ATTACHMENT 3

Resource Insight, Inc.

Affordability of Pollution Control on the Apache Coal Units

Review of Arizona Electric Power Cooperative's Comments on Behalf of the Sierra Club

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Introduction

In June of 2012 the Arizona Electric Power Cooperative (AEPCo or the Coop) filed comments regarding EPA's proposed Best Available Retrofit Technology (BART) determinations for steam units 2 and 3 of AEPCo's Apache Generating Station (Apache) (Docket EPA-R09-OAR-2012-0021). AEPCo (2012a, 7) asserted that the costs associated with environmental upgrades for Apache Units 2 and 3 would be "unreasonable, unaffordable, and impracticable." It argued that an $80 million capital expenditure for selective catalytic reduction (SCR) would be burdensome for the following reasons:

- The Coop "has no outside investors [and] must necessarily pass its costs through to the Class A member[s] who pass them through [to] retail customers…, who must ultimately bear the costs of any required environmental controls" (AEPCo 2012a, 8).
- The retail customers are already "relatively economically disadvantaged" (AEPCo 2012a, 8).
- The Coop "cannot abandon the units and expect to serve its loads adequately and reliably," since units 2 and 3 "are AEPCo's two load-following units. AEPCo's other generating units are not as inefficient [sic] and are used primarily for peaking and reserves" and AEPCo "cannot import sufficient power…to cover its loads due to limitations in grid capacity" (AEPCo 2012a, 9).
- The Coop "may also face impediments to borrowing such a large sum of money, which would likely need to come from RUS [the Rural Utility Service] (meaning ultimately from United States taxpayers through Congressional allocation) or from the National Rural Electric Cooperative Finance Corporation (effectively meaning other cooperatives, many of whom are facing their own financing challenges)" (AEPCo 2012a, 9).

- "Unlike many other utilities, AEPCo is…not in a position to 'spread' the cost of proposed BART technologies either over other plants in its fleet (there are none) or over a large ratepayer base."(AEPCo 2012a, 11)
- "The required investment would swamp AEPCo's budget and limited financial resources. An…$80 million investment in controls would increase AEPCo's existing net plant investment by a third" (AEPCo 2012a, 9).
- The Coop's "operating margin for 2011 was less than $1.9 million. Accordingly, an $80 million investment would be over 42 times AEPCo's 2011 margin. The associated investment would necessitate a substantial long-term increase in AEPCo's rates" (AEPCo 2012a, 9).
- "It is not clear that existing government resources in RUS and CFC are available to AEPCo…." (AEPCo 2012a, 11).
- "A significant increase in the cost of power generation, as would likely occur should BART be established as an SCR-based control for NOx, would jeopardize AEPCo's long-term existence if it causes the cost of power provision to substantially exceed that available from…other cooperatives that AEPCo's existing Class A and D members could join" (AEPCo 2012a, 11–12).

In late August, AEPCo (2012b) provided responses to some questions from EPA staff. These responses provide more detail on the Coop's positions, and in some cases provide inconsistent information.

Some of these assertions are factually incorrect, others are irrelevant, and none of them constitute reasons to set the BART standard differently for the Apache units than any other coal-fired plant in Arizona.

Simply put, AEPCo can afford to install SCR at Apache 2 and 3, AEPCo can finance SCR, and the rate increases would not be exorbitant or extraordinary. In addition, AEPCo has other resource options for complying with BART, including various combinations of power purchases, transmission, solar power, energy-efficiency, operating the units on gas, and converting one unit to combined-cycle operation burning gas.[1] The Coop can select the most advantageous resource portfolio and will have five years to transition to the preferred resource mix.

[1]Both Apache coal units can burn gas (AEPCo 2011b, 5). A combined-cycle plant using one of the Apache-2 or -3 boilers would generate more power than the two coal units together. Alternatively, AEPCo could convert the 75-MW Apache Unit 1 to combined-cycle operation, adding roughly 100 MW of capacity.

Costs of SCR Are Modest

The Coop's assertions that SCR would require "a significant increase in the cost of power generation" and that the costs would be "unreasonable" are not supported by the projected costs. The proposed SCR would have only minor effects on retail rates.

