the natural gas pipelines that serve AECC's natural gas fired power plants. The most challenging issue facing AECC during this time period was the pipelines' contractual requirement that the plants run ratably (at a constant level) over a 24-hour period. AECC's two plants most affected by this requirement, the Fulton CT1 Generating Station ("Fulton") and the Harry L. Oswald Generating Station ("Oswald"), are connected to Natural Gas Pipeline Company of America ("NGPL"). The Fulton Plant is a simple cycle combustion turbine and is designed to come online and offline quickly, starting and stopping multiple times daily. The Oswald Plant is an NGCC plant designed with significant flexibility. It has seven combustion turbines, each with a heat recovery steam generator that can feed into either of two steam generators. It can cycle daily and maintains a good heat rate over a wide range of operational conditions. Oswald also has over 100 MW of duct firing that can come online and offline quickly. Despite having a firm transportation ("FT") gas contract, for 66 days during the 2013-2014 winter, not only could AECC not vary the plants' gas consumption during the day (requiring the plants to stay at a constant output), but AECC would have incurred contractual, financial penalties just to start up the plants. Below is a more detailed description of the actions taken by NGPL and the effect those actions had on AECC.

Timeline of Natural Gas Delivery Interruptions and Constraints

December 6, 2013: NGPL issued a cold weather advisory asking all shippers to make sure receipts matched deliveries.

December 11, 2013 – January 3, 2014: As conditions began to worsen, NGPL issued an hourly-takes advisory effective on gas day, which remained in effect for three weeks. Under this advisory shippers with FT had their hourly rights limited to up to 130% of nominated quantities divided by 24. Interruptible Transportation ("IT") hourly rights were essentially limited to nominated quantities only, divided by 24. NGPL also stated in this advisory that if the ability to provide hourly flexibility should decrease, an operational flow order ("OFO") would be issued. During this time period, AECC could have used FT to start either of the plants connected to NGPL without incurring penalties, but both plants would have had to run somewhat consistently during a 24-hour period in order not to exacerbate conditions on the pipeline. Whether a unit runs continuously or consistently is not a decision AECC makes; RTOs determine generating units' dispatch conditions and run times, based on a variety of factors and inputs over a large geographic footprint.

January 5 - 7, 2014 & January 16, 2014: NGPL issued an OFO effective for gas day January 5, which further limited FT hourly rights to 120% of nominated quantities over a 24-hour period, and IT was limited to ratable takes over a 24-hour period. Shippers failing to comply with the OFO would have been subject to penalties as stated in NGPL's Federal Energy Regulatory Commission ("FERC") tariff. Under this OFO, AECC could not start either of the plants connected to NGPL without incurring penalties and both plants would have had to run ratably over a 24-hour period, again, a constraint over which AECC has little to no control. This OFO was removed effective for start of gas day January 7, 2014, but was replaced by an hourly-takes advisory, only to be re-instated effective gas day January 16, 2014.

January 22, 2014: NGPL issued a point hourly flow off-rate advisory effective immediately. Shippers not adhering to the hourly flow

rate restrictions as stated in the current OFO would be subject to mechanical flow control by NGPL.

January 26 – January 29, 2014: On January 24, 2014, NGPL issued a critical time declaration effective for gas day January 26, 2014. During this time period shippers operating outside the requirements of the on-going OFO would be subject to significant charges of up to $200.00/Dth and penalties as stated in NGPL's FERC Gas tariff. AECC would not have been able to start either of the plants connected to NGPL without facing significant increased costs during this period. The critical time declaration was removed effective gas day January 29, but the OFO was still in effect.

February 6, 2014 – March 12, 2014: Another critical time declaration was issued effective gas day February 6, 2014 and continued until gas day March 12, 2014, at which time the OFO remained in effect. On March 19, NGPL removed the OFO and re-instated an hourly-takes limitation.

April 8, 2014: On April 7, 2014, NGPL removed the hourly takes limitation effective for gas day April 8, 2014. At this time the pipeline was able to operate under what would be considered "normal" conditions, eliminating the requirement that AECC's plants run ratably over a 24-hour period and enabling the plants to start-up without incurring penalties.

AECC experienced similar issues with plants connected to other pipelines, but not for as long a time period as what happened with NGPL.

The facts noted above yield three primary conclusions which are contradictory to the premises underlying the proposed Rule:

(1) There are events outside of an EGU-operator's control which affect an NGCC facility's annual capacity factor; and
(2) The existing natural gas infrastructure is currently insufficient to meet demand when it is most needed; and

(3) In order to achieve even higher capacity factors for NGCC units than are achievable under current conditions, i.e. 70% (or 81+%), the natural gas pipeline infrastructure needs to be upgraded.

AECC urges EPA to take these factors into account when finalizing the proposed Rule. While industry experts may differ about the sufficiency of the existing natural gas pipeline system, there is no doubt AECC was affected by natural gas delivery issues during the most recent winter and those effects cost AECC and its members' precious time and money. Notably, these gas supply constraints were present throughout the peak winter months and were not alleviated until peak demand went down.

FERC regulates both electric and natural gas utilities and the issue of natural gas deliverability is one where FERC input and collaboration is essential. Although not directly addressed by the proposed Rule, natural gas companies' participation in compliance with the proposed Rule is a must. AECC respectfully requests EPA, in its dealings with FERC, seek ways to assess the effect of the proposed Rule on natural gas delivery systems and ensure natural gas deliverability, which is outside the control of electric utilities, is sufficiently reliable to permit compliance with the final rule. In addition, in order to facilitate such collaboration, adequate time between state implementation plan ("SIP") approval and the interim compliance period must be afforded for the inter-utility efforts to ensure NGCCs can operate when and how required, without regard to natural gas delivery constraints.

b. Transmission Constraints Affect the Ability to Achieve Capacity Factor Targets, further impeding the ability to comply with the proposed Rule.

AECC has experienced transmission constraints in the past at some of our larger co-owned facilities. Similarly, the capacity factor of an existing NGCC plant (the Union Power Plant) in Arkansas has been limited by transmission constraints as well. In fact, in a public filing the owner of that facility acknowledged the same: "Entegra's Union Power facility has substantial excess capacity and energy that could be sold and provide substantial economic benefits to Arkansas electric consumers. However, transmission access from EAl's system to the SPP system is severely constrained and the Union Power facility has limited ability to meet the needs of Arkansas' load serving entities in the SPP footprint. The scope and cost of transmission improvements that eliminate this constraint - allowing the Union Power facility and other existing generation resources in the Entergy region to reliably and economically transmit power across the Entergy-SPP seam - need to be identified and considered."[2]

[2] See Arkansas Public Service Commission Docket No. 10-011-U, Entegra Power Group, LLC's Petition to Intervene at 2-3 (February 19, 2010).

c. Air Permit Limitations Affect a Unit's Capacity Factor, further hampering AECC's ability to comply with the proposed Rule.

A restrictions in a generating facility's air permit can affect that same unit's capacity factor. Such restrictions include limitations on emissions and/or fuel usage.

AECC's Oswald plant is an NGCC plant that is limited by a NOx emissions "cap" in its air permit. The seven NGCCs at the plant are restricted to a facility-wide NOx emission cap of 619 tons per year. If each unit is operated at its average hourly NOx emission rate, the facility would be limited to a maximum annual capacity factor of about 60%, well below the supposed 70% (and even further below the actual 81.4%). Admittedly, certain environmental control measures could potentially be installed to increase Oswald's capacity factor, but those measures are at a prohibitive cost level.

AECC's Thomas B. Fitzhugh Generating Station ("Fitzhugh") is another NGCC plant and it is limited by a fuel usage limit. The air permit lists a natural gas usage limit of 9.626 billion cubic feet based on a twelve-month rolling average. This limits the plant to a maximum annual capacity factor of about 63%. Again, perhaps there are environmental controls that could be installed to increase the capacity factor of Fitzhugh, but those costs would be additive to the all of the other compliance costs associated with the proposed Rule, which AECC has assessed already to be prohibitive.

7. The proposed Rule disproportionately burdens states with perceived underutilized NGCC capacity with higher emissions reductions.

The proposed Rule purports to produce a 30% reduction nationally in CO_2 emissions from EGUs by 2030; however, the State of Arkansas must produce a disproportionately higher amount of reductions (44%) over that same time period. Arkansas must achieve a disproportionately larger emissions reduction target than a vast majority of other states across the country and all other states in Arkansas' region because the proposed Rule assumes it has a relatively large amount of "underutilized" existing NGCC capacity. Based on that assumption, the proposed Rule suggests that, because Arkansas has this underutilized NGCC capacity, it should simply displace a large portion of coal-fired generation in favor of NGCC generation, apparently wholly-divorced from any concern regarding the cost of such redispatch. Based on current fuel prices, the proposed Rule's concept of "redispatch" from coal to natural gas will cost Arkansas ratepayers an estimated $75 million per year. *See* Appendix B, attached. AECC expects that amount to increase over time as natural gas prices increase in response to higher demand and constrained supply.

In contrast to the situation in which Arkansas finds itself, if the proposed Rule assumes a state does not have a lot of underutilized NGCC capacity, then that state (or states) has a much less stringent emission reduction requirement, thereby diminishing the effect on that state's existing coal-fired generation. Put another way, Arkansas is penalized under the proposed Rule because it has been diligent for a long time in diversifying its energy portfolio to ensure a proper generation mix that includes both coal- and natural gas-fired EGUs, and those efforts ensured access to stable fuel prices. Such a high reduction burden on one of the smallest and poorest states in the country (*see* Appendix C for detailed information regarding Arkansas' relative income metrics) will hamper Arkansas' ability to join in a regional compliance plan, which will further limit Arkansas' ability to offset its disproportionately high 44% compliance burden.

In summary, AECC believes the redispatch scenario in Building Block 2 of the proposed Rule treats Arkansas unfairly based on a faulty assumption—which was detailed more fully in Comment 4 above —about underutilized NGCC capacity and a direct penalty for a historically-diverse generation mix.

8. The proposed Rule will require RTOs to replace economic dispatch with environmental dispatch, while trying to maintain reliability for different states, all of which have different emissions reduction targets.

There are two RTOs that operate in Arkansas: (1) Midcontinent Independent System Operator ("MISO"); and (2) Southwest Power Pool ("SPP"). AECC is a member of both RTOs. Combined, these entities' footprints include more than 20 states. Each RTO's footprint includes various types of electric generating assets and both serve members in states with various emission reduction targets under the proposed Rule.

The underlying premise of an RTO is to permit access, by their voluntary members, to the lowest-cost electricity based on economics. Said another way, RTOs exist to help their members access the lowest cost generation on a continual basis, regardless of the location of the generation or the location of the member, while maintaining grid reliability. Under the proposed Rule every state has a different CO_2 emission reduction target, and presumably each state implementation plan will propose to achieve its respective target differently. As a result, RTOs will be forced to implement environmental dispatch of generating units, i.e. RTOs will first consider environmental effects of operating generating units before the economic benefits of operating those same units. This is contrary to the purpose for which RTOs were formed and also violates those regional entities' obligations under the Federal Power Act to dispatch generation economically.[3]

[3] *See Written Testimony of FERC Commissioner Tony Clark Before the Committee on Energy and Commerce Subcommittee on Energy and Power United States House of Representatives Hearing on* FERC Perspective: Questions Concerning EPA's Proposed Clean Power Plan and other Grid Reliability Challenges (July 29, 2014). Online at: http://www.ferc.gov/CalendarFiles/20140729091839-Clark-07-29-2014.pdf.

The assumption underlying the proposed Rule—that the electric utility industry is able to implement this shift from economic dispatch to environmental dispatch while maintaining reliability—is faulty and premised on oversimplifications about the electric system and how it works. The gas pipeline network and delivery infrastructure are limited; and, as learned from the recent "polar vortex," (described in Comment 6a, above) the existing natural gas system cannot effectively handle current demand for natural gas during peak usage, let alone the tremendous increase in demand that will result from even more natural gas dispatch.

In addition, the market forces and incentives on both the fuel delivery and electric sides of the energy market that drive the dispatch of the existing generation fleet have evolved over decades and cannot be effectively transitioned to an "environmental dispatch" regime in just a few short years. Complex contractual arrangements will have to be renegotiated and new ones developed to address the assignment of costs under the new "environmental dispatch" scenario driven by the proposed Rule's Building Block 2. And furthermore, all of this has to be accomplished without compromising electric system reliability.

On August 28, 2014, at a public stakeholder meeting on the proposed Rule hosted jointly by the Arkansas Public Service Commission and the Arkansas Department of Environmental Quality, Lanny Nickel, Vice President – Engineering for SPP made public comments stating that SPP has run models under several redispatch scenarios that would meet the proposed Rule's Building Block 2 and has determined that, if such environmental dispatch measures are put in place, there will no longer be sufficient reactive power on the electric grid to satisfy existing utility demand and maintain daily operation of existing industry. In short, the result of the proposed Rule's implementation will be unreliable electricity production and potential brown- and black-outs, all of which pose threats to health and safety and create potential adverse effects on economic development, including the potential loss of industrial activities.

9. The need for coordination between EPA and FERC regarding the feasibility of compliance with the proposed Rule cannot be understated.

Due to the importance of maintaining reliability and the need for efficient RTO energy market operations, coordination between FERC and EPA on the proposed Rule's requirements and implementation is essential. FERC's Office of Electric Reliability has specific expertise on power grid reliability and was formed in response to the 2003 Northeast blackout under new authorities granted to FERC by Congress in the Energy Policy Act of 2005. One of that Office's major responsibilities is to "coordinate with the applicable federal agencies … to facilitate energy reliability and security." In fact, Section 215 of the Federal Power Act, codified at 16 USC § 824*o*, gives FERC the power

to "to establish and enforce reliability standards for the bulk-power system,"[4] and grants FERC jurisdiction over "all users, owners and operators of the bulk-power system…for the purposes of approving reliability standards…and enforcing compliance with [reliability standards]."

FERC is legally-designated with the authority and responsibility for grid reliability, and the proposed Rule represents a sea change for the electric utility industry in this regard. As a result, FERC must be engaged heavily in this undertaking. The most efficient and productive manner of moving forward with the proposed Rule's implementation is for FERC and EPA to work closely and effectively together regarding the mandates imposed by the proposed Rule, mindful of reliability and other electric grid issues, for the benefit of the country, including the electric industry.

10. The proposed Rule is based on data from only one calendar year (2012), yet a single calendar year is not representative of variability in generation, weather patterns or the various other factors affecting electric power production.

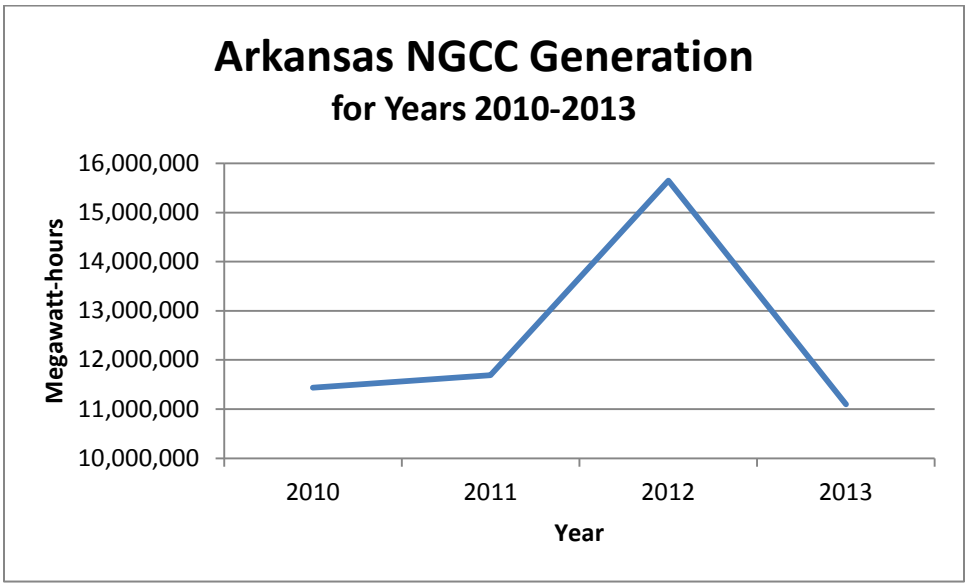
One calendar year of data does not take into account random, unplanned EGU outages, variability in fuel pricing, anomalous weather patterns and a host of other factors that determine which generation is used at any given time or that may shift generation of electricity from one fuel source to another.

In 2012, natural gas prices were near all-time lows, making natural gas a more attractive fuel choice due to price. Because prices were uncharacteristically low, many natural gas-firing EGUs ran at higher capacity factors in 2012 than would otherwise have been the case, based on historical gas prices. *See* Chart 1 below. In fact, NGCC units in Arkansas generated more than 25% more megawatts in 2012 than they did in 2010, 2011, or 2013. Industry experts consider 2012 to be an anomalous year in the mix of electricity generation due to the low natural gas prices.

Given 2012 is not representative of electric generation patterns—frankly, no single year could be—reliance on data from 2012 makes compliance with the proposed Rule's emission targets appear much easier than it really is. In Arkansas, a high capacity factor of natural gas EGUs generally lowers the capacity of coal-fired generation, meaning that natural gas plants, as a whole, operated more in 2012 than in 2010, 2011 or 2013, and, by extension, coal plants operated less in those same years.

[4] "(1) The term 'bulk-power system' means—(A) facilities and control systems necessary for operating an interconnected electric energy transmission network (or any portion thereof); and (B) electric energy from generation facilities needed to maintain transmission system reliability." 16 U.S.C. § 284*o*(a)(1).

CHART 1. ANNUAL GENERATION FROM NGCC UNITS IN ARKANSAS FOR YEARS 2010 THROUGH 2013



In sum, in a typical year, natural gas EGU capacity factors would be lower and coal-fired EGU capacity factors would be higher than in 2012, further demonstrating why the use of a single year is unhelpful. Because 2012 (and any other single year) is not representative of electric generation patterns, the use of that single year lessens the true impact of the proposed Rule's environmental dispatch plan.

AECC's recommendation to address this faulty premise is provided in the next comment.

11. The emissions targets set by any rule or regulation affecting generation dispatch decisions should use a multi-year approach for comparison.

As explained in the previous comment, in assessing long-range plans and making long-term goals for electric generation, the use of a single year of data is inappropriate and creates a faulty premise. In order to have a representative baseline year against which emission targets can be measured, multiple years must be used and averaged – just as EPA did to create other regulations such as the Acid Rain Program and the Clean Air Interstate Rule. The use of a multi-year average would take into account fuel price variability, weather patterns (hot vs. mild summers, cold vs. mild winters), and a number of other factors affecting generation dispatch that are misrepresented or missed entirely by using a single year.

AECC recommends using a baseline timeframe of the average of calendar years 2005 through 2012, subject to a caveat included in the next section about a single EGU in Arkansas that came online in December 2012. This would take into account years with both high natural gas prices and low natural gas prices as well as other factors such as weather variability and forced unit outages.

12. The proposed Rule needs to account for the annual CO_2 emissions for the John W. Turk, Jr. Power Plant.

The John W. Turk, Jr. Power Plant ("Turk") began commercial operation on December 20, 2012. Therefore, the only CO_2 emissions in EPA's database for 2012 were startup emissions and ten operational days for Turk. By contrast, in 2013, Turk operated in a manner that AECC considers a typical year for a baseload, coal-fired power plant, i.e. all year long.

Turk Plant CO_2 Emissions and Generation By Calendar Year			
Year	**CO_2 (tons)**	**Gross Load (MWh)**	**Commercial Operation Days**
2012	188,785.6	205,317	10
2013	3,687,004.3	4,070,792	365

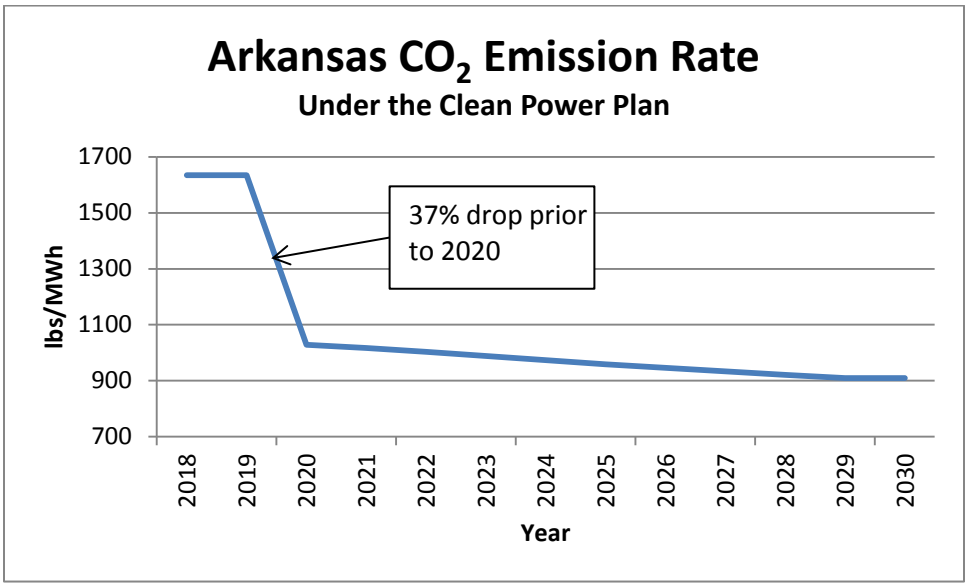
The table above lists the CO_2 emissions and gross megawatt-hours generated in 2012 and 2013 for Turk, given the number of commercial operation days.

The emissions from Turk must be factored into the baseline emissions levels in order for the proposed Rule to accurately capture the status quo. Because the 2012 baseline is not a representative sample as it pertains to Turk (or other factors, for that matter), AECC proposes a substitution of calendar year 2013 values, in lieu of 2012 values, for Turk in the eight-year average ('05-'12) proposed in the prior comment.

13. The proposed Rule's implementation schedule forces the actual compliance date to be 2020 – not 2030; utilities and states need more time to comply. The time given is simply insufficient.

Public statements made by EPA personnel since the proposed Rule's announcement indicate that there is a "glide path" to achieving CO_2 emission reductions and the proposed Rule itself even indicates emission reductions can be achieved in the short-term, through interim goal achievements. While there may be a perceived glide path between 2020 and 2030, AECC is concerned that the proposed Rule does not address the sharp drop in emissions that must be achieved *prior* to 2020. *See* Chart 2 below, which demonstrates that a 37% decrease in CO_2 emissions prior to 2020 must be achieved in Arkansas in order to maintain the average CO_2 emission rate of 968 lb/MWh from 2020 through 2029. For the purposes of this chart, AECC assumes that the current emission rate of 1,634 lb/MWh does not change until 2020. Arkansas' interim goal for 2020 through 2029 is 968 lb/MWh, and the final goal in 2030 is 910 lb/MWh.

CHART 2. ARKANSAS CO_2 EMISSION RATE AS PRESCRIBED BY THE CLEAN POWER PLAN



The proposed Rule's assumption that there is low-hanging fruit to be picked to achieve the interim targets as a means to soften the ultimate blow of drastic, long-term reductions is wrong. In order to meet the interim goals and 2030 targets, the large majority of emissions reductions must be made prior to 2020. Because utility forecasting and generation planning are long-term prospects, AECC will effectively have to comply with Building Blocks 1 and 2 prior to 2020, in order to achieve the interim goals. As mentioned in a previous comment, Building Block 1's proposed heat rate efficiency gains are greatly overstated meaning Arkansas will have to achieve more CO_2 emission reductions in Building Block 2 to comply with the proposed Rule. This means that Arkansas would have to lower its coal-fired capacity and increase its NGCC capacity even more than what is suggested in the proposed Rule to meet the goals.

Under the proposed Rule, a state has one year to submit a proposed SIP and a group of states has two years to submit a multi-state plan. Under either a single-state or a multi-state plan approach, there is an option to request a one-year extension which AECC feels confident most, if not all, states and groups of states will request.

If the final rule is issued in June 2015, a state will have to submit a proposed SIP by June 2017, at the outside, assuming an extension is granted. Then the EPA has to approve the SIP, the timeframe concerning which is uncertain but, if past is prologue, that approval could take another one to two years. So, it is likely that a final SIP will not be in place until June 2018, at the earliest, or even as late as calendar year 2019. Depending on the scenario, EGU operators could have as little as six to a maximum of 18 months to prepare for compliance under the final, approved SIP.

If many states are forced to reduce coal-fired generation to the point of shutting down coal-fired units, then it is very likely that those coal-fired units will be replaced with NGCC units. Based on AECC's estimates, it takes approximately five years to site, permit, and construct an NGCC facility. Also, as was discovered on a very cold period of time in the winter of 2014, explained above, the existing natural gas infrastructure in Arkansas is likely insufficient to handle the expected increase in demand resulting from more generation produced by NGCC facilities. Thus, the existing natural gas infrastructure must be upgraded in order to support the addition of NGCC units to a generation fleet in the near future.

Even if the proposed Rule were finalized today, meeting the emissions targets by the year 2020 would be extraordinarily difficult and very costly. Adding the additional time for the SIP process to be vetted and finalized makes the task almost impossible. In short, more time is needed between EPA's approval of a state's SIP and the beginning of the intermediate compliance period.

Based on the information above, AECC believes that the compliance dates should be extended no less than five (5) years, *i.e.*, the interim compliance period should begin no earlier than 2025, and the final compliance date should be no earlier than 2035.

14. It is likely that several existing coal-fired units will be forced to retire as a result of the proposed Rule, which will result in stranded assets for which cost recovery will be a significant concern for AECC and its members.

As mentioned in the previous comment, based on the proposed emissions targets, it is virtually certain that several existing coal-fired units will be forced to retire under the proposed Rule. Even the proposed Rule's own supporting technical documents make such predictions. If a generating unit, which takes years and hundreds of millions (if not billions) of dollars to build, is forced to prematurely close and it has not yet reached the end of its useful life, then the owner(s) of that generating unit will be left with stranded assets. Generating units are planned, designed and built to last a long time and they are capital-intensive undertakings, the costs of which are recovered during a long period of years. If a generating unit is shut down, the historical and present-day costs to build and maintain that unit do not simply go away, and there are additional costs in the form of decommissioning and the like associated with the closure.

Generally speaking, the costs associated with generating units, including the costs tied to those assets once they are stranded, are passed through to a utility's ratepayers. Thus, at the same time Arkansas ratepayers will have to cover the increase in fuel costs from switching from coal to natural gas and the costs associated with construction of new NGCC units, those same ratepayers will also have to cover the costs of the stranded assets, which have the potential to be very great, depending on which units are closed prematurely.

How to accurately account for such stranded assets is something that has, so far, not been addressed by the proposed Rule. That failure needs to be remedied in a fair way that accurately balances the utility's need for financial stability and the customer's need for reasonable rates.

COMPLIANCE ISSUES WITH BUILDING BLOCK 3

15. State ownership of renewable energy generation should be the state in which the generation is used.

The preamble to the proposed Rule states:

> The EPA is proposing that, for renewable energy measures, consistent with existing state RPS policies, a state could take into account all of the CO_2 emission reductions from renewable energy measures implemented by the state, whether they occur in the state or in other states. This proposed approach for RE acknowledges the existence of renewable energy certificates (REC) that allow for interstate trading of RE attributes and the fact that a given state's RPS requirements often allow for the use of qualifying RE located in another state to be used to comply with that state's RPS.[5]

As drafted, this language is ambiguous and the body of the final rule should clearly express the EPA's intention regarding which entity or state can claim the benefit of renewable energy dispatch. AECC believes EPA's intent is to allow renewable energy to be credited to the state where the renewable energy is used – not to the state where it is generated.

As explained more fully in comments below, Arkansas has very limited renewable energy potential. Arkansas will need to depend on the purchase of renewable energy generation in surrounding states to meet its renewable energy generation targets in the proposed Rule.

As illustrative examples, AECC currently has power purchase agreements ("PPAs") with wind farms in Kansas and Oklahoma. As a result of those PPAs, AECC is paying for the cost of such production and dealing with the consequences of generation variability associated with the use of generation from those facilities. Given the dispatch and financial consequences of those facilities are matters with which AECC must contend, the renewable energy generated from those facilities should count toward meeting the Arkansas state goals in the Clean Power Plan.

[5] Federal Register, Vol. 79, No. 117 at 34922 (June 18, 2014).

Also, without these AECC PPAs in place, construction financing of a portion of those wind farms in Kansas and Oklahoma likely would not have been possible; therefore, Arkansas should receive the renewable energy credits for AECC's portion of the output of those wind farms and any other renewable energy sources acquired in the future through contractual means.

On this point, the final Rule must be direct and unambiguous: The credits for renewable energy should belong to the state where the renewable energy is purchased and consumed. In addition, this clear directive should be included in the operative and binding portions of the final Rule itself, rather than the non-binding preamble of the rule.

16. AECC believes that a regional approach – in lieu of a state-by-state approach – would be the most efficient way to try to achieve the goals of the Clean Power Plan.

Under the proposed state-by-state compliance approach, if EPA agrees that renewable energy should be credited to the state where the energy is consumed as suggested in the previous comment, likewise CO_2 emissions from fossil-fired units should be credited to the state where the electricity from that unit is consumed.

If the approach to Clean Power Plan was a regional approach, then many of the compliance hurdles and constraints would be alleviated. This is particularly true given the vast majority of electricity is bought and sold within an RTO region, all of which (save Texas) have a multi-state footprint. In addition, studies by RTOs indicate costs are minimized using a regional approach. In fact, MISO has demonstrated through detailed analysis that regional approaches are more economic.[6] The electricity industry already operates on a regional basis, and electrons flow without regard to geographic conventions: What matters in the electric transmission business are the boundaries between transmission operators.

Based on all of the statements above and the logistics of providing electric utility service, AECC believes that the best approach to achieve the goals set forth by the Clean Power Plan is a regional approach – and not a state-by-state approach.

17. Existing hydropower facilities should be classified as renewable energy sources in order to meet compliance with the state goals set under the Clean Power Plan.

The preamble to the proposed Rule states:

> Hydropower generation is excluded from this existing 2012 generation for purposes of quantifying BSER-related renewable energy generation potential

[6] MISO presentation entitled "GHG Regulation Impact Analysis – Initial Study Results," September 17, 2014, at 3. Online at: http://www.eenews.net/assets/2014/09/18/document_ew_01.pdf.

> because building the methodology from a baseline that includes large amounts of existing hydropower generation could distort regional targets that are later applied to states lacking that existing hydropower capacity. The exclusion of pre-existing hydropower generation from the baseline of this target-setting framework does not prevent states from considering incremental hydropower generation from existing facilities (or later-built facilities) as an option from compliance with state goals.[7]

In its most basic definition, "renewable energy" is energy that comes from resources which are naturally replenished. Hydropower is just that, and hydropower plants emit zero CO_2. A hydropower plant receives its energy from replenishing rainwater, which drains to the river or water body where the hydropower plant is located. In fact, in Arkansas, hydropower facilities are defined as renewable energy by law. The Utility Facility Environmental and Economic Protection Act defines "renewable energy technology" as "any technology or source of energy that is not depletable, including without limitation solar, wind, biomass conversion, hydroelectric, or geothermal."[8] AECC has been a leader in hydropower for a long time and should not be denied the benefit of being environmentally responsible before its time.

Arkansas does not have the wind resource potential of the overwhelming majority of the five other states in the South Central region, specifically Kansas, Nebraska, Oklahoma, and Texas. Nor does Arkansas have appreciable amounts of solar resources using current technologies. Arkansas has the potential for developing great biomass resources, but it is currently unclear whether an electricity generating unit firing biomass will be considered by the final rule to be CO_2 neutral, thereby providing compliance benefits with the proposed Rule. Arkansas does have existing hydropower facilities and some developable hydropower potential as well.

In short, for the reasons listed above, states should be afforded compliance credit for existing hydropower facilities, independent of incremental additions, to meet the renewable standards or achieve compliance with the emission rate goals set by the Clean Power Plan. The final rule should allow states the flexibility to use hydropower facility production in meeting the state emissions reduction targets.

18. Arkansas' renewable energy growth potential target is skewed because the other states in the South Central region have much higher renewable energy growth potential than Arkansas.

When developing the compliance regions, the proposed Rule's stated intent was to create regions that group states with similar renewable profiles. In the South Central Region, of which Arkansas is a part, four of the other five states have significantly

[7] Federal Register, Vol. 79, No. 117 at 34867 (June 18, 2014).
[8] Ark Code Ann. § 23-18-503 (15) (emphasis supplied).

greater renewable energy ("RE") potential than Arkansas. Specifically, in addition to Arkansas, the South Central region includes Louisiana, Texas, Oklahoma, Kansas, and Nebraska. Four of the six states, excluding Arkansas and Louisiana, have significant RE potential, primarily wind. Nonetheless, under the proposed Rule, Arkansas and Louisiana are presumed to have —and if the rule is finalized as-is, will be required to rely on—as much RE as these other states.

Unfortunately, though, the proposed Rule fails to provide a systematic look at the actual renewable potential across the states in the South Central region. A more systematic analysis, which takes into account each state's unique opportunities and challenges in developing renewables, is needed before setting regional goals.

Of the fix states grouped with Arkansas in the South Central region only Kansas has a state-established renewable portfolio standard ("RPS") in place, yet the proposed Rule assumes that every state in the South Central Region can meet RE targets based on that single state's RPS. The use of a single state's policy to set regional goals is legally-unsupportable and arbitrary, especially in regions with only one existing RPS policy out of six total states.

19. As a follow up to the previous comment, the proposed Rule should not arbitrarily subject every state in a region to a single state's RPS.

The only state in the South Central region with an RPS is Kansas, which is set to achieve a mix of 20% generation from renewables by the year 2020. In the absence of an RPS in the other five states, the proposed Rule extrapolated Kansas' RPS to all six states in the region, a move that gets ahead of state regulators, state policy and law makers without regard to the achievability of such a standard.

Compounding the RPS extrapolation error is the fact that Kansas' RPS of 20% is capacity-based, not energy-based. The proposed Rule made an error using the capacity-based RPS value. By AECC's estimation, the energy-based standard is closer to 12%. Thus, even if the intention is to rely on a single state's RPS to set a regional target (an error in and of itself, in AECC's estimation), the South Central region's RPS should be no greater than 12%.

The 20% capacity-based number for Arkansas equates to a renewable energy target in 2029 of 4,709 GWh. But given Kansas' RPS is actually 12% (because Kansas' RPS is capacity-based), Arkansas' renewable energy target in 2029 would be, at most, 2,872 GWh, a figure that is 60% lower than the proposed Rule mandates.

An additional error in the proposed Rule is that it states that the <u>average</u> RPS within the region is applied across all states in the region. By contrast, the proposed Rule simply applied Kansas' 20% RPS to all six states, without taking an average. The average of 20%

applied to 6 states in the region is 3.33% capacity-based or 2.0% energy-based; as opposed to 20% capacity-based or 12% energy-based. That is because the correct mathematical calculation, for the purpose of extrapolating and enforcing an RPS average across a region, is the aggregate renewable energy percentage (20% capacity-based, or 12% energy-based) divided by the number of states (6) in the region. In sum, the RPS standard set for the South Central region is wrong on its face, and even with corrections, is unachievable.

20. The proposed Rule's 5.8% "at risk" nuclear assumption is wrong and should be removed from the state goal computation for Arkansas.

AECC knows of no nuclear generation in Arkansas that is considered or has been identified as "at risk," as all nuclear generation is currently operational and does not appear threatened; therefore, the 5.8% assessment regarding "at risk" nuclear that the proposed Rule assumes for each state should be removed from the Arkansas state goal computation. This incorrect assumption only serves to artificially lower Arkansas' target emission rate, which compounds the effort and money Arkansas will have to expend to achieve its already disproportionate 44% emissions reduction. Setting aside the question of whether a premise that "at risk" nuclear generation could be used to reduce emissions from a fossil unit has any legal basis, "at risk" nuclear should only be a factor for states that whose nuclear capacity is truly "at risk." Arkansas is not one of those states.

COMPLIANCE ISSUES WITH BUILDING BLOCK 4

21. AECC and its member-owners have a rich history of demand-side management and energy efficiency educational programs and services; however, it is unlikely that the State of Arkansas will get credit for AECC's past actions because it is not an improvement to existing load.

For more than 50 years, AECC has been educating its members about the difference between energy efficiency and conservation, residential building science, the importance of a balanced generation portfolio, environmental stewardship and the value of electricity. A major educational resource is our statewide publication, *Arkansas Living* magazine. Formerly *Rural Arkansas,* this magazine is provided monthly to more than 400,000 farms homes and businesses.

Over the decades we have empowered our member-owners by providing fact-based building science resources, energy savings solutions, and demand response programs. When implemented, the byproducts were conservation, improved quality of life and lower utility bills without sacrificing comfort and conveniences.

AECC and its member-owners have provided numerous educational, training and informational mediums designed for use by residential, farm, commercial and industrial members. Some of those resources are:

- www.smartenergytips.org web site resource.
- "Building Guidelines Booklet for Energy Efficiency." Available on web and in print.
- Smart Energy Tips monthly column in the *Arkansas Living* magazine.
- Sponsorship of weekly "Home Remedies" radio show.
- Building science and energy efficiency seminars.
- Energy efficiency model home program.
- Annual Energy Efficiency Home Makeover educational project.
- Social media resource https://www.facebook.com/SmartEnergyTips.org.
- Comprehensive energy audit programs, including blower-door and duct-blaster tests by BPI Building Analysts.
- Infrared thermal imaging services by ANST, ANSI, NETA Level I and II credentialed thermographers.
- Traveling Energy Efficiency Solutions Center educational demonstration trailer.
- Smart Energy Tips podcast available on iTunes or www.smartenergytips.org.
- Complete brochures series to include water heating, efficient lighting, heat pumps, geothermal heating and cooling, retrofitting manufactured homes and general efficiency tips.
- On bill financing of energy efficiency improvement loans.
- Commercial and industrial energy audit services.
- Water heating, air-conditioning and water pumping load control programs.

Even today, AECC and its member-owners remain steadfast with the purpose to equip our members with knowledge and resources to manage their electric consumption. In fact, AECC continues to remain exempt from the Arkansas Public Service Commission Conservation and Energy Efficiency Rules that apply to all other natural gas and electric utilities in Arkansas.

Fortunately, AECC and its member-owners have benefited from the unwavering commitment to energy efficiency education, awareness and implementation by reaping 50 years of "low-hanging" energy efficiency fruit. Unfortunately, as it is drafted, the proposed EPA Rule affords AECC zero benefit in the compliance assessment embedded in the Clean Power Plan for all of the current and past programs and services. Therefore, AECC believes that the final Rule should allow credit for past actions – including actions that occurred before the Clean Power Plan was proposed.

22. Increased energy efficiency lowers overall generation, which increases the emissions rate in the compliance calculation. This is an error in the proposed Rule that the final Rule must correct.

Increased energy efficiency is equivalent to negative load growth and negative load growth is equivalent to fewer megawatt-hours ("MWh") generated. In the proposed Rule's annual compliance calculation, the amount of MWh generated is in the denominator. For compliance purposes, lowering the denominator lowers the overall emission rate level, which increases the compliance burden with the Clean Power Plan. Such a reality creates a perverse disincentive to engage in aggressive energy efficiency measures, which is counter to the goal of reducing overall CO_2 emissions.

The guidelines for compliance with energy efficiency requirements written in the proposed Rule further complicate matters, as they impose limitations regarding when energy efficiency can be brought onto the electric utility system. Compliance can be demonstrated by adjusting the CO_2 emission rate based on pounds per CO_2 or MWh (lbs/CO_2 or lbs/ MWh) of affected generation that the new energy efficiency displaced. This brings up a concern for industry regarding how the lower emission rate or offset of affected generation is calculated and justified.

EPA should simplify in the final Rule regarding how energy efficiency is accounted for in the compliance calculation so that increased energy efficiency is a benefit to the state for compliance and not a potential detriment.

OTHER PROCEDURAL MATTERS

23. AECC supports the extension of deadlines for state and multi-state plans.

AECC supports the option to extend the SIP submittal deadline for states developing individual state plans and groups of states developing multi-state plans. Considering the complexity of the proposed Rule, states and multi-state groups will need as much time as possible to develop realistic and well-considered plans.

24. AECC requests that the final Rule detail what happens if a state or multistate plan is disapproved.

As detailed more fully above, under the proposed Rule's implementation timeline, there will only be six to 18 months between SIP approval and the beginning of the interim compliance period (2020), which is insufficient time for EGU operators to meet the compliance date – especially when it takes approximately five years to site, permit, and construct an NGCC facility.

An even greater concern is what happens in the event that EPA does not approve a state or multistate plan. To date, no federal implementation plan ("FIP") has been put forth, which is necessary for states to assess whether to propose their own SIPs, or rely on the FIP. In order to remedy this void, EPA is obligated to develop a FIP and the final rule should include a FIP for comparison and consideration.

25. As a final note, AECC shares the concerns, expressed already and anticipated in the future before the public comment period closes, about the legal underpinnings of the proposed Rule.

Without exhaustively citing and repeating legal arguments posed and provided by other utilities and trade associations, to date and in the future, AECC notes that it shares concerns about the legality and enforceability of portions of the proposed Rule, including whether Section 111(d) of the Clean Air Act (42 U.S.C. § 7411) enables EPA to undertake such drastic measures to alter the manner in which electric energy is produced in the United States: A concern that is heightened by the language of Section 112 of the Clean Air Act regarding regulation of "major sources," such as power plants. In addition, AECC questions the legal supportability of the proposed Rule regarding: the imposition of an RPS standard on Arkansas; the lack of acknowledgment of the "remaining useful lives of the sources in the category of sources to which such standard applies,"[9] i.e. many of the coal-fired units shut down or not dispatched as result of the proposed Rule have long useful lives remaining; and other aspects of the proposed Rule that have the potential to abridge or affect FERC's jurisdiction over grid reliability, specifically, and the utility industry, generally.