Effect of SCR on Retail Rates

The cost of an SCR system on the retail rates of AEPCo's member coops would be relatively small. The Coop assumes a capital cost of $80 million (AEPCo 2012, 9), which is consistent with the estimate of $67.5 million (in 2009 dollars) in Alkon, Bohning, et al.'s review for the EPA (2012, 45, Table 16), inflated to 2018 dollars.[2]

This capital cost is likely to be financed by a 20-year loan through RUS. (We address the financial capability of RUS, below.) As AEPCo (2012a, 7) notes, the RUS charges coops "an interest rate based upon the equivalent term treasury rate plus ⅛ of a percent." As of August 24, 2012, the interest treasury rate was 2.41% (Daily Treasury Yield Curve Rates, U.S. Department of the Treasury, August 24 2012), resulting in an RUS interest rate of 2.535% (2.41% + 0.125%). Repaying a loan over 20 years at a 2.535% interest rate would require a yearly payment of roughly 6.44% of the original loan, or roughly $5.15 million. In addition, the Technical Support Document (at 45) estimates an annual property-

[2]The EPA costs were derived from the formulas in 2009 dollars from Sargent & Lundy (2010), inflated at 2% from 2009.

tax payment of 0.9% of the capital cost and insurance of 0.3%.[3] While these cost items are not included in the EPA's cost-effectiveness computation for the purpose of comparing control costs among sources, those costs are relevant to estimating the rate and bill effects for AEPCo's customers. Taxes and insurance would add a bit less than $1 million annually to the annual ratemaking cost of the SCR.[4]

In addition, while the AEPCo Comments do not mention operating costs, AEPCo Response Exhibit 1 projects incremental O&M of about $3.28 million in 2018, rising very slowly thereafter. The annual cost of the SCR would thus be about $9.4 million.

Table 1 summarizes the allocation of the annual SCR cost to each of the six distribution utilities that are Class-A members of AEPCo.

Table 1: Annual SCR Cost by Distribution Coop

	Allocated Capacity Percentage	Share of SCR Cost ($/k)	Share of SCR Cost $/MWh	Total Sales 2010 (MWh)
Anza Electric Coop	2.5%	$235	$5.29	44,415
Duncan Valley Electric Coop	1.3%	$122	$4.84	25,214
Graham County Electric Coop	7.6%	$714	$4.86	146,736
Mohave Electric Coop	35.8%	$3,363	$4.79	702,445
Sulphur Springs Valley Elec Coop	31.7%	$2,978	$3.63	819,288
Trico Electric Coop	21.1%	$1,982	$3.20	619,326
Class-A total	100.0%	$9,393	$3.98	2,357,424

Sources: Capacity Percentage from AEPCo (2012a, 3).
Total Sales from Annual Electric Power Industry Data Files, Form EIA-861, 2010.

The $3.2 to $5.3/MWh (0.32¢ to 0.53¢/kWh) of SCR costs would be only a small percentage increase in the coops' rates 2010 rates, as shown in Table 2.[5]

[3]The AEPCo Responses from the 2009 rate proceeding (Schedule B-1, Schedule C-2 Page 1) show about $300,000 in property taxes for $4 billion in gross plant, or a tax rate of about 0.75%. Using a 0.9% tax rate probably overstates the costs to ratepayers.

[4]The property taxes would be paid to Cochise County, which has an average per-capita income of $23,010 (in 2010; see http://quickfacts.census.gov/qfd/states/04/04003.html). Most of Cochise County is served by the Sulfur Springs Electric Coop, a member of AEPCo. The additional property-tax revenue would allow the County to improve services to a large portion of the low-income households for which AEPCo expresses so much concern.

[5]Sales, revenues, and rates are not yet available for all coops for 2011.

Table 2: Effect on Residential Rates from SCR Cost

	2010 Residential Rates ($/MWh)		
	2010	SCR	% increase
Anza Electric Coop	$197.85	$5.29	2.7%
Duncan Valley Electric Coop	$134.61	$4.84	3.7%
Graham County Electric Coop	$130.26	$4.86	3.7%
Mohave Electric Coop	$99.13	$4.79	4.8%
Sulphur Springs Valley Elec Coop	$120.40	$3.63	3.0%
Trico Electric Coop	$146.38	$3.20	2.2%
Class-A total	$121.14	$3.98	3.3%

Rates from Annual Electric Power Industry Data Files, Form EIA-861, 2010

Since sales and costs are likely to rise by the time the SCR is installed, the actual first-year rate effects of the SCR, in dollars per MWh and percentage terms, are likely to be even less than shown in Table 2. For example, the Coop's Integrated Resource Plan presentation (August 22 2012) reports that the Duncan Valley and Graham County coops are the "Slowest growing of AEPCo's Arizona Class A members," with a "2010–2026 forecasted growth rate of 1.1%." At a 1.1% annual growth rates, even these slowest-growing coops would have sales 9% greater by 2018, and the rest of the coops would have even greater growth. The higher sales would spread the SCR costs over more megawatt-hours, reducing the SCR-related rate increases proportionately.