CONCLUSION

The above comments and technical matters represent AECC's current appreciation of the compliance hurdles associated with the proposed Rule as well as the effect implementation of the proposed Rule, if finalized as-is, will have on AECC and its members. AECC appreciates EPA's close and careful consideration of the technical and operational concerns expressed above and looks forward to continued public dialogue on a responsible path forward to ensure AECC can continue to satisfy its mission to provide affordable, reliable energy and services in a responsible manner to AECC's members.

[9] 42 U.S. Code § 7411(d).

Appendix A – Letter to Gina McCarthy

Arkansas Electric
Cooperative Corporation

Your Touchstone Energy Cooperative

1 Cooperative Way
P.O. Box 194208
Little Rock, Arkansas 72219-4208
(501) 570-2200

September 26, 2014

Gina McCarthy
Environmental Protection Agency
1200 Pennsylvania Avenue, Mail Code 1101A
Washington, DC 20460

Dear Gina:

We met at the Aspen Energy Institute this year and had the chance to visit briefly regarding the 111(d) rule. At that time you encouraged us to share our comments early to allow the EPA more time for evaluation. I applaud you for your efforts to reach out to all stakeholders regarding this rule.

I serve as President, CEO and Chief Affordability Office for Arkansas Electric Cooperative Corporation (AECC), serving 500,000 homes, farms and businesses in Arkansas, representing about 1 million ultimate consumers. We serve some of the most economically challenged citizens in the U.S. – Arkansas has the 5th lowest per capita income and the 2nd highest child poverty rate. Affordability is an acute concern for our members.

My main concern with 111(d) is the unfairness of the reduction burden placed on Arkansas when compared to surrounding states. Our 44% reduction target, the 7th highest in the nation, is higher than that of any surrounding state. In fact, all of the 18 states that have higher carbon emission rates (lbs/MWh) than Arkansas have lower reduction targets than ours. We bear a disproportionate burden of compliance in a state that can least afford it.

EPA's approach in setting targets based on a state's ability to switch fuel is akin to the IRS taxing people based on the size of their savings account, regardless of income. Arkansas is home to a large, "under-utilized" merchant-owned gas-based plant, the Union Power Partners plant in El Dorado. This plant has not been

competitive in the market and has significant transmission limitations, hence it doesn't run much.

We reflect the values of our member-owners, and our Board invested in renewable hydroelectric energy before it was the cool thing to do. Unfortunately we do not appear to get credit for that investment in the proposed rule. Our members have also entered into long-term agreements to buy wind capacity from Kansas and Oklahoma, yet the proposed rule does not allow us to take credit for this action either.

We are also concerned about the "glide path" in the emission reduction process. As the rule is currently written, 92% of our proposed reduction must occur by 2020. The proposed "glide path" looks more like a crash landing for those of us that are trying to keep energy reliable and affordable.

Finally, I remain convinced that compliance through fuel-shifting is most cost-effective when implemented over a wide geographic area. The RTOs are uniquely positioned to help utilities achieve compliance at the lowest possible cost, perhaps as little as half the cost of state-by-state implementation (per a recent MISO study). I encourage you to host an "RTO Summit" as soon as possible to allow industry to explore this concept further.

I appreciate your outreach and personal attention to these concerns in Arkansas. Thank you for requesting this letter, and thank you for all your efforts at crafting an improve rule that we can all support.

Sincerely,

Duane Highley
President/CEO

Comments of Arkansas Electric Cooperative Corporation
Re: U.S. Environmental Protection Agency (EPA) Proposed Rule on Greenhouse Gas Emission (GHG) from Existing Stationary Sources: Electric Utility Generating Units (Clean Air Act, Section 111(d))

Introduction

Arkansas Electric Cooperative Corporation (AECC) is an Arkansas not-for-profit electric utility owned by 17 distribution cooperatives across the state of Arkansas, which in turn are owned by the utility customers they serve (members). AECC's mission is to provide reliable, affordable, responsible electric service to its members. As a result, AECC is a consumer advocate representing more than 38 percent of the residential consumers in Arkansas. AECC's service territory extends into 74 of Arkansas's 75 counties, and covers more than 60 percent of the state's geographic area.

AECC has reviewed EPA's proposed Rule on GHG Emissions from existing sources and has concerns about the effect of the proposed Rule, and the resulting compliance obligations, on AECC's members in the following five categories:

1. Increased Cost;
2. Economic Inequities;
3. Decreased Reliability;
4. Premature Retirements and Future Utility Planning Complications; and
5. Errors in the proposed Rule and Compliance Hurdles.

Preliminary comments on the proposed Rule are summarized below. Details, analyses, and other information for categories 1 and 2 listed above are presented as appendices to this document.

Summary

(1) Increased Cost

AECC has completed a preliminary analysis of the costs of compliance with the proposed Rule to AECC's members. This preliminary analysis reveals that AECC's costs will increase primarily due to a shift in the fuel source used for AECC's power plants from coal to natural gas. Using historic, current and projected costs for coal, natural gas, and the cost to replace coal capacity retired solely as a result of efforts to comply with the proposed Rule, AECC anticipates that a typical residential member's bill will increase 10 percent to 30 percent compared to that same member's bill today, depending on the exact measures implemented.

(2) Economic Inequities

Arkansas is an economically-disadvantaged state and currently ranked 46th in per capita income nationally. Notwithstanding, the proposed Rule requires Arkansas to reduce GHG emissions by 44 percent, which is the sixth highest reduction proposed for any state. This disproportionate burden leads to economic inequity for Arkansas, while simultaneously placing Arkansas at a

disadvantage for attracting economic development to the state. National Economic Research Associates, Inc. (a global firm of economic, finance and business experts) estimates between 15,000 and 57,000 jobs will be lost in the multi-state region that includes Arkansas as a result of the proposed Rule's implementation.

In addition to the loss of jobs from plant and associated industry closures, the average Arkansas household spends about 20 percent of its after tax income on energy, with electricity representing more than 77 percent of that cost. Sharp increases in electricity costs will be especially hard on lower income households, as cost of living or salary increases will not likely keep pace with rising electricity prices. Similarly, the lower one's income, the greater the proportion of that income is spent on utility services. Finally, the proposed Rule will result in the forced, early retirement of coal plants, which provide a stable tax and employment base for the communities in which they are located. Such plant closures will further exacerbate the economic strife already being experienced in those communities, several of which are in high unemployment counties within Arkansas.

(3) Decreased Reliability

During this past winter (2014), AECC and many other power producers across the country, experienced natural gas delivery interruptions (called "curtailments") solely due to gas pipeline constraints. Although 2014's winter was unusually cold, the inability to get natural gas to fuel power plants, and the resultant cost increases experienced, heighten the concerns about whether the natural gas pipeline system will be ready and able to accommodate a large increase in demand, when it cannot satisfy existing demand during high-volume periods. By the same token, the winter 2014 curtailments occurred when natural gas deployment was significantly below what the proposed Rule will require it to be in the future, because the proposed Rule calls for a shift from coal to natural gas in power production. Given, natural gas cannot be stored for future use onsite, power plants can only run on gas if the gas is delivered when needed. This uncertainty about supply undoubtedly will affect reliability and could even affect safety, if power cannot be delivered during peak utility usage times (such as for heating on a very cold winter day or air conditioning on a very hot summer day). Given the paramount importance the natural gas delivery system will have under the proposed Rule's power supply regime, qualitative and comprehensive studies are needed to assess the capabilities of the natural gas pipeline system and the vulnerability of the system to attacks with resultant impacts to electricity supply.

(4) Premature Retirements and Future Utility Planning Complications

Power plants, regardless of the fuel used, are long-term investments engineered with life expectancies well beyond 30 years with many plants operating 50 to 60 years. If the proposed Rule becomes final in June 2015, AECC will be faced with untenable decisions on the selection of future generation technology and will likely be forced to opt singularly for NGCC plants to meet the proposed 2030 emissions targets, given the state of current power production technology. That said, the proposed Rule's emissions targets extend beyond the year 2030, and the next phase of targets ratchet up to require an 80 percent reduction by the year 2050.

In order to achieve an 80 percent reduction by 2050 compared to 2012 emission levels, even though NGCC technology is required in the near-term to meet the year 2030 targets, such technology cannot meet the 2050 GHG target, making NGCC investments obsolete long-term. Notwithstanding the fact that current technology cannot meet the emissions standards projected to be in place in the next 35 years or so, AECC and similarly-situated utilities have a statutory obligation to provide an essential public service. Thus, utilities cannot wait for technology to catch up because they have to provide utility service in the meantime. As a result, AECC will be forced to make costly long-term decisions that will produce only short- or medium-term results. Another consequence of the forced closure of the existing fleet of generating units that cannot achieve the more stringent emissions targets will be accelerated depreciation and other stranded costs that result from retiring generation resources well ahead of their economic or useful lives. In short, new technologies are required to achieve the long-term reductions required by the proposed Rule and utilities will need more latitude and time to make better, cost-based planning decisions in the interim.

(5) Errors in the Proposed Rule and Compliance Hurdles

As part of its preliminary analysis, AECC discovered several errors or open questions associated with the proposed Rule's assumptions that will affect compliance with the proposed Rule. Each of these matters needs correction and/or clarification:

Errors in the Proposed Rule

1. Reliance on a baseline year of 2012 (or any single year, for that matter) disregards the variability of electric power generation resulting from anomalous weather years, unanticipated outages and other facts. In order to accurately assess historical emission levels, a multi-year baseline must be used.
2. The proposed Rule's current baseline year (2012) does not include annual emissions from the John W. Turk, Jr. Power plant. The plant was placed in service in December 2012.
3. The proposed Rule indicates NGCC capacity in Arkansas is currently 5,588 MW. However, AECC's analysis shows there is a maximum of 5,114 MW of NGCC capacity in the state.
4. The proposed Rule assumes existing power plants can improve the efficiency of their power production by 6 percent, which is not technically feasible for the plants in Arkansas. Even with significant time and the investment of tremendous capital, the most likely efficiency improvements will be in the 1 percent to 2 percent range, at most.
5. Contrary to the proposed Rule's assumption, the nuclear units in Arkansas are currently not "at risk" of shutting down. This inaccurate assumption artificially lowers Arkansas's target emission rate.

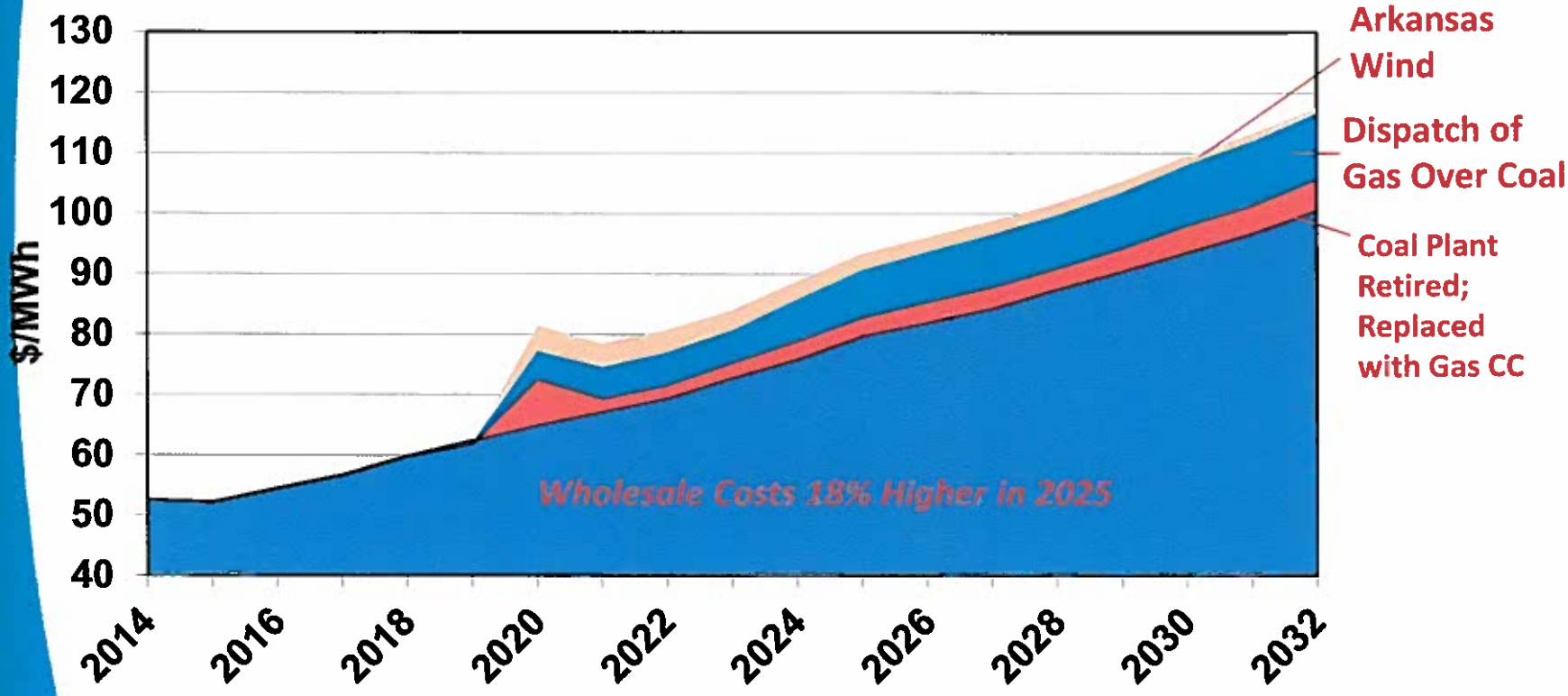
Compliance Hurdles with the proposed Rule

6. In order to prepare adequately to meet the 2030 emissions target, given the long-term nature of utility operations planning, the majority of the steps taken to achieve those emissions reductions will be made prior to 2020. Additional time for compliance with the proposed Rule would give utilities more flexibility in the near-term to meet the initial

targets, and additional time in this instance would lower cost and other impacts on electric utility consumers.

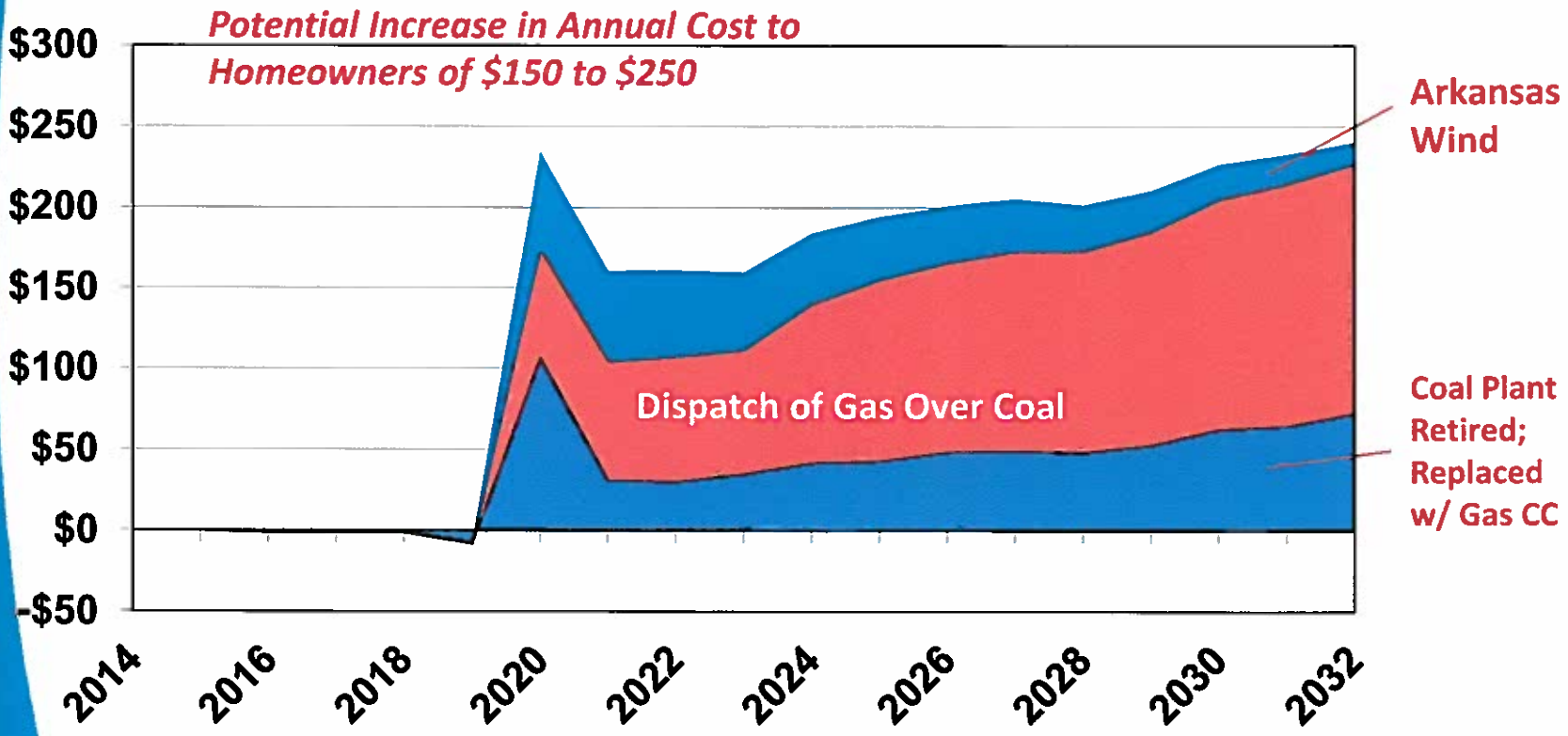
7. The proposed Rule disproportionately targets states with under-utilized NGCC capacity without any analysis concerning why the capacity is under-utilized. In Arkansas' case, for example, the Union Power Partners Station is under-utilized due to transmission constraints among other reasons, issues that no amount of redispatch, as contemplated by the proposed Rule, can address.
8. As the proposed Rule is currently drafted, it is unclear which state has the contractual rights to renewable generation when the renewable generation is produced in one state but consumed in another. Which state can claim the credit for such emission lowering activity is a policy matter that, currently, is unclear and needs to be clarified.