The Coop (AEPCo 2012b, Exhibit 1) indicates that the SCR-related rate increase would be phased in over a three-year period. That phase-in would further reduce the maximum annual increase due to the SCR costs, compared to that shown in Table 1 and Table 2.

The effect on residential customer bills would be only about $2.63–$4.20 per month. See Table 3.

Table 3: Residential Bill Effect per Customer of SCR Cost

	Rate Increase ($/MWh)	Average Annual Usage (MWh)	Monthly Bill Increase
Anza Electric Coop	$5.29	8.01	$3.53
Duncan Valley Electric Coop	$4.84	9.04	$3.65
Graham County Electric Coop	$4.86	9.76	$3.96
Mohave Electric Coop	$4.79	10.53	$4.20
Sulphur Springs Valley Elec Coop	$3.63	8.86	$2.68
Trico Electric Coop	$3.20	10.60	$2.83
AEPCo Class-A total	$3.98	9.87	$3.28

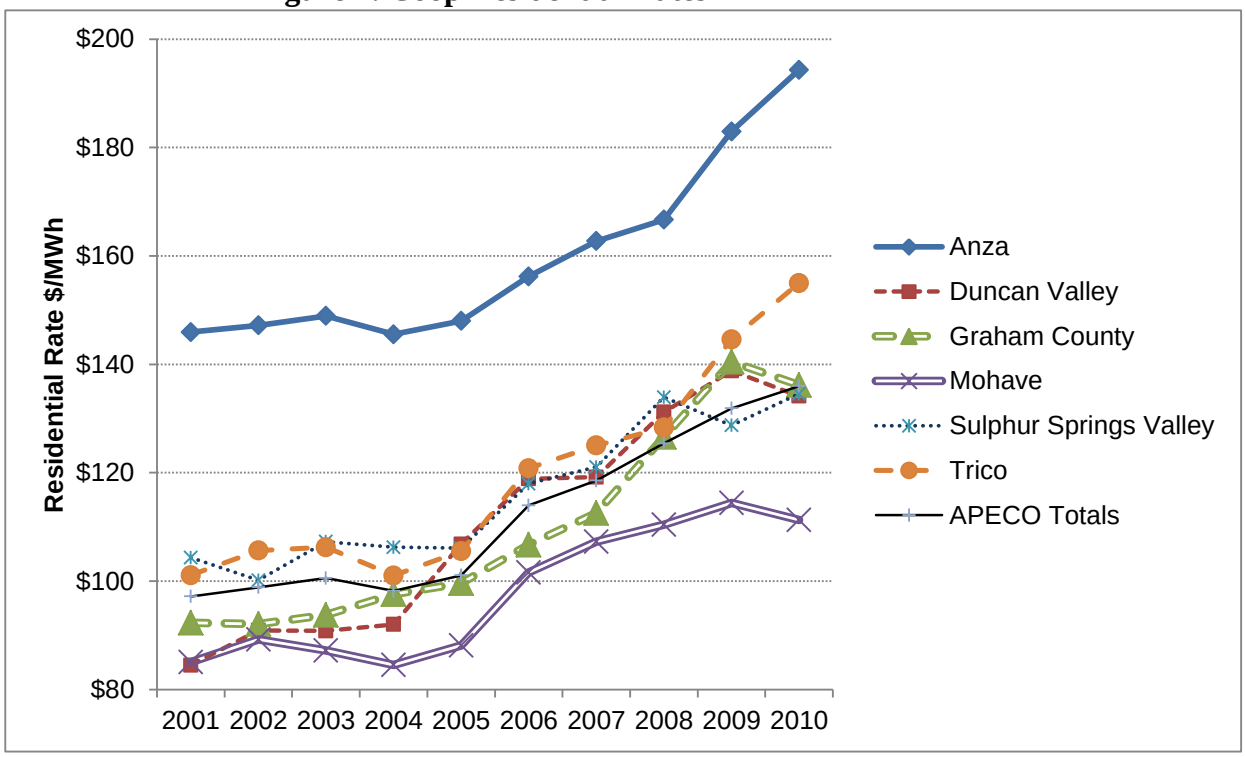
The SCR Rate Increases Would Be Small Compared to Historical Rate Increases