Wholesale Power Costs per MWh
Effect of Clean Power Plan, "Primary Scenario"

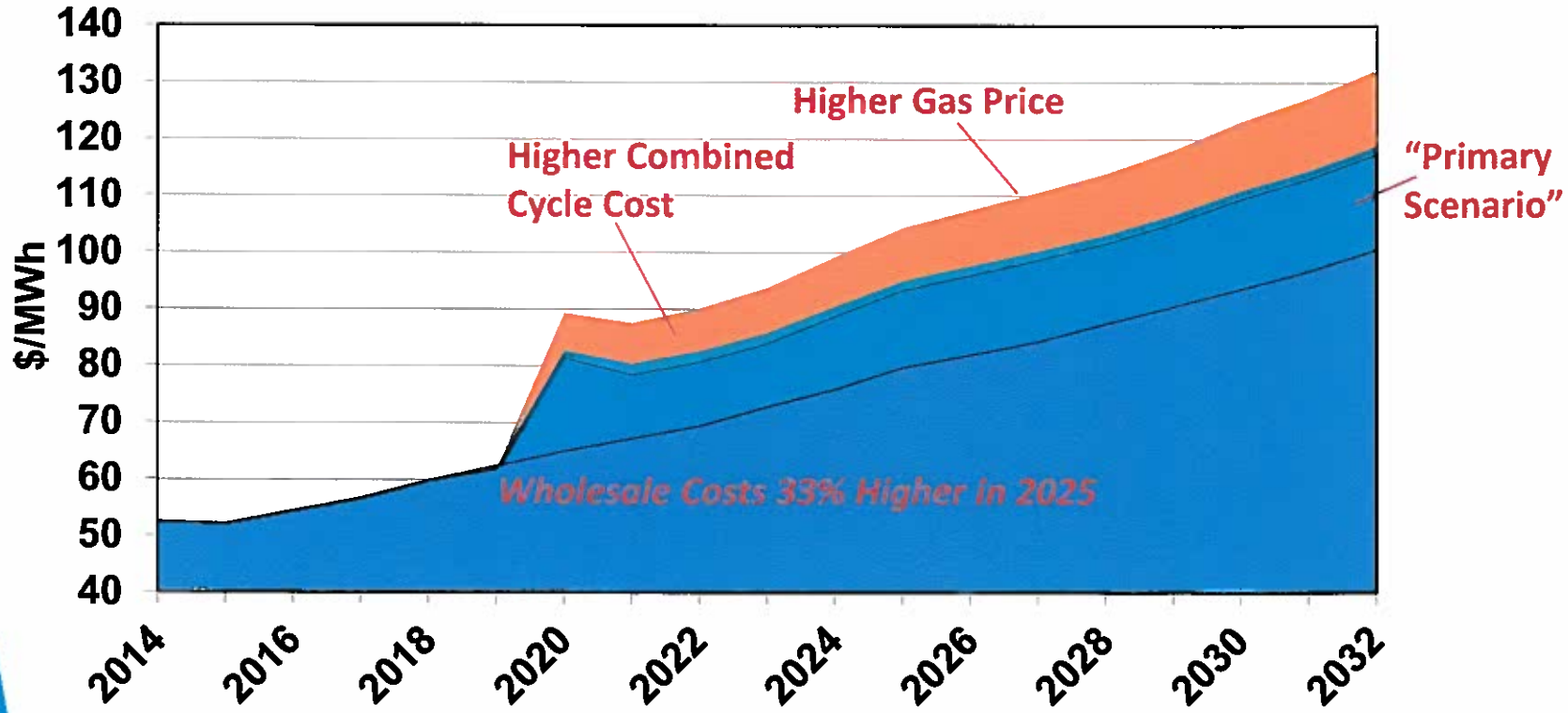


2020 cost includes write off of $106 million of undepreciated portion of Coal Plant

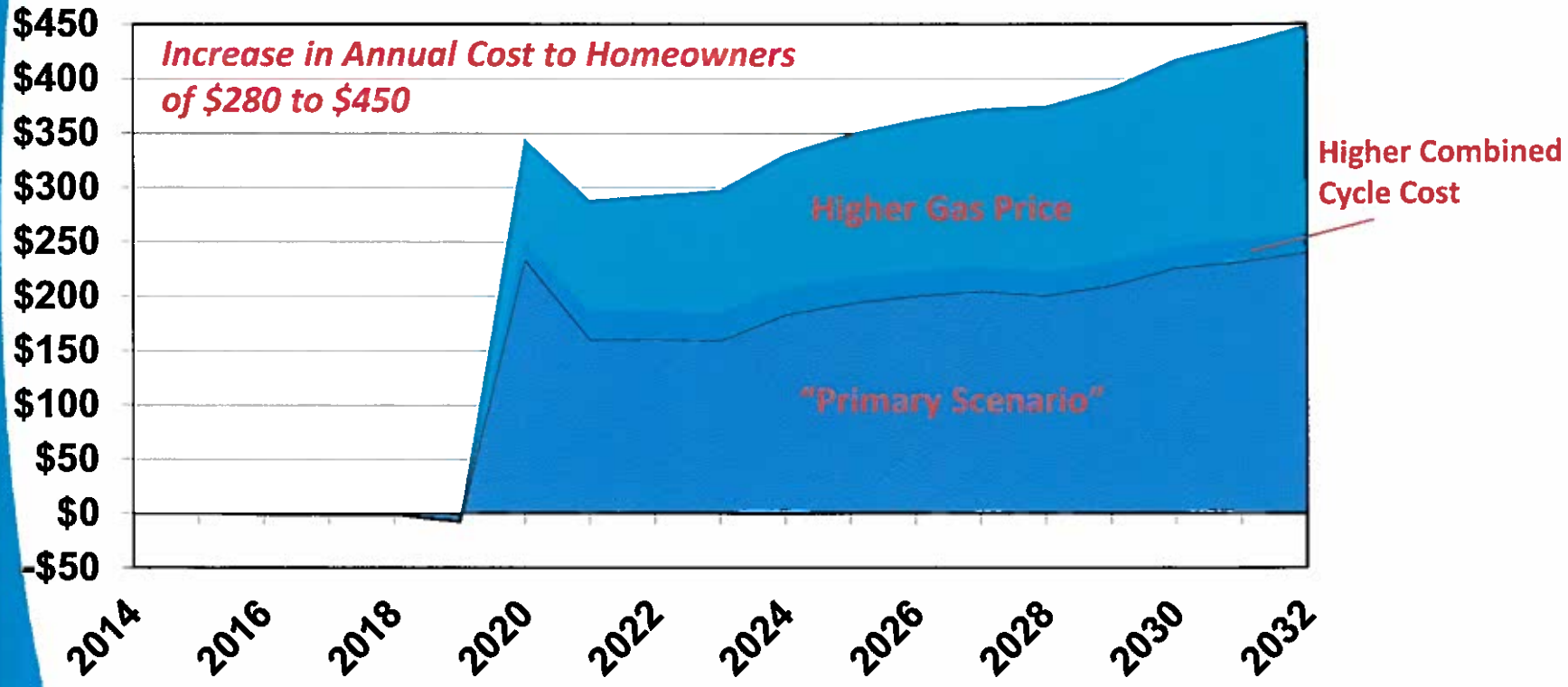
Increase in Annual Residential Cost
Effect of Clean Power Plan, "Primary Scenario"



Wholesale Power Costs per MWh
Potential Effect of EPA's Clean Power Plan

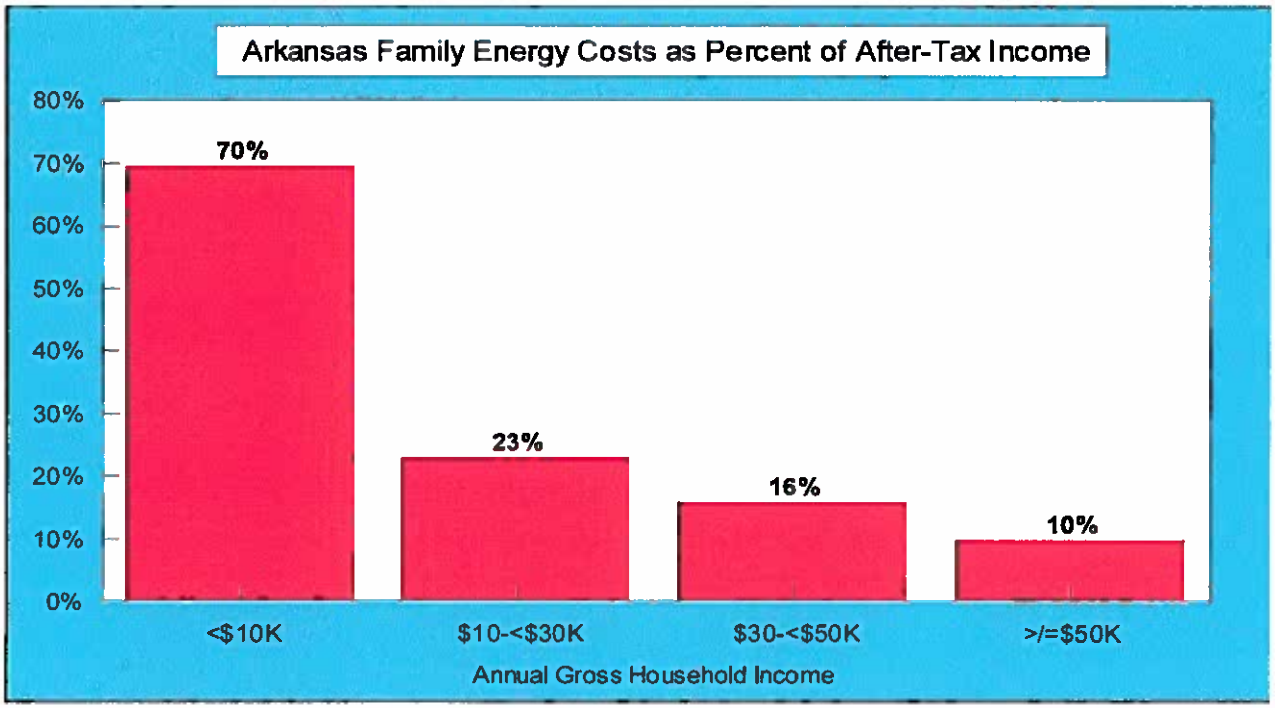


Increase in Annual Residential Cost
Potential Effect of EPA's Clean Power Plan



Energy Cost Impacts on Arkansas Families

Energy prices and stagnant incomes are straining the budgets of Arkansas's lower- and middle-class families. Arkansas households with gross annual incomes below $50,000, representing 61% of Arkansas's households, spend an estimated average of 20% of their after-tax income on energy. Energy bills for the poorest households earning less than $10,000 represent 70% of their family incomes, before accounting for any energy assistance programs. Increased energy costs are competing with other necessities for lower- and middle-income family budgets across Arkansas.



December 2013
www.americaspower.org

Energy Cost Impacts on Arkansas Families

This paper assesses the impact of energy costs on Arkansas households using energy consumption survey data and current energy price data from the U.S. Department of Energy's Energy Information Administration (DOE/EIA).[1] Energy costs are summarized by household income group using 2013 Arkansas data from the U.S. Bureau of the Census.[2] Energy expenditures as a percentage of after-tax income are estimated for the effects of federal and state income taxes and federal social insurance payments.

Key findings include:

- Some 61% of Arkansas's families have gross annual incomes of $50,000 or less, with an average after-tax income of $22,116. These households collectively receive 27% of Arkansas's total household income. The median gross household income of Arkansas families in 2012 was $40,112, 21% below the national median household income of $51,017. The average gross income of Arkansas households in 2012 was $54,116, 24% below the national average of $71,274.

- Measured in constant 1990 prices, residential electricity prices in Arkansas are 34% below their 1990 levels. After more than a decade of sharp price increases, residential natural gas prices are 13% above their 1990 levels. The relative low price of electricity in Arkansas reflects in part the state's dependence on low-cost domestic coal for a majority of its electric power supplies. In 2013, Arkansas will generate approximately 53% of its electricity from domestic coal.

- Energy costs are consuming the household incomes of Arkansas's low- and middle-income families at levels comparable to other necessities such as housing, food, and health care. Arkansas families spend an estimated average of 12% of their after-tax incomes on energy. The 683,000 Arkansas households earning less than $50,000 devote an estimated average of 20% of their after-tax incomes to energy.

- The 111,000 poorest families in Arkansas, living well below the federal poverty line and earning less than $10,000 per year, are being squeezed hardest by energy cost increases. Many of these families receive state and other energy assistance to help reduce energy costs. Yet for most lower-income families and for the 34% of Arkansas households receiving Social Security, energy costs are competing with other basic necessities for the family budget.

Arkansas Household Incomes

U.S. Census Bureau data on Arkansas household incomes in 2012 (the most recent available) provide the basis for estimating the effects of energy prices on consumer budgets.[3] The table below shows estimated 2012 after-tax incomes for Arkansas families in different income brackets. The Congressional Budget Office has calculated effective total federal tax rates, including individual income taxes and payments for Social Security and other social welfare programs.[4] State income taxes are estimated from Arkansas income tax rates.[5]

Arkansas households by pre-tax and after-tax income, 2012

Pre-tax annual income:	<$10K	$10-<$30K	$30-<$50K	≥$50K	Total/avg.
Households (Mil.)	0.111	0.330	0.242	0.461	1.143
Pct. of total households	10.4%	29.2%	21.4%	39.1%	100.0%
Avg. pre-tax income	$4,975	$19,545	$39,544	$98,387	$54,116
Effec. fed tax rate %	1.8%	4.5%	10.6%	19.5%	11.6%
Est. state tax %	0.0%	2.5%	4.0%	6.5%	4.2%
Est. after-tax income	$4,885	$18,176	$33,771	$72,806	$45,587

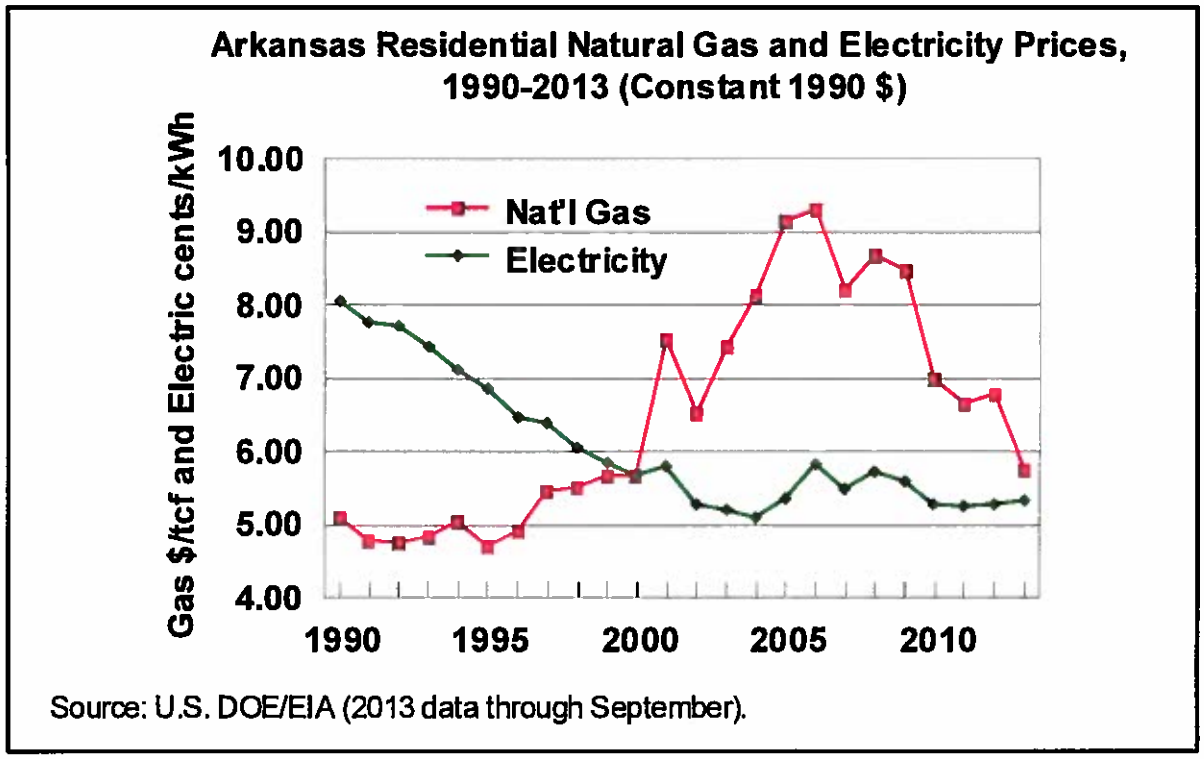
Some 61% of Arkansas families had estimated pre-tax incomes below $50,000 in 2012. After federal and state taxes, these families had average annual incomes of $22,116, equivalent to an average monthly take-home income of $1,843. Collectively, these households received 27% of Arkansas' total household income in 2012. The top-4% of households, those earning more than $150,000 annually, received 17% of total income. In 2012, the median gross household income of Arkansas families was $40,112, 21% below the national median household income of $51,017.[6] The average gross income of Arkansas households was $54,116, 24% below the national average.

Residential and Transportation Energy Expenses

The principal residential energy expenses are for electricity and natural gas for home cooling, heating, and household appliances. Many Arkansas homes also use propane fuel and other heating sources such as wood.

As shown in Chart 1, the price of residential electricity is 34% below its level in 1990, measured in real, inflation-adjusted terms.[7] The relative low price of electricity in Arkansas reflects in part the state's dependence on low-cost domestic coal for a majority of its electric power supplies. In 2013, Arkansas will generate approximately 53% of its electricity from domestic coal. After more than a decade of sharp price increases, the real price of residential natural gas is 13% above its 1990 level.[8] Recent natural gas price decreases primarily reflect the development of new gas supplies.

Chart 1



Source: U.S. DOE/EIA (2013 data through September).

Energy Expense Estimates

Estimated household energy expenses for Arkansas are based upon DOE/EIA residential electric and natural gas sales data for Arkansas through September 2013. Total household energy costs are distributed by income category using the most recent DOE/EIA residential energy survey data.

Gasoline prices have declined from their 2012 peaks, but are above $3.25 per gallon in many areas. Gasoline accounts for the largest single increase in consumer energy costs since 2001. EIA's November 2013 Short-Term Energy Outlook estimates 2013 average retail gasoline costs at $3.56 per gallon, nearly two and a half times higher than the $1.47 per gallon price in 2001.

DOE/EIA's 2001 Survey of Household Vehicles Energy Use (December 2004) provides information on regional gasoline use by household income category.[9] These regional gasoline consumption data are updated using EIA's 2013 national average retail gasoline price estimate of $3.56 per gallon. To be conservative, household gasoline consumption is reduced by 17% from 2001 levels, reflecting trends in retail gasoline sales.[10]

The table below summarizes estimated Arkansas household energy expenses by income group, with the percentage of after-tax income represented by energy costs:

Estimated Arkansas household energy costs by income category

Pre-Tax Annual Income:	<$10K	$10-<$30K	$30-<$50K	≥$50K	Average
Residential energy $	$1,529	$1,614	$1,833	$2,416	$2,048
Electric $	$1,182	$1,228	$1,424	$1,833	$1,563
Natural Gas $	$226	$252	$266	$380	$316
Other* $	$121	$135	$142	$203	$169
Gasoline $	$1,871	$2,572	$3,490	$4,733	$3,540
Total energy $	$3,400	$4,186	$5,323	$7,149	$5,588
Energy % of after-tax income	70%	23%	16%	10%	12%

*Other includes LPG and wood.

The share of household income spent for energy falls disproportionately on lower- and middle-income families earning less than $50,000 per year. The 61% of Arkansas households earning less than $50,000 spend an estimated average of 20% of their after-tax income on energy. While many lower-income consumers qualify for energy assistance, these government programs are hard pressed to keep pace with the escalation of energy prices. The large share of after-tax income devoted to energy by lower-income groups poses difficult budget choices among food, health care and other necessities.

Disproportionate Impacts on Senior Citizens

The impacts of increased energy costs are falling disproportionately on Arkansas's elderly Social Security recipients, representing 34% of the state's households. In 2012, Social Security recipients in Arkansas had average household Social Security incomes of $16,022.[11] Some 17% of Arkansas households had additional retirement income averaging $19,163 before taxes.

Unlike young working families, many fixed income seniors are limited to cost-of-living increases that may not keep pace with energy prices. Maintaining the relative affordability of electricity and natural gas prices, and increasing low-income energy assistance, are essential to the wellbeing of Arkansas' senior and lower-income citizens.

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Acknowledgment: This paper was prepared for ACCCE by Eugene M. Trisko, an energy economist and attorney in private practice. Mr. Trisko has served as an attorney in the Bureau of Consumer Protection at the Federal Trade Commission and as an expert economic witness before state public utility commissions. He represents labor and industry clients in environmental and energy matters. Mr. Trisko can be contacted at emtrisko@earthlink.net.

End Notes

[1] Data on residential energy consumption patterns by income category are from U.S. Department of Energy, Energy Information Administration, 2009 Survey of Residential Energy Consumption (2012). Arkansas electricity, natural gas and other residential energy costs are based on 2013 state data from U.S. DOE/EIA Electric Power Monthly (November 2013), Natural Gas Monthly (November 2013), and State Energy Data System data available at www.eia.gov/state/seds. 2013 gasoline price estimates are from DOE/EIA Short Term Energy Outlook (November 2013).

[2] Household incomes in Arkansas by income category are derived from the distribution of household income in U.S. Census Bureau, American Fact Finder, Arkansas Selected Economic Characteristics: 2012 (2013).

[3] *Id.*

[4] Congressional Budget Office, "Effective Federal Tax Rates Under Current Law, 2001 to 2014," (August 2004). Effective federal tax rates for the income categories employed in this paper were interpolated from CBO's tax rates by income quintile and adjusted for changes in the American Taxpayer Relief Act of 2013.

[5] State tax data are from state tax rates compiled by the Tax Foundation (2012).

[6] U.S. Census Bureau, American Fact Finder, Arkansas Selected Economic Characteristics 2012 (2013).

[7] U.S. DOE/EIA, Electric Power Monthly (November 2013).

[8] U.S. DOE/EIA, Natural Gas Monthly (November 2013).

[9] U.S. DOT, 2001 National Household Travel Survey, "Summary of Travel Trends," (December 2004).

[10] DOE/EIA data indicate that retail gasoline consumption in barrels per day declined by 17% from 2001 to 2013 on a household-adjusted basis. The household gasoline expenditure estimates presented in this report are comparable to the total national expenditure data reported in DOT's 2009 National Household Travel Survey after adjustment for gasoline price differences.

[11] U.S. Census Bureau, American Fact Finder, Arkansas Selected Economic Characteristics: 2012 (2013).

ACCCE
AMERICAN COALITION FOR CLEAN COAL ELECTRICITY

ARKANSAS AND EPA'S PROPOSED CARBON REGULATIONS

- In 2013, Arkansas relied on coal for slightly more than half of its electricity; natural gas, nuclear and renewables provided the rest of the state's electricity supply.[i]

- Arkansas' balanced mix of electricity sources has resulted in some of the lowest electricity prices in the U.S. The state's electricity prices were 22 percent below the national average in 2013.[ii]

- Despite low electricity prices, many Arkansas families are struggling with high energy prices. Low-income and middle-income families in Arkansas spend an average of 20 percent of their after-tax income on energy, and lower income families are especially vulnerable to further increases in energy prices, such as those caused by EPA regulations.[iii]

- Recently, EPA proposed regulations to reduce carbon dioxide (CO_2) emissions from existing coal-fired and natural gas-fired power plants in 49 states, including Arkansas. The regulations and EPA's explanation comprise over 1,600 pages. There are many legal and policy questions about the proposal, but what we know so far is that -

- EPA's proposal will force Arkansas to fundamentally change the way the state generates electricity, the way Arkansas consumers use electricity, and the price of electricity. Under the proposal, Arkansas would -

  - Reduce the CO_2 emissions rate of its electric generating fleet by 44 percent, the *sixth largest* emissions reduction requirement of any state,[iv]
  - Increase electricity from natural gas by 120 percent,[v]
  - Reduce electricity from coal by 64 percent,[vi]

- Retire 3,700 megawatts of coal-fired electric generating capacity, representing 68 percent of the state's coal capacity,[vii]
- Increase electricity from renewable energy sources by 184 percent,[viii] and
- Reduce consumers' use of electricity by 10.3 percent.[ix]

- EPA acknowledges that energy prices will increase and jobs will be lost because of its proposal.[x] However, further analysis will be necessary to understand fully the impacts of EPA's proposal on Arkansas and other states.

- Analysis of a similar (but not exactly the same) carbon reduction proposal shows significant negative impacts on Arkansas, such as:

  - Electricity prices could increase by as much as 18 percent per year for Arkansas consumers,
  - 57,000 jobs per year could be lost in the multi-state region that includes Arkansas, and
  - Natural gas prices could increase nationwide by as much as 12 percent.[xi]

June 2014

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[i] U.S. Energy Information Administration, *Electric Power Monthly*, February 2014.
[ii] *Ibid.*
[iii] Eugene M. Trisko, *Energy Cost Impacts on Arkansas Families, 2001 – 2014*, December 2013.
[iv] The percentage reduction is relative to emission rates in 2012. The Arkansas emissions rate goal is from Table 8, pages 346 – 348, of EPA's proposal, and 2012 emission rates are found in EPA's *Goal Computation Technical Support Document*, June 2014. http://www2.epa.gov/sites/production/files/2014-05/documents/20140602tsd-goal-computation.pdf.
[v] EPA, *Technical Support Document (TSD) for the CAA Section 111(d) Emission Guidelines for Existing Power Plants: Goal Computation Technical Support Document*, June 2014, Appendix 1.
[vi] *Ibid.*
[vii] IPM model results from http://www.epa.gov/airmarkets/powersectormodeling/cleanpowerplan.html.
[viii] EPA, *Technical Support Document (TSD) for the CAA Section 111(d) Emission Guidelines for Existing Power Plants: GHG Abatement Measures*, June 2014, Table 4.9.
[ix] EPA, *Regulatory Impact Analysis for the Proposed Carbon Pollution Guidelines for Existing Power Plants and Emission Standards for Modified and Reconstructed Power Plants*, June 2014, Table 3.3.
[x] EPA, *Regulatory Impact Analysis for the Proposed Carbon Pollution Guidelines for Existing Power Plants and Emission Standards for Modified and Reconstructed Power Plants*, June 2014.
[xi] NERA, *A Carbon Dioxide Standard for Existing Power Plants: Impacts of the NRDC Proposal*, March 2014.

Appendix B – Increased Cost

Arkansas Electric Cooperative Corporation

Appendix B: Increased Costs

Anticipated Increased Costs to AECC's Members Resulting from Compliance with the Clean Power Plan

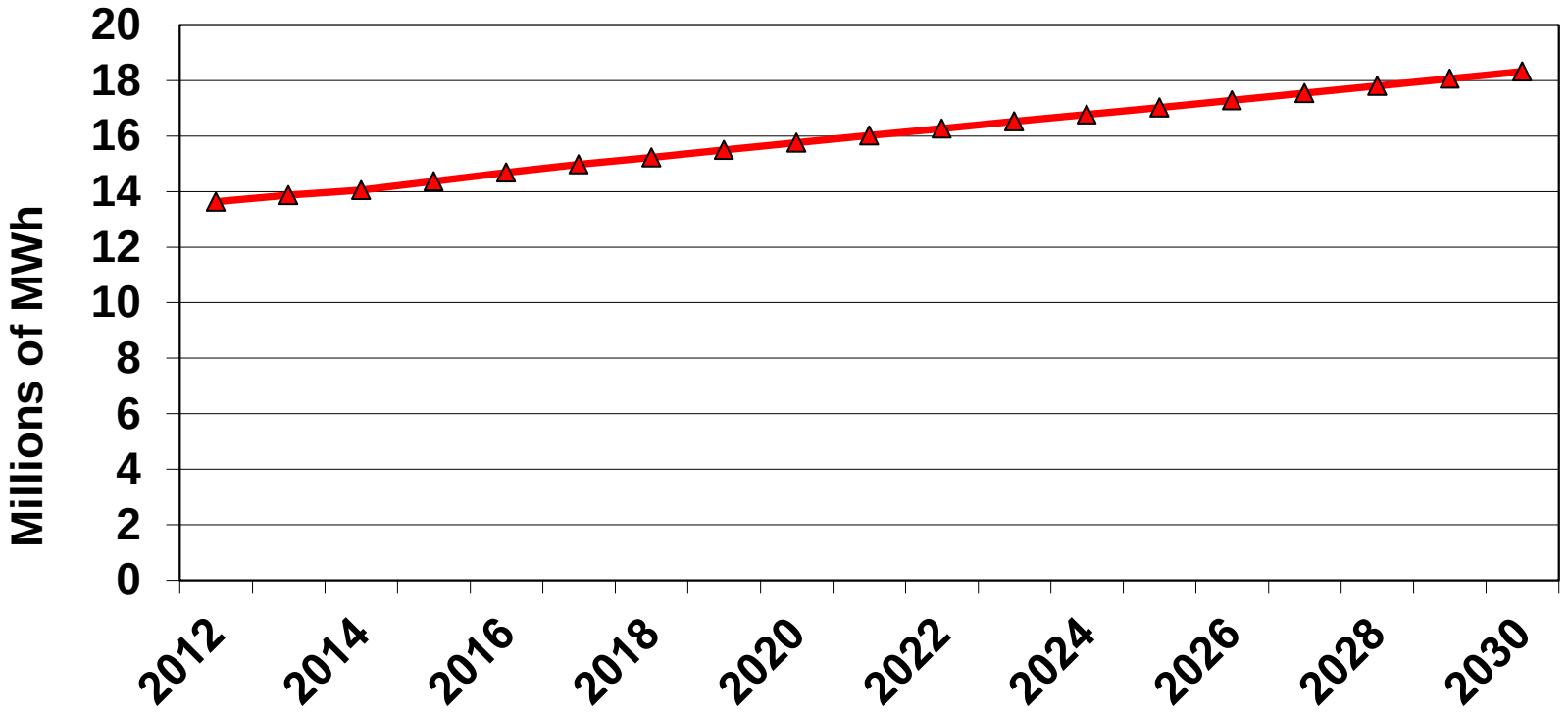
AECC's Analysis of Costs of the Proposed Clean Power Plan

- **AECC Generation Serving AECC Load**
- **"Primary Scenario":**
  - **Coal Plant Retired in 2020 (worst case)**
  - **Gas Combined Cycle Built to Replace Coal Plant**
  - **Gas Combined Cycle Dispatched Ahead of Coal**
  - **325 MW (1,000 GWh) of Arkansas Wind Added**
  - **Gas Price and Gas Combined Cycle Cost Unaffected by Clean Power Plan**
- **Sensitivity Cases**
  - **$1/MMBtu Higher Gas Price**
  - **2020 Gas Combined Cycle Capital Cost 50% Higher**

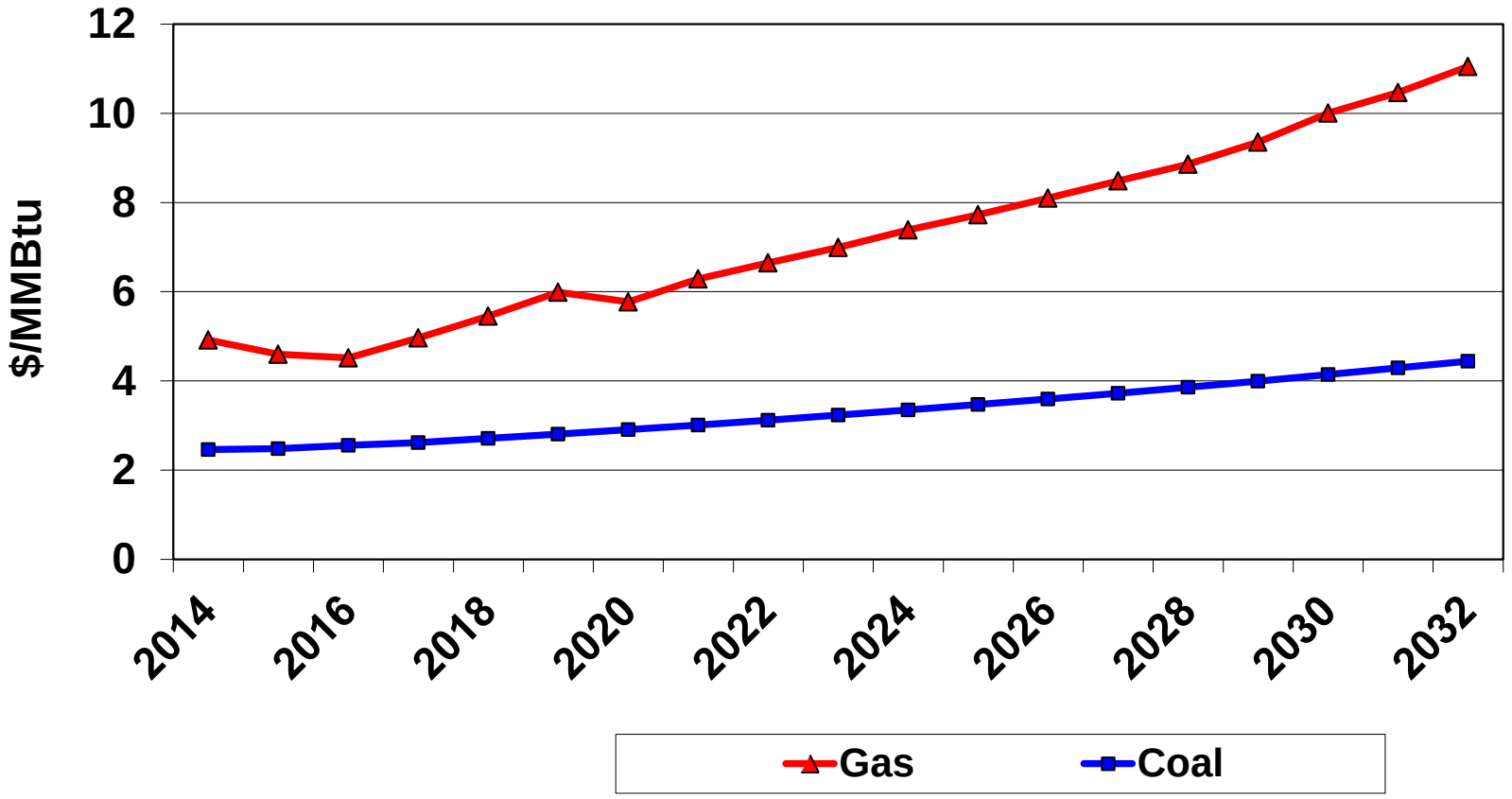
Analysis To-Date Does Not Include:

- **State-wide or Regional Analysis**
- **Increased Energy Efficiency**
- **Increased Gas Infrastructure or Gas Transportation Costs**
- **Increased Electric Transmission Rates**
- **Analysis of Reliability Impacts**

Load Forecast
AECC Energy Sales to Members



Fuel Price Forecasts

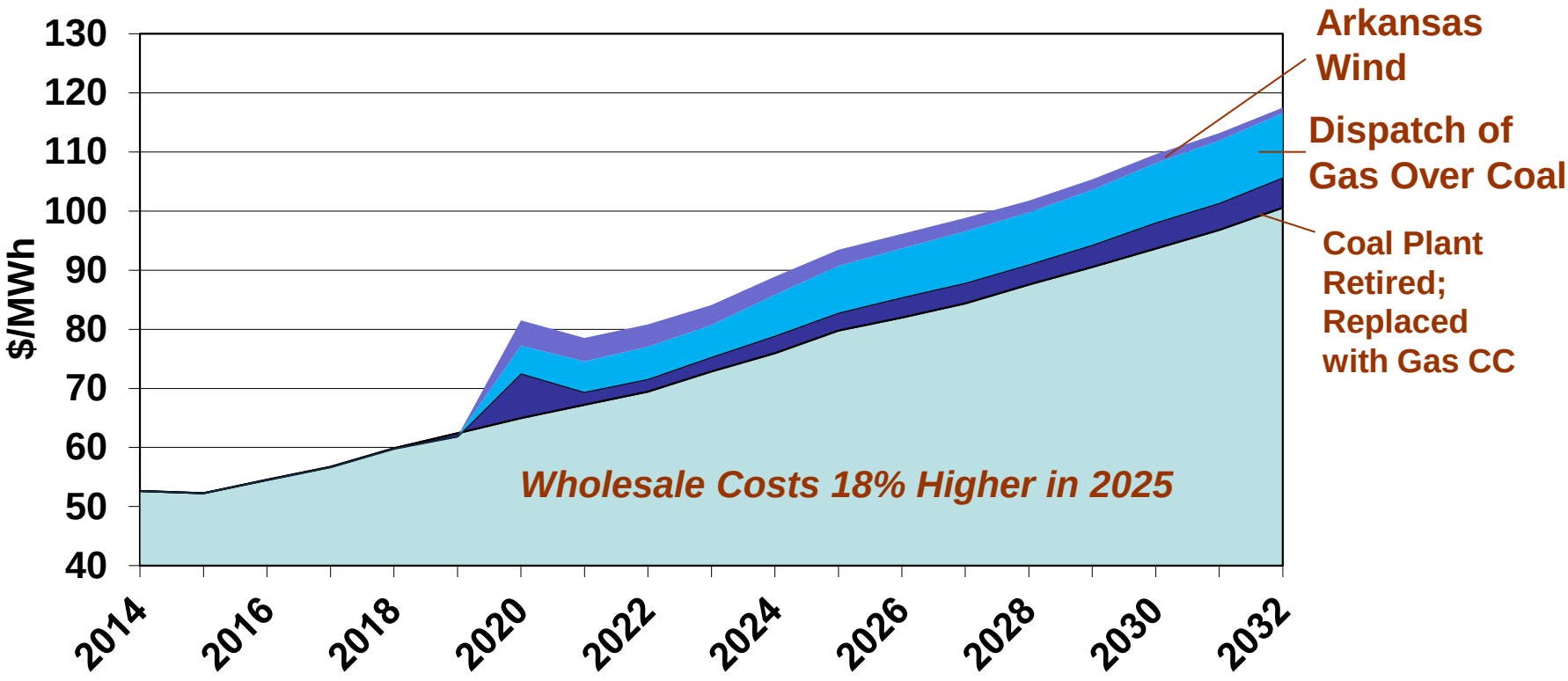


Gas forecast after 2018 based on the forecast from the Energy Information Administration

Arkansas Wind Assumptions

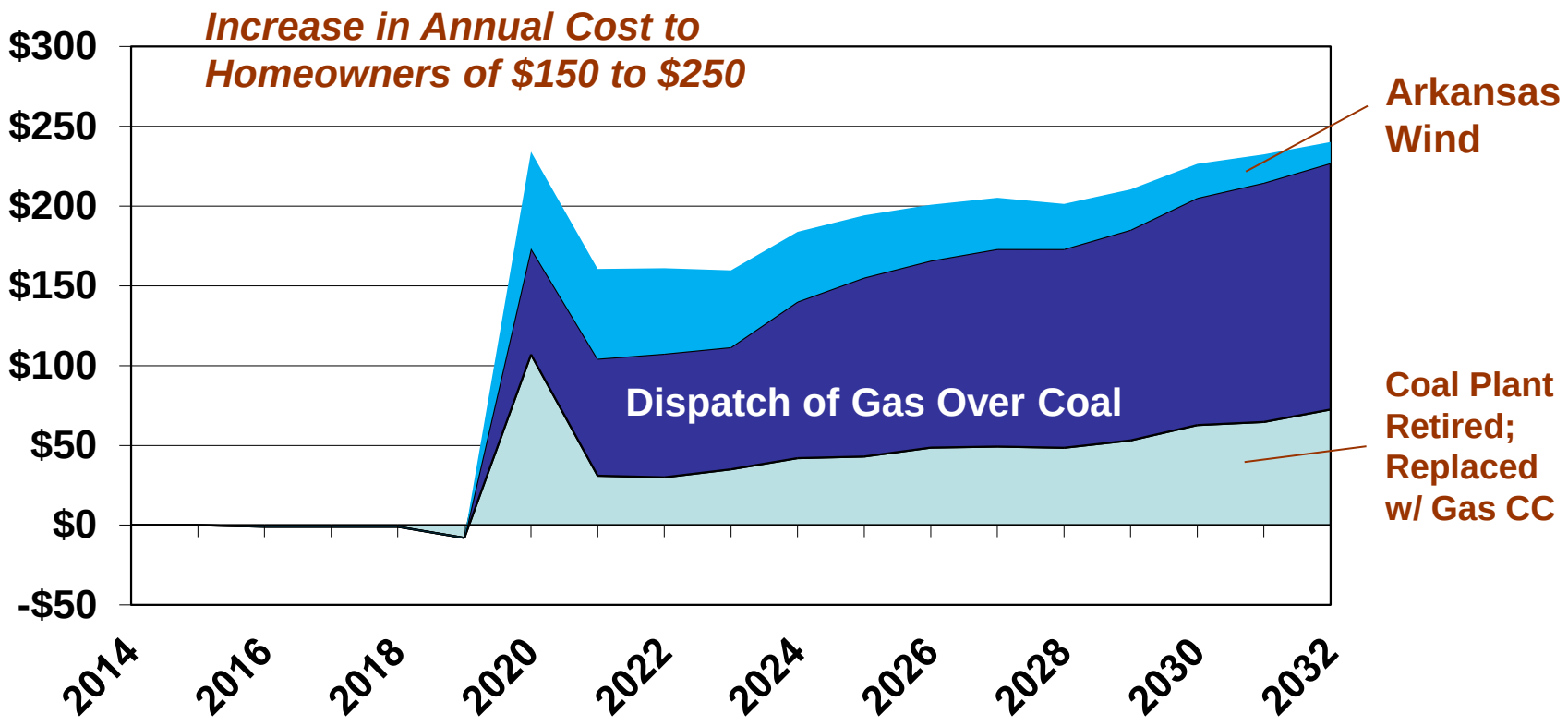
- **35% capacity factor**
- **325 MW built, providing 1,000 GWh**
- **Capital cost of $2,205/kW (2012$, Energy Information Administration)**
- **Capital cost in 2020 is $852 million**
- **First year (2020) cost is $111/MWh**
- **No costs added for transmission**
- **No benefit assumed for existing wind capacity**
- **No federal or state tax credits assumed**

Wholesale Power Costs per MWh
Effect of Clean Power Plan, "Primary Scenario"

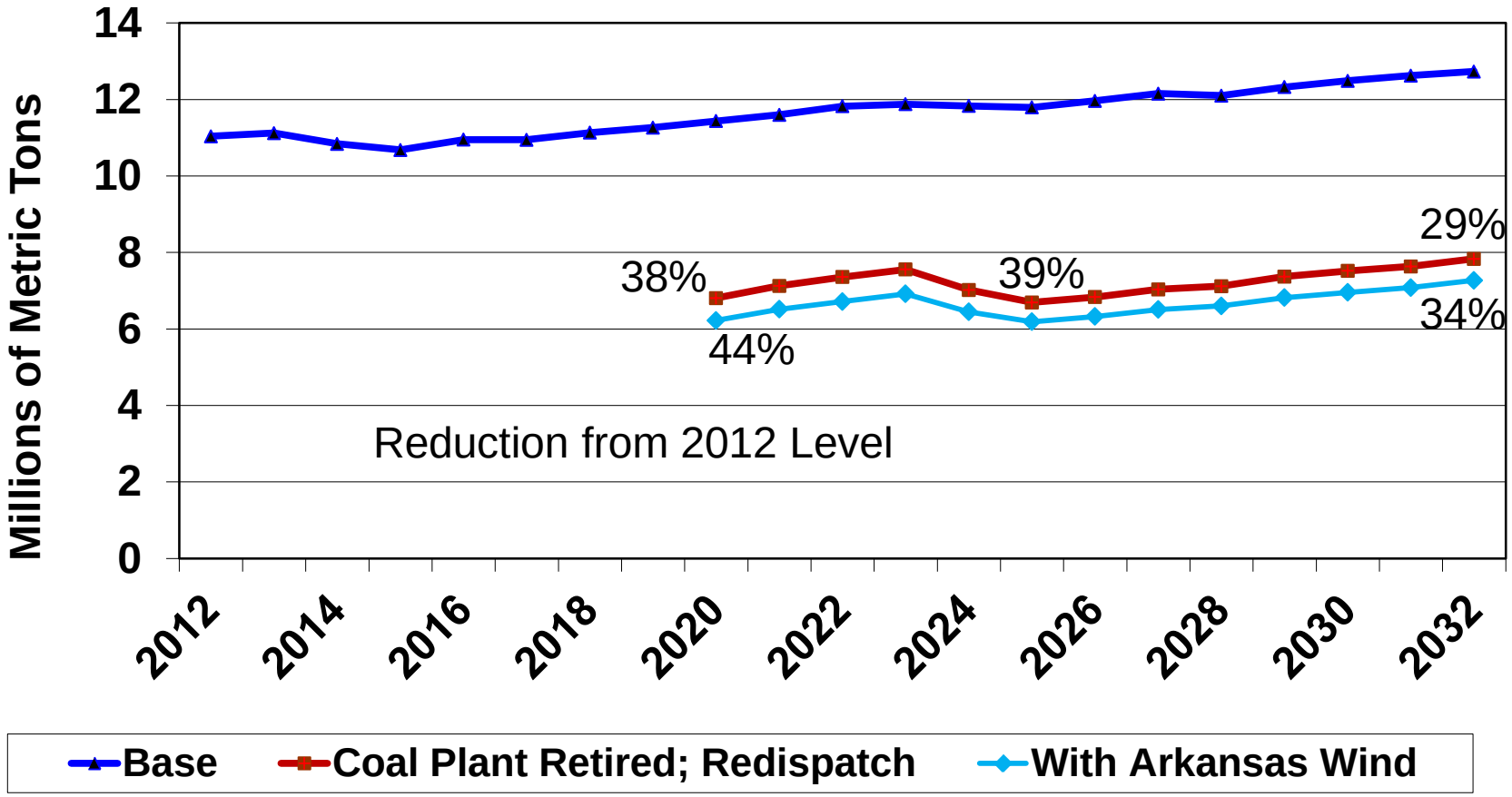


2020 cost includes write off of $106 million of undepreciated portion of Coal Plant

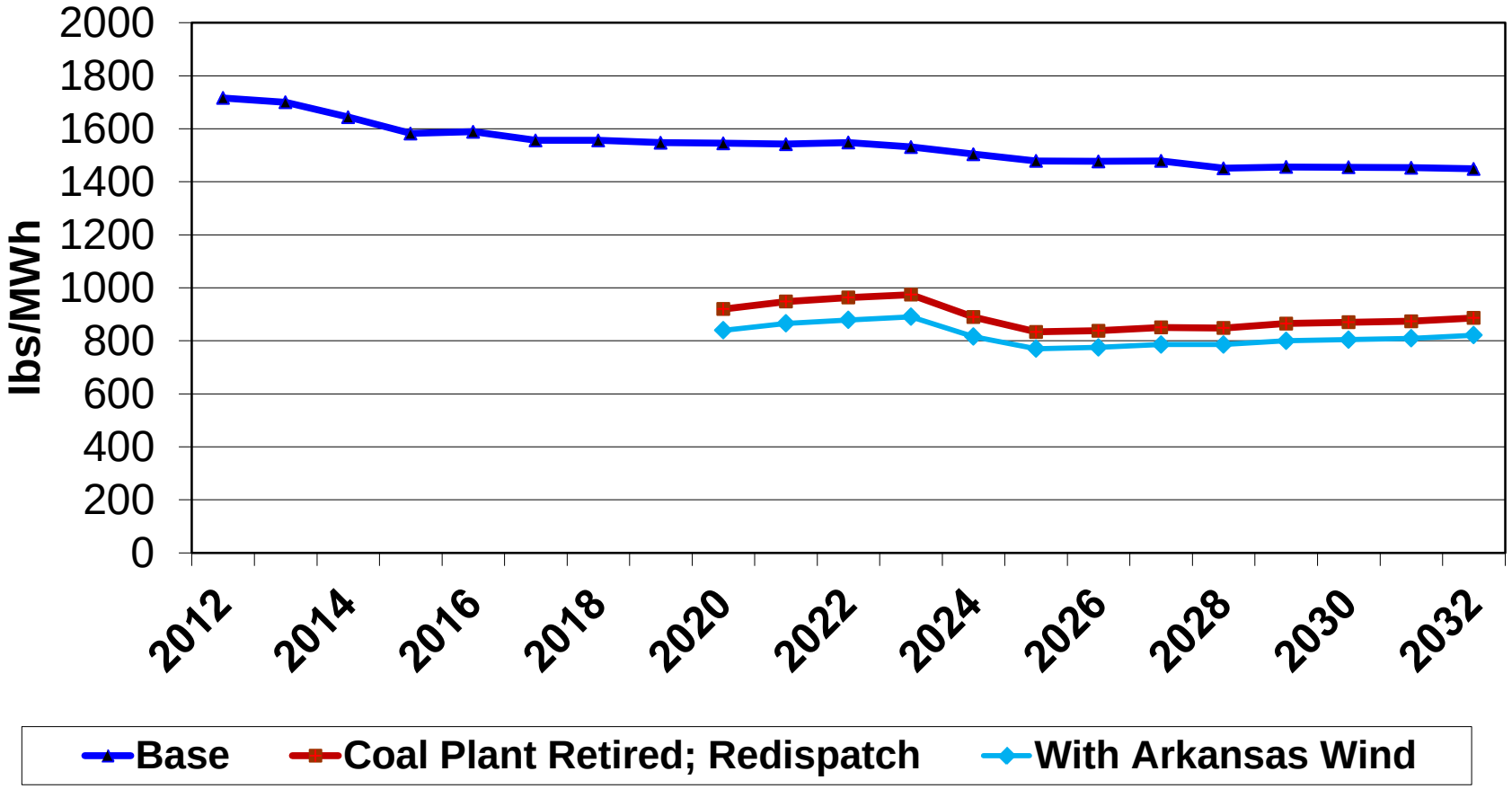
Increase in Annual Residential Cost
Effect of Clean Power Plan, "Primary Scenario"



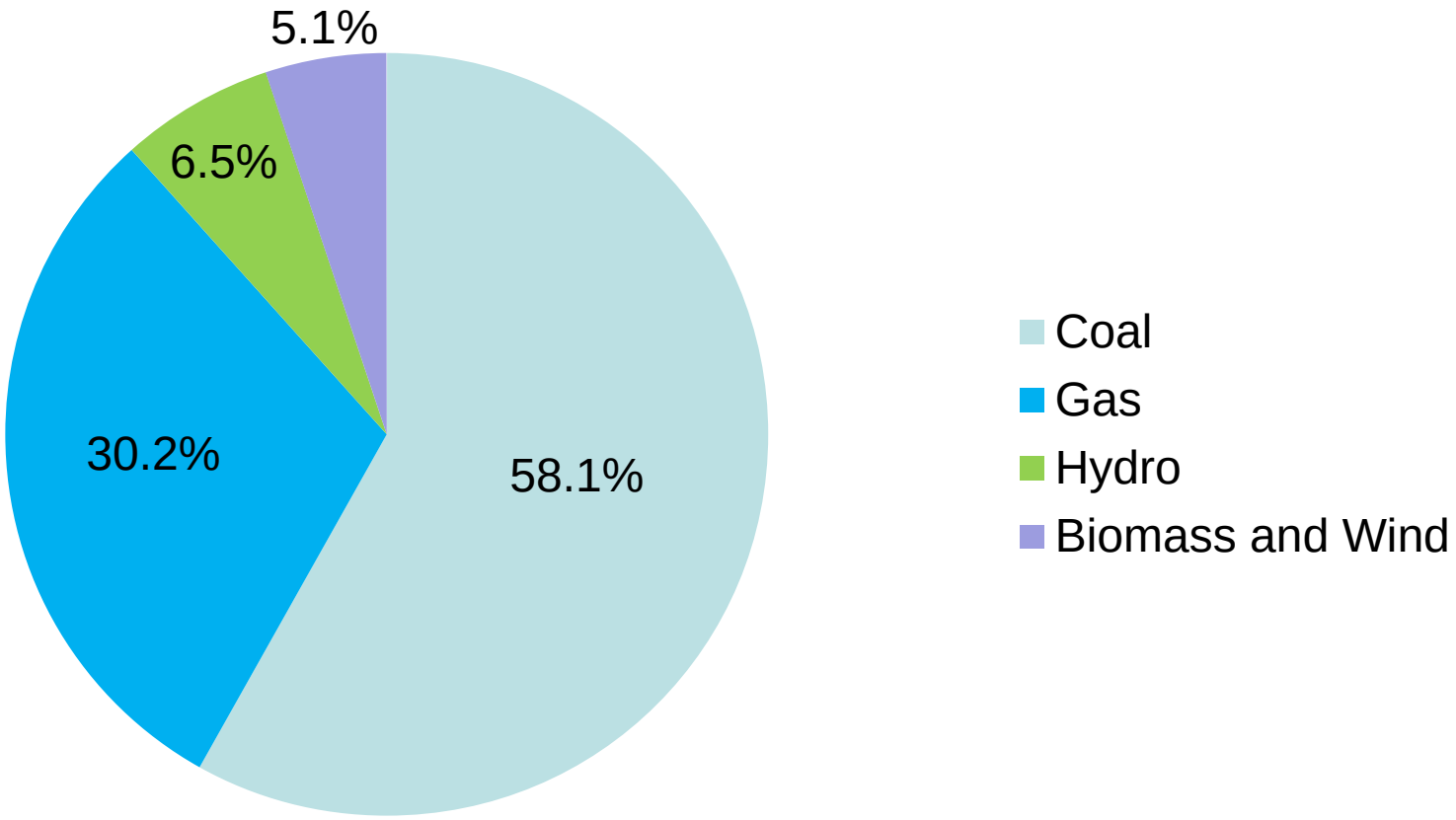
CO_2 Emissions, Metric Tons
Effect of "Primary Scenario"



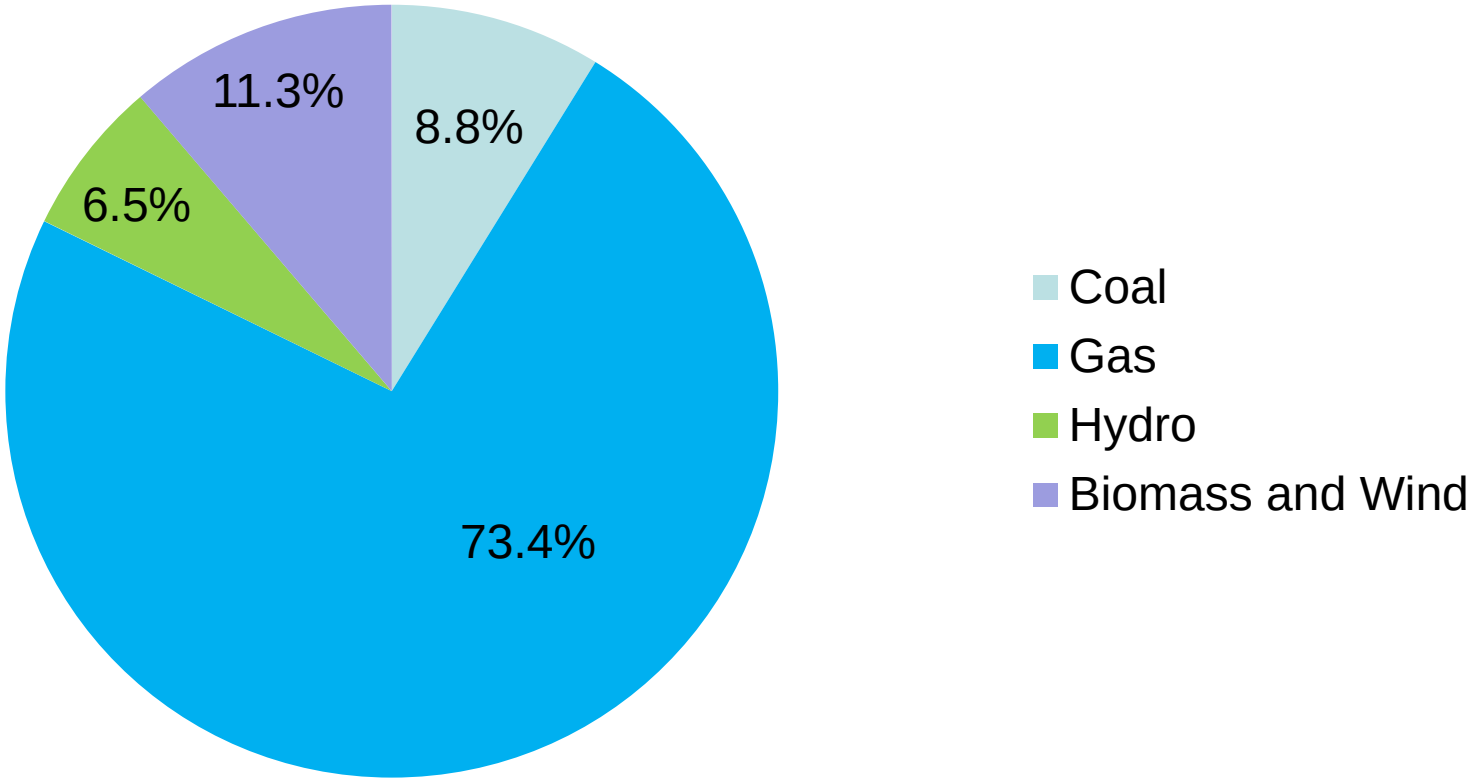
CO_2 Emissions, lbs/MWh
Effect of "Primary Scenario"



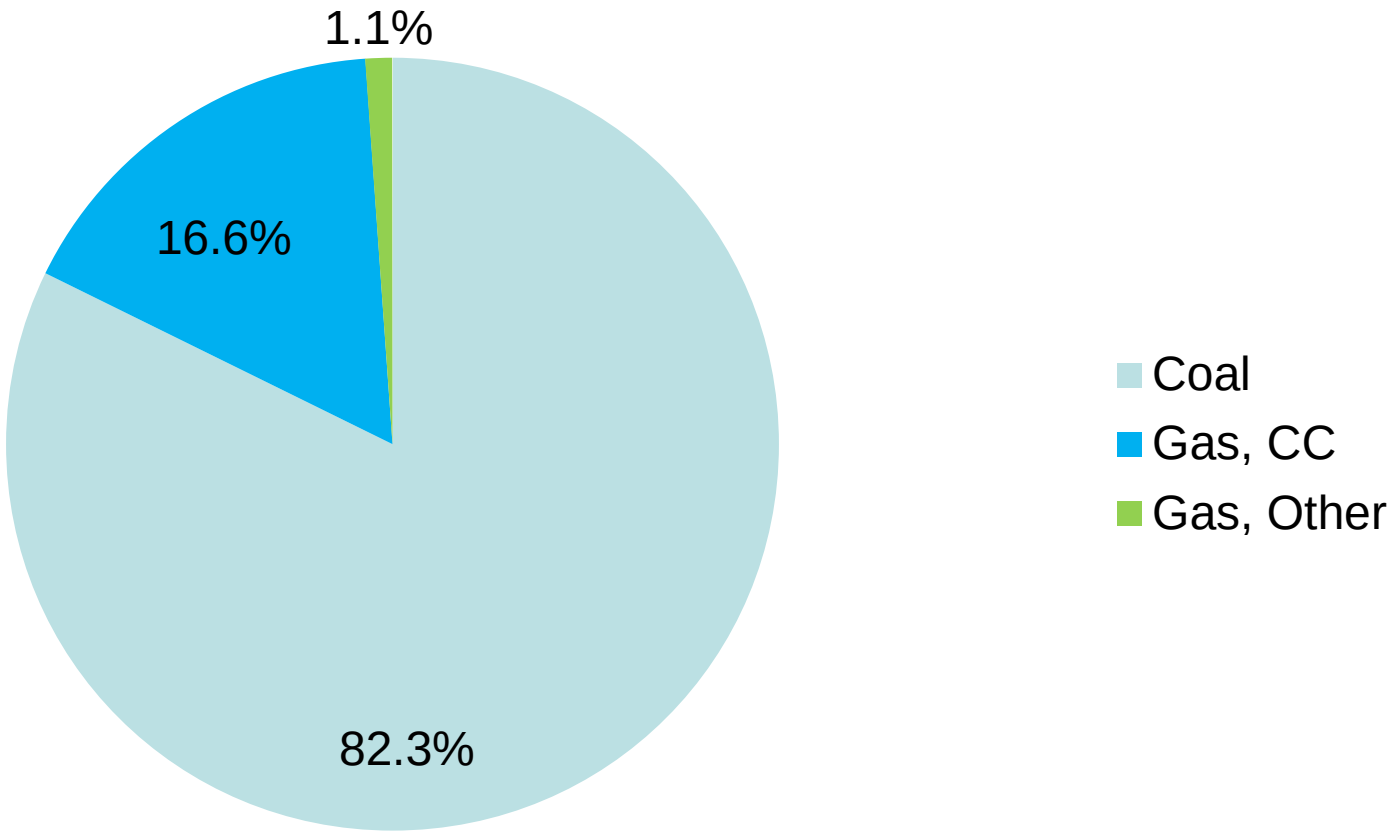
2020 Generation Mix, Base Case



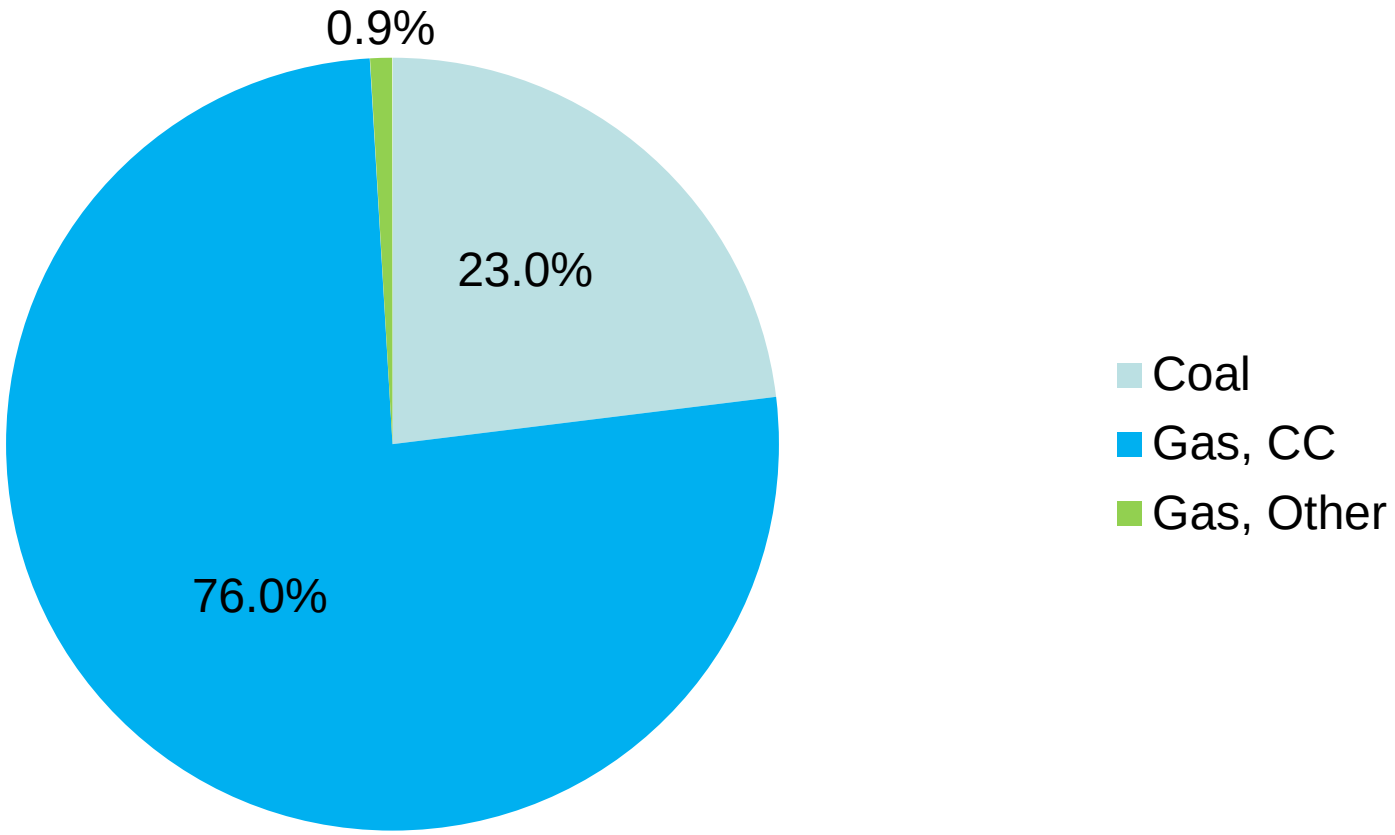
2020 Generation Mix
"Primary Scenario"



2020 Source of CO_2, Base Case



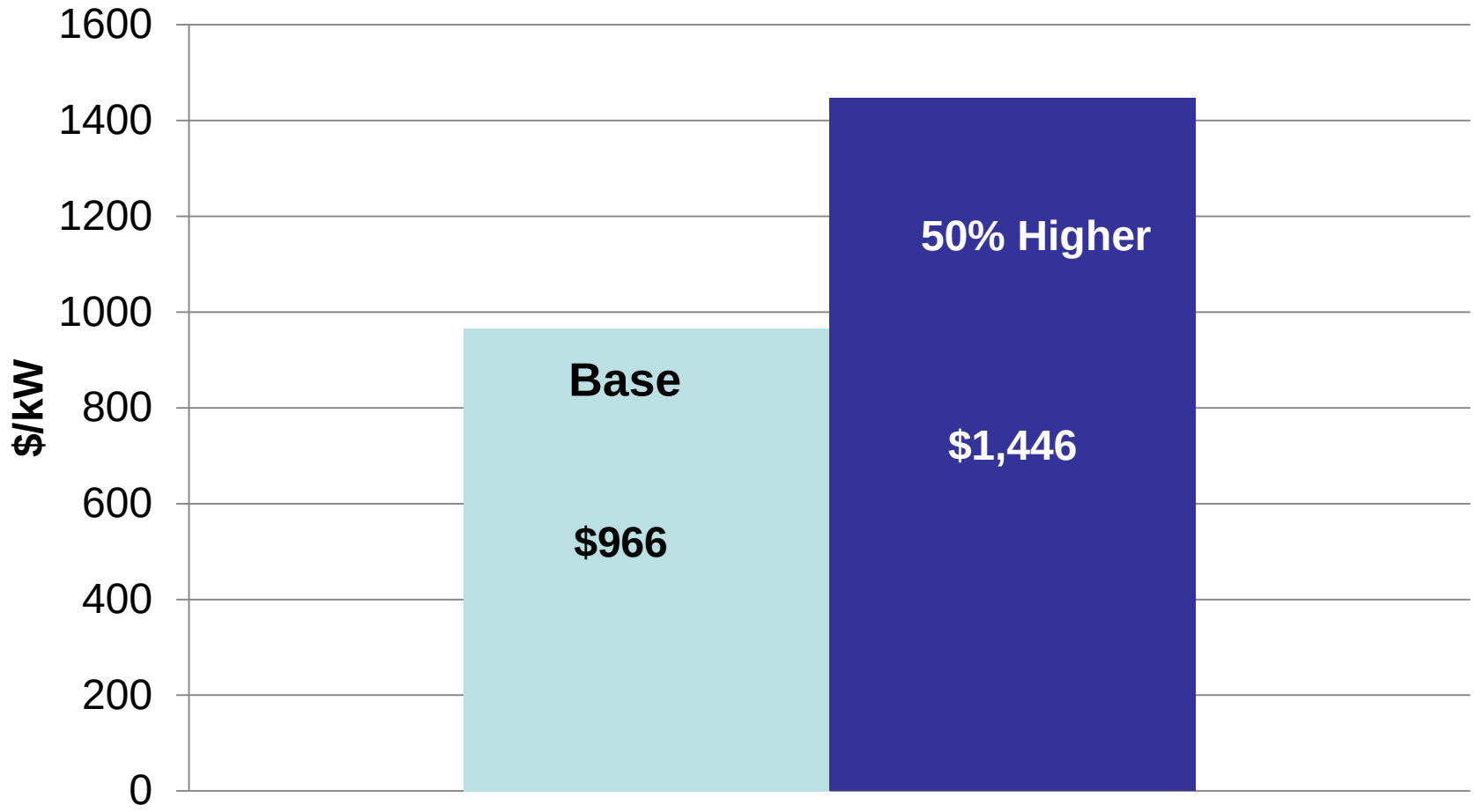
2020 Source of CO_2 "Primary Scenario"



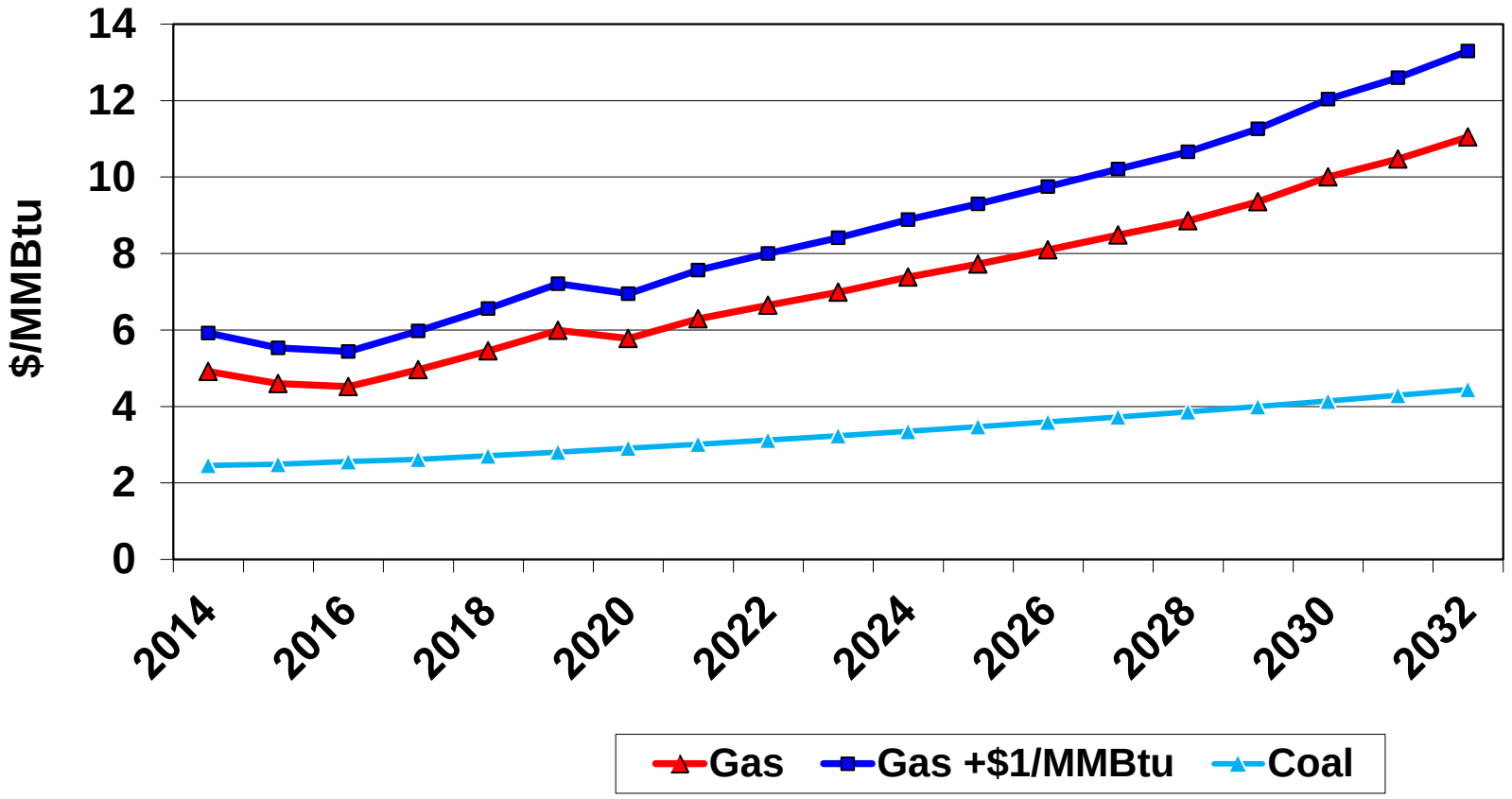
Sensitivity Cases

- The Clean Power Plan will result in a significant need for new gas combined cycle capacity to replace retired coal plants. Sensitivity case has **capital cost of 2020 gas combined cycle plant 50% higher**.
- The Clean Power Plan will require electric utilities to rely more heavily on gas, including the dispatch of gas ahead of coal. Increased gas demand will increase price. Sensitivity case has a **gas price increase of $1/MMBtu**.

Combined Cycle 2020 Capital Cost ($/kW)

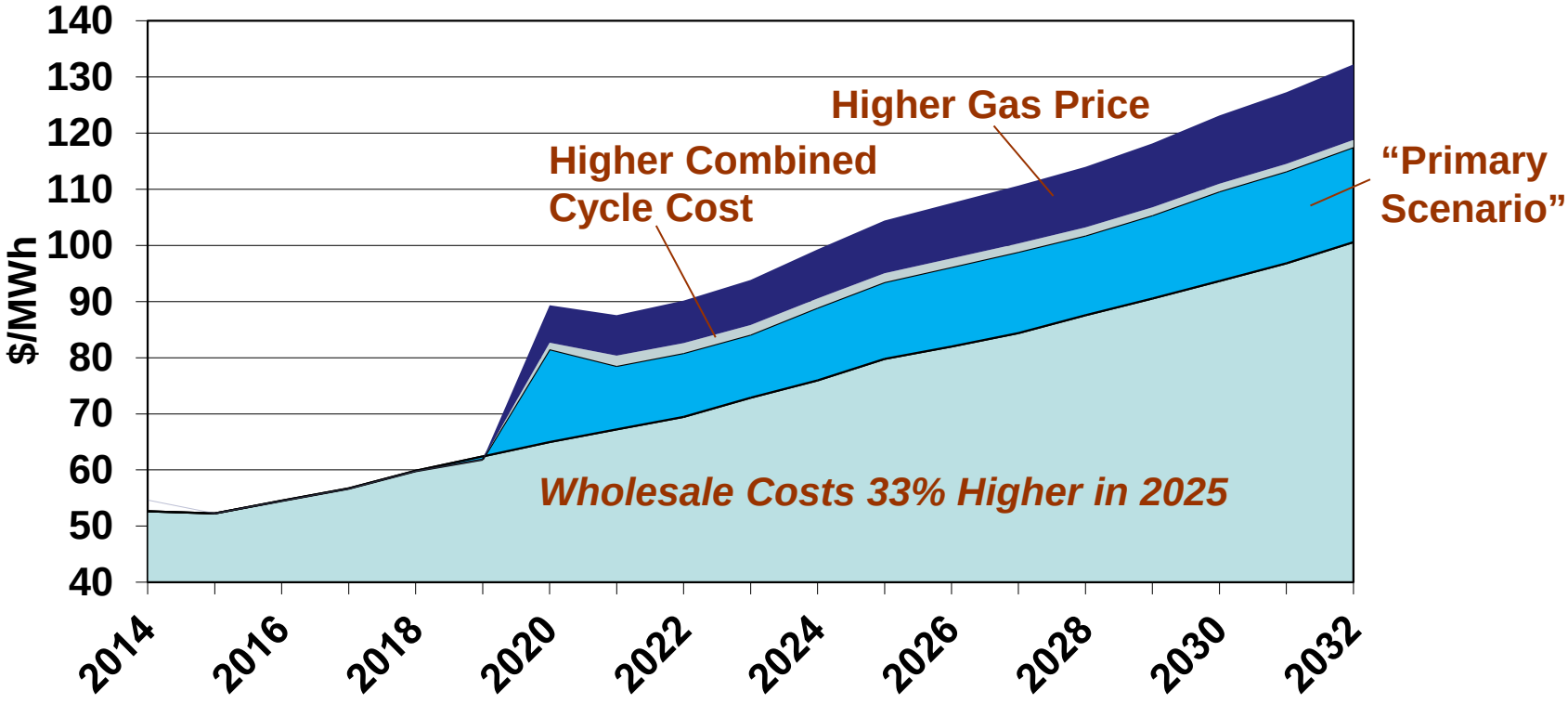


AECC Fuel Price Forecasts

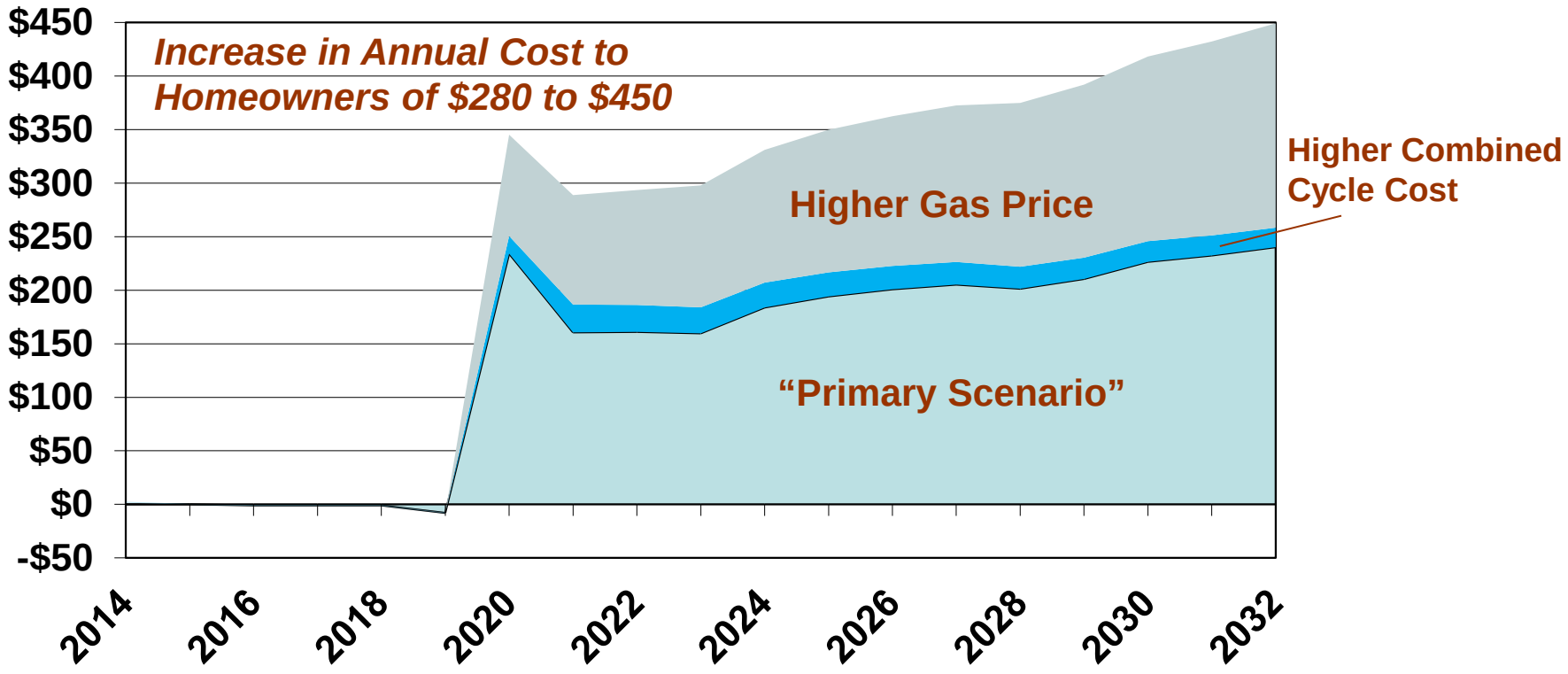


Gas forecast after 2018 based on the forecast from the Energy Information Administration

Wholesale Power Costs per MWh
Potential Effect of EPA's Clean Power Plan on AECC's Members



Increase in Annual Residential Cost
Potential Effect of EPA's Clean Power Plan



Improved Efficiency of Coal Plants?

- **EPA: Increase coal plant heat rate efficiency by 6%**
- **6% increase is not physically possible – 1-2% increase is more realistic; however, any increase is limited by EPA New Source Review concerns**
- **A 1-2% improved efficiency across AECC's portion of Arkansas' coal fleet will range in cost from $4 million to $60 million**
  - **The primary difference in costs relates to whether efficiency upgrades are exempted from New Source Review**

Energy Efficiency

- **EPA: Energy efficiency (EE) growth of 1.5% / year from 2020-2029**
- **AECC has strongly promoted EE since 1963 – unfortunately EE benefits prior to 2020 will not count toward meeting the Clean Power Plan goals**
  - **AECC currently budgets about $1.5 million/year for seminars/education programs, model homes, and the weekly "Home Remedies" radio show**
  - **Distribution cooperatives provide EE loans, EE lighting, and energy audits**

Energy Efficiency

- **It is extremely difficult to determine and verify the effectiveness of EE programs on total energy consumption.**
- **AECC will continue to research the cost of future EE to our ratepayers.**

Appendix C – Economic Inequities

Arkansas Per Capita and Personal Income:

Both per capita and personal income (defined as income received by all persons from all sources) in Arkansas have traditionally ranked well below the national average. In 2012, Arkansas' per capita income ranked 46th in the nation with only Mississippi, South Carolina, Idaho and West Virginia having lower household incomes.[1]

Currently, Arkansas' per capita income is 81 percent of the US average[2] and only two (2) of Arkansas' 75 counties met or exceeded average US per capita income.[3] The remaining 73 Arkansas counties fell below the national average. Of the remaining 73 Arkansas counties, 31 were below 70 percent of US per capita income and seven (7) were below 60 percent of US average per capita income.

For many years, Arkansas has languished in the lower tier of national income. Arkansas' percent change in personal income between 2012 and 2013 ranked in the second lowest quintile of growth and Arkansas ranked in the lowest quintile of growth in the fourth quarter of 2013.

In addition to the population as a whole having lagging income, the level of poverty for children in Arkansas is particularly alarming. Currently 27.6 percent (27.6%) of Arkansas children live at or below the poverty level.[4]

Unemployment:

In the five (5) Arkansas counties where coal plants are located and that will be most affected by coal plant closures, the current unemployment rate is particularly high. These counties are:

Flint Creek Generating Station	Benton Co.	4.7%
White Bluff Plant	Jefferson Co.	8.7%
Independence Steam Electric Station	Independence Co.	7.7%
John W. Turk Jr. Power Plant	Hempstead Co.	6.1%
Plum Point Power Generation Station	Mississippi Co.	9.0%

The closing of these plants will only serve to exacerbate existing high unemployment rates in these counties.

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[1] Bureau of Economic Analysis (BEA) News Release, Table 1 (March 28, 2014).
[2] *Id*.
[3] BEA, CA1-3
[4] "Child Poverty in the United States 2009 and 2010: Selected Race Groups and Hispanic Origin," Table 1. Report Issued November 2011 and online at:
w*ww.census.gov/acs/www/Downloads/data_documentation/Accuracy/ACS_Accuracy_of_Data_2010.pdf*.

Arkansas Electric Cooperative Corporation

Appendix C: Economic Inequities

Arkansas' Per Capita Income and Other Metrics Affecting Feasibility of Compliance with the Clean Power Plan

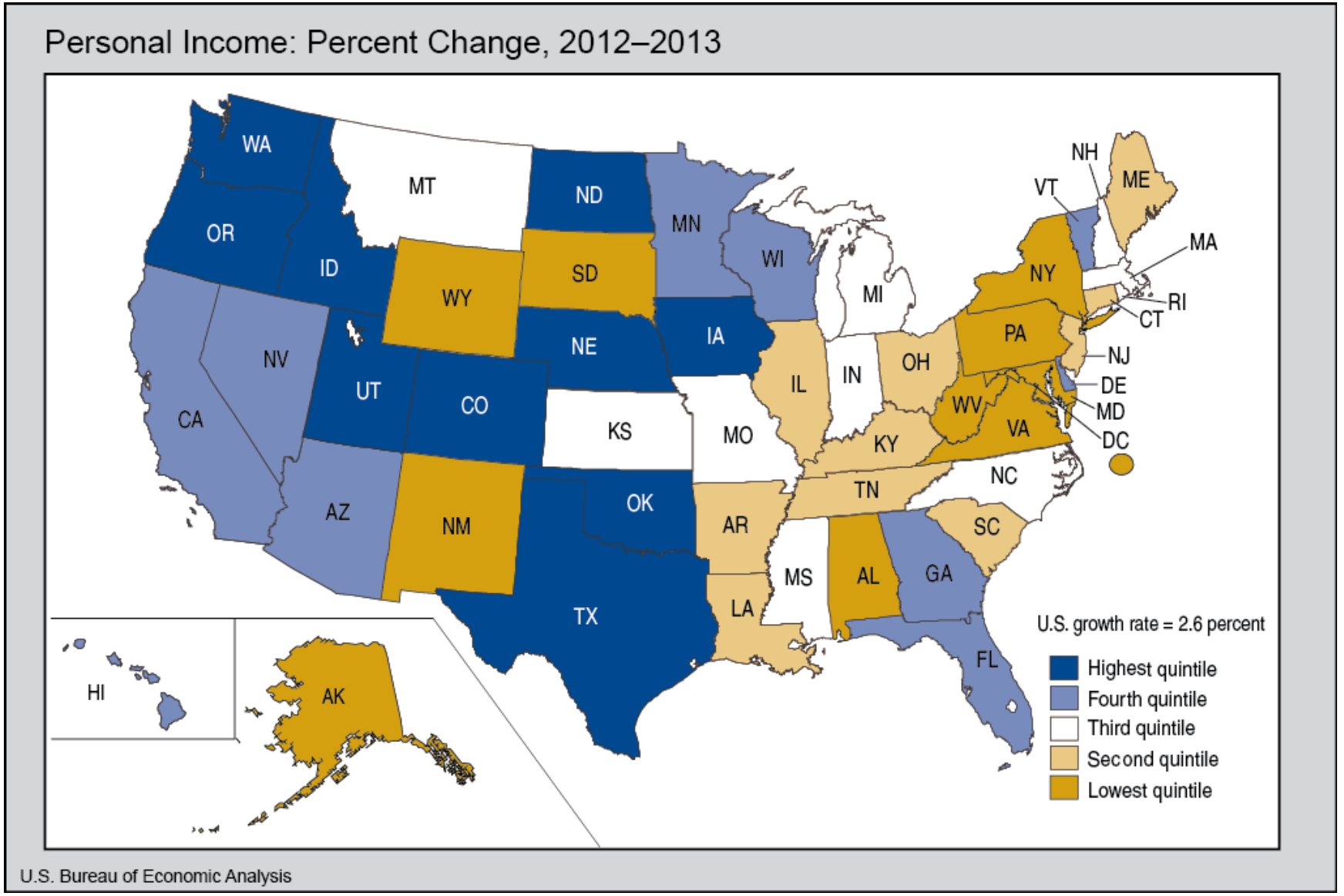
Arkansas Income Quick Facts

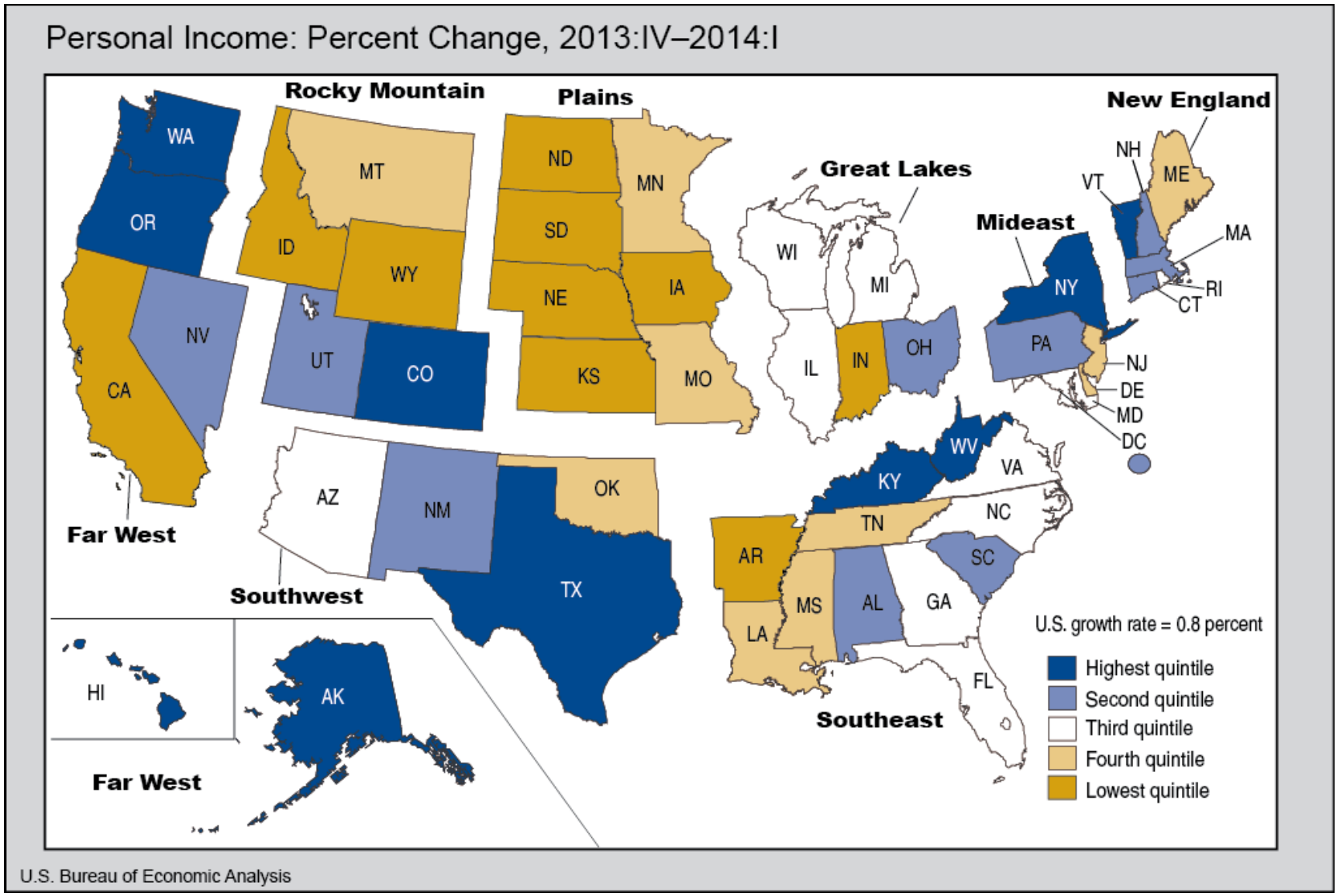
In 2013, Arkansas Ranked 46th in U. S. Per Capita Income. Only Mississippi, South Carolina, Idaho, and West Virginia have lower Per Capita Incomes.

Arkansas ranks 49th in child poverty. Only Alabama has a higher rate.

In 2013, Arkansas' Per Capita Income was 81 percent of U. S. Per Capita Income.

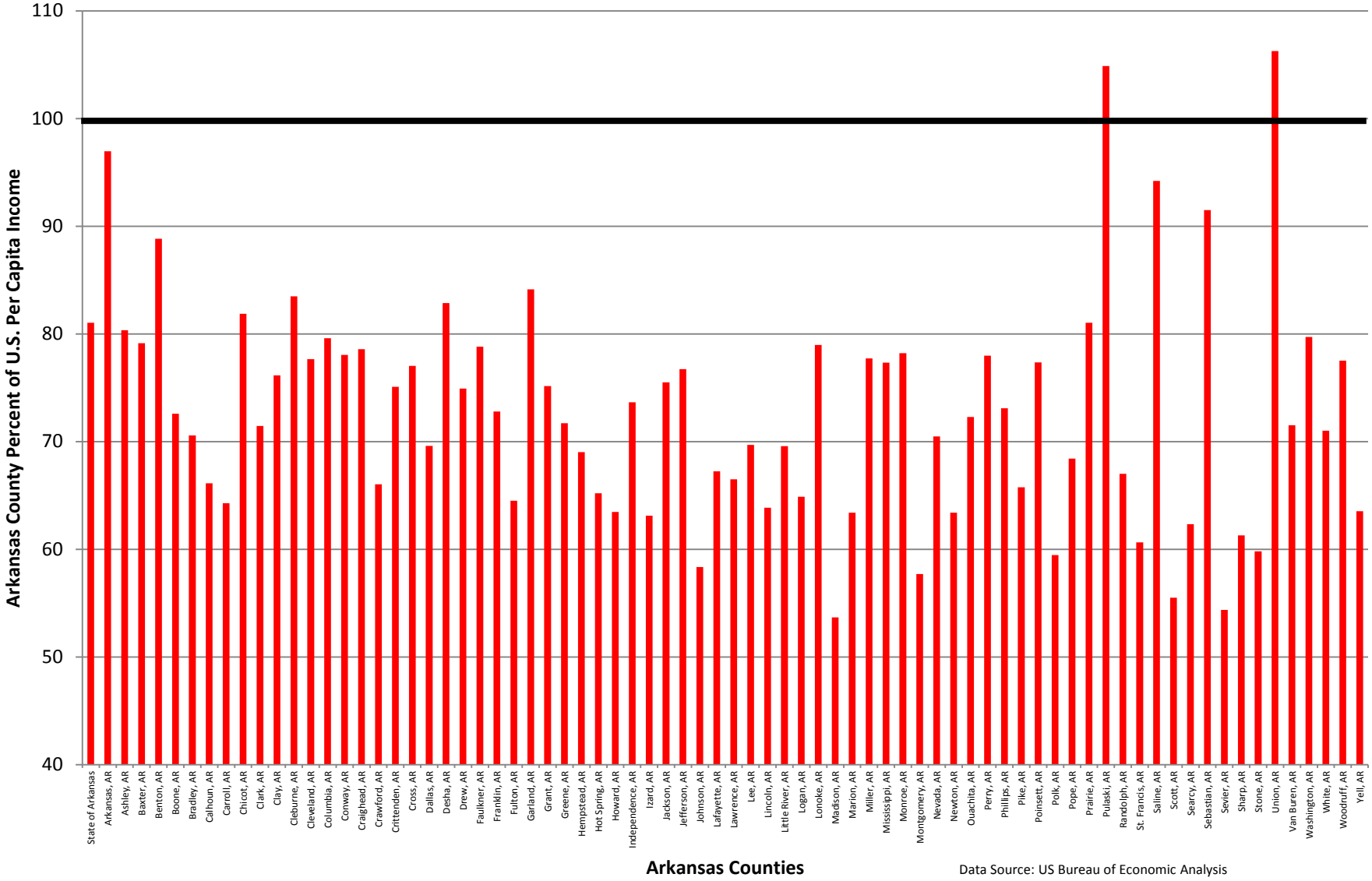
In the first quarter of 2014, Arkansas ranked in the lowest quintile of Personal Income growth in the U. S.


Personal Income: Percent Change, 2012–2013
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
GA
FL
SC
NC
VA
PA
NY
VT
NH
ME
MA
RI
CT
NJ
DE
MD
DC
HI
AK
U.S. growth rate = 2.6 percent
Highest quintile
Fourth quintile
Third quintile
Second quintile
Lowest quintile
U.S. Bureau of Economic Analysis



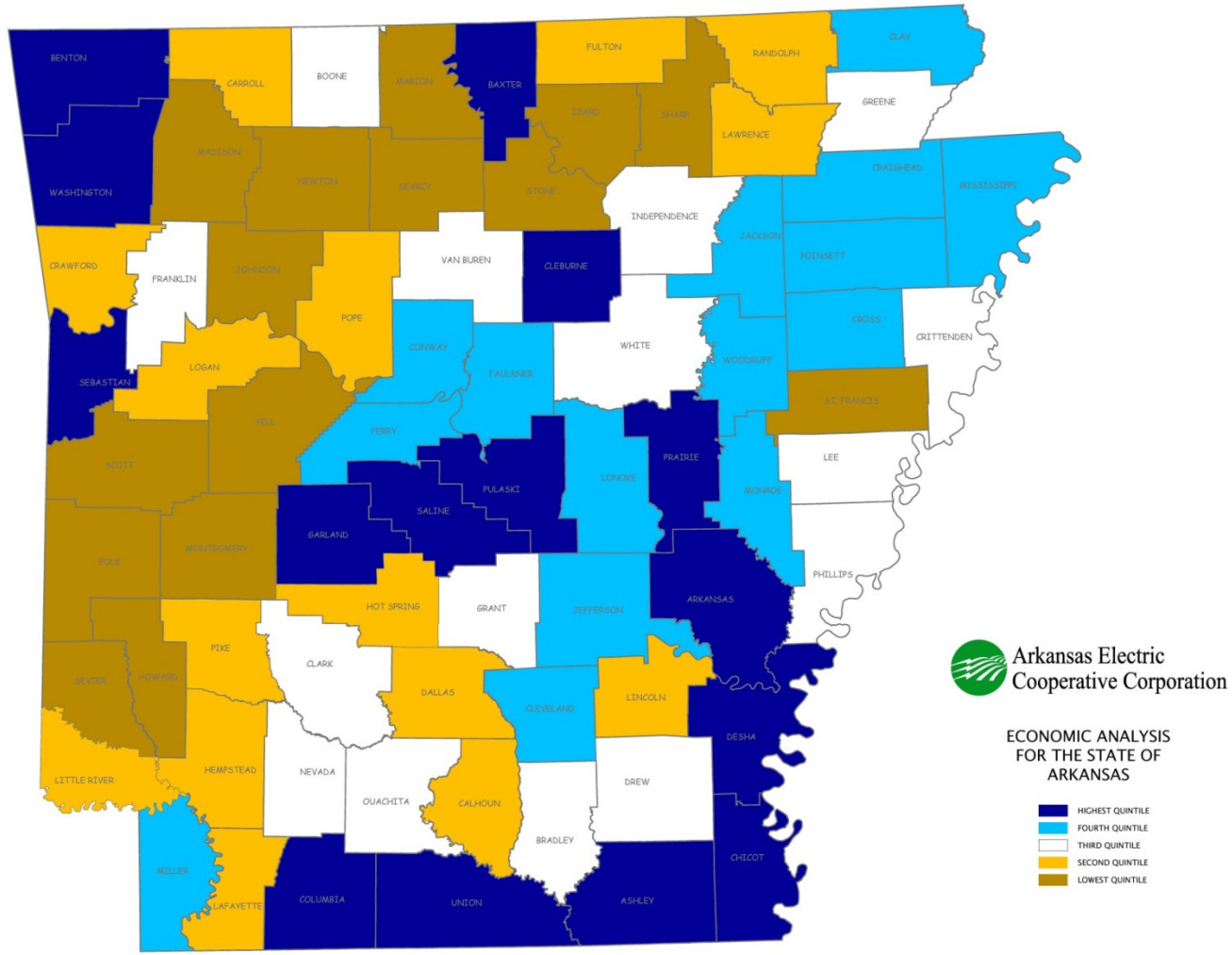
Source: www.bea.gov.newsreleases/regional/spi/2014/spi0614.htm

2012 Per Capita Income by Arkansas County in Percent of U.S. Per Capita Income (U.S. Per Capita Income = 100%)



Data Source: US Bureau of Economic Analysis

Relative County Per Capita Income 2012 Arkansas



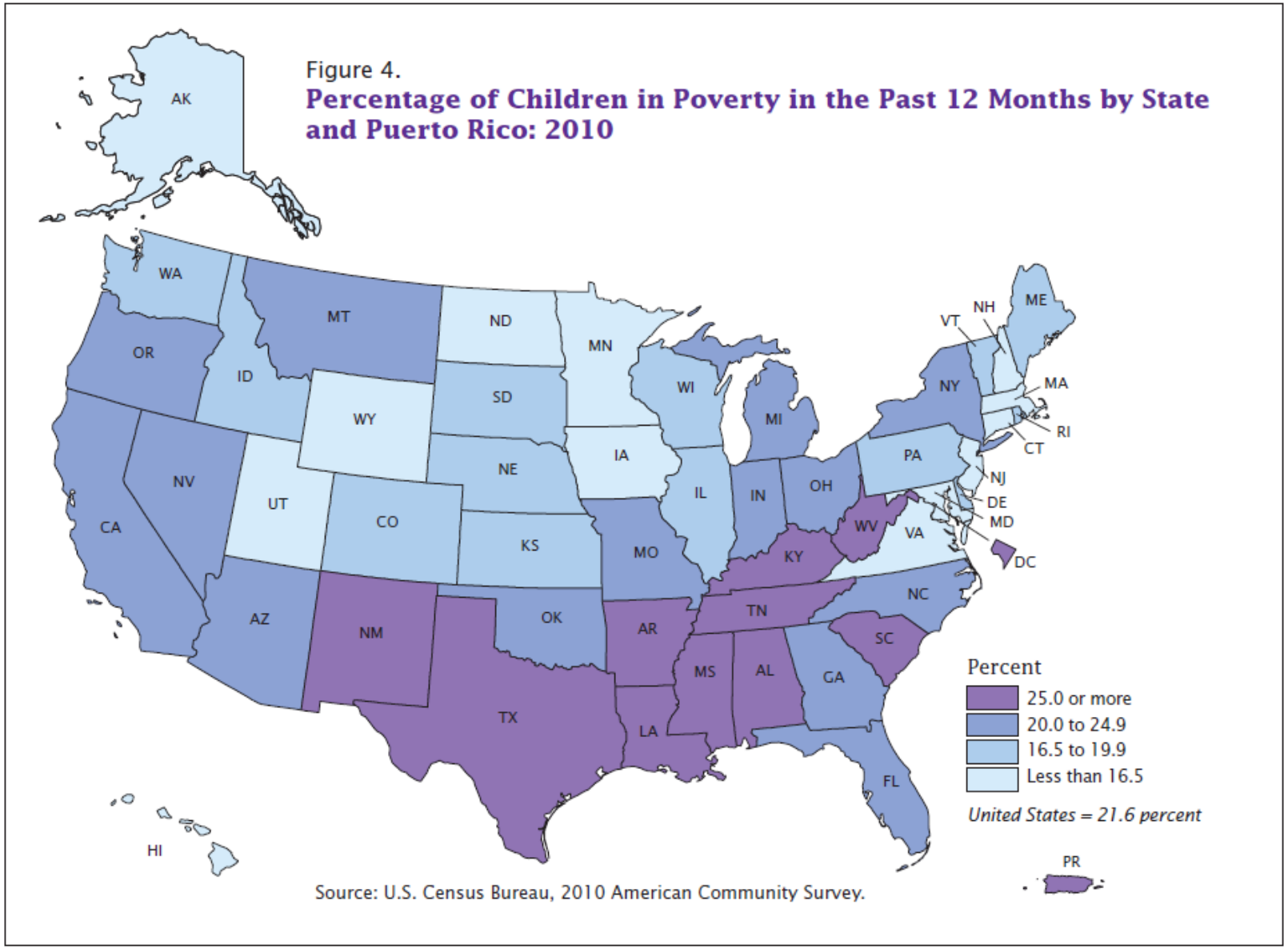
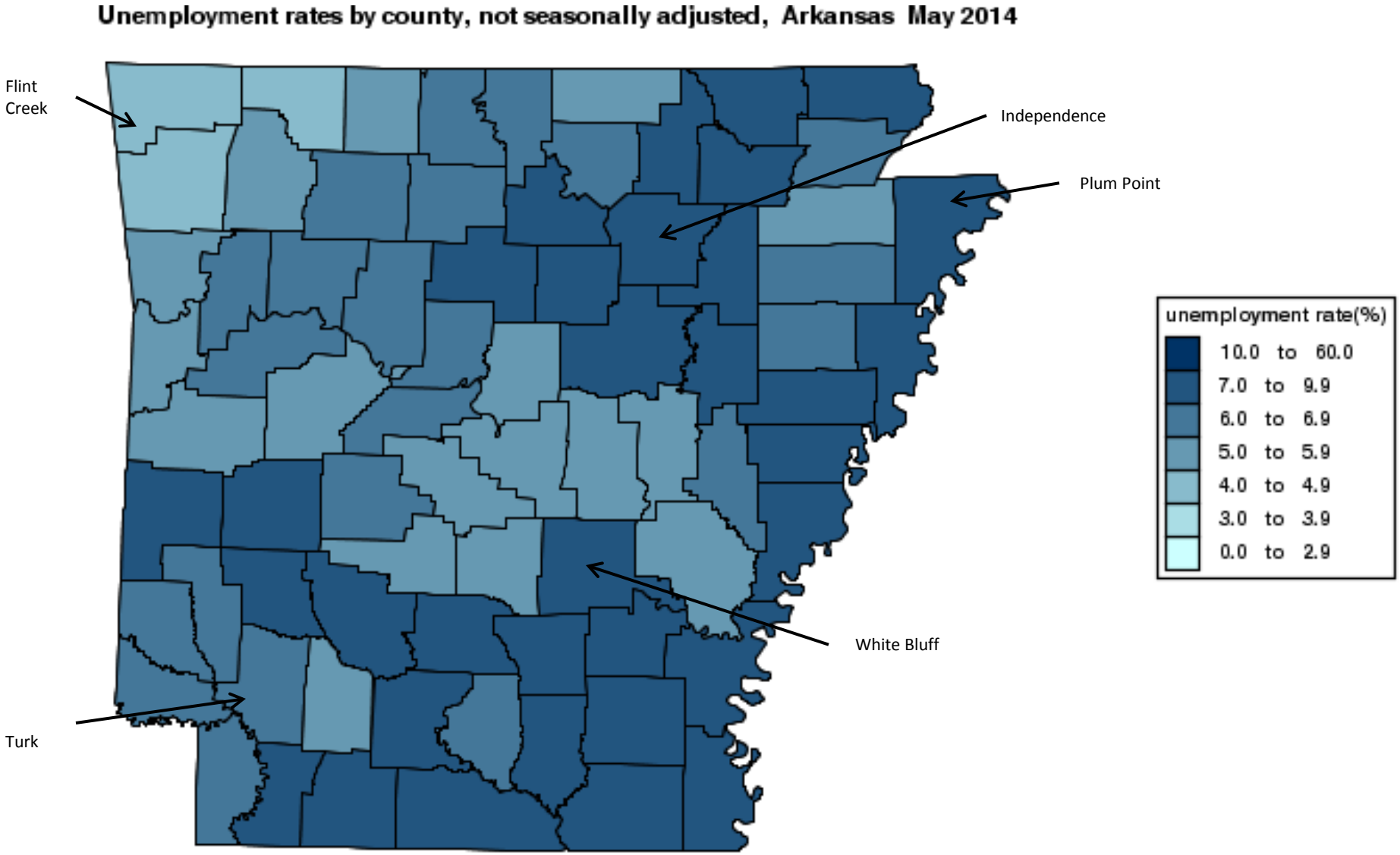


Figure 4.
Percentage of Children in Poverty in the Past 12 Months by State and Puerto Rico: 2010
AK
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
GA
FL
SC
NC
VA
PA
NY
VT
NH
ME
MA
RI
CT
NJ
DE
MD
DC
HI
PR
Percent
25.0 or more
20.0 to 24.9
16.5 to 19.9
Less than 16.5
United States = 21.6 percent
Source: U.S. Census Bureau, 2010 American Community Survey.


Unemployment rates by county, not seasonally adjusted, Arkansas May 2014
Flint Creek
Independence
Plum Point
White Bluff
Turk
unemployment rate(%)
10.0 to 60.0
7.0 to 9.9
6.0 to 6.9
5.0 to 5.9
4.0 to 4.9
3.0 to 3.9
0.0 to 2.9