The 2% to 5% one-time increase that might be required for the various distribution coops pales by comparison with the rate increases those coops have implemented over the last decade. See Table 4 and Figure 1.

Table 4: Residential Rates by Coop (Dollars per MWh)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Anza	$146	$147	$149	$146	$148	$156	$163	$167	$183	$194
Duncan Valley	$84	$91	$91	$92	$107	$119	$119	$131	$139	$134
Graham County	$92	$92	$94	$98	$100	$107	$113	$127	$140	$136
Mohave	$85	$89	$87	$85	$88	$102	$107	$110	$114	$111
Sulphur Springs Valley	$104	$100	$107	$106	$106	$118	$121	$134	$129	$135
Trico Electric Coop	$101	$106	$106	$101	$106	$121	$125	$128	$145	$155
APECO Totals	$97	$99	$101	$98	$101	$114	$119	$125	$132	$136

Figure 1: Coop Residential Rates



The rate increases for the coops have been much larger than the potential $3–$5/MWh rate increases that might result from installing SCR on Apache; see Table 5. The total rate increases since 2000 have been 10 to 25 times the potential SCR increase, average annual increases since 2004 have been running up to 3 times the potential SCR rate increase, and the maximum annual increases have been up to 4 times the potential SCR rate increase.

Table 5: Summary of Coop Rate Increases

	Increase Since		Annual Increase Since		Max Annual Increase 2001–10	Potential SCR Rate Increase
	2001	2004	2001	2004		
Anza	33%	34%	3.2%	4.9%	8.0%	2.7%
Duncan Valley	59%	46%	5.3%	6.5%	6.5%	3.7%
Graham County	48%	40%	4.4%	5.7%	6.6%	3.7%
Mohave	31%	32%	3.0%	4.7%	4.8%	4.8%
Sulphur Springs Valley	29%	27%	2.9%	4.0%	4.9%	3.0%
Trico	53%	53%	4.9%	7.4%	9.9%	2.2%
AEPCo Totals	40%	39%	3.8%	5.6%	6.1%	3.3%

Comparing the small rate increases that might result from SCR installation to the routine rate increases experienced in the past decade, it is clear that SCR costs could not be considered "unreasonable, unaffordable, and impracticable."

Errors in AEPCo's Revenue Requirement Analysis

According to AEPCo (2012b, Response 1, first unnumbered page), "Exhibit 1 shows the estimated increase in revenue requirements that would be required to support the installation of SCR pollution control equipment." This exhibit (2012b, Response 1, third unnumbered page) overstates the revenue requirements in at least the following three ways:

- Exhibit 1 reports that AEPCo's debt load would increase by $184 million in 2018 (Total Change in Long-Term Debt line). That is more than twice the $80 million capital cost of the SCR system estimated by EPA and accepted in AEPCo's Comments. AEPCo (2012b) does not provide any support for this inflated cost value.
- The Coop increases the revenue requirements by increasing its retained equity by $35 million from 2021 to 2031, as discussed further below.
- While AEPCo does not specify the interest rate it assumed, its estimate of the incremental fixed charges (which must include interest and principal repayment, probably property tax and insurance, and apparently a surcharge to increase equity) are about 13% of the $184 million in incremental debt in 2019, falling slowly to just under 12% by 2031. Even if the extra revenue requirements that fund the equity increase were removed, the other fixed charges in Exhibit 1 would still start at 13% and remain at 8.4% in 2031. The nominally levelized carrying charge for RUS-financed debt, in contrast, would be about 7.6%.

The SCR System Can Be Financed

The Coop has access to both internal and external financial resources.

Internal Resources

While AEPCo (2012a, 9) compares the cost of SCR installation to its 2011 operating margin of $1.9 million, it does not mention its operating margins of $9.5 million in 2010, $9.4 million in 2009, and $17.4 million in 2008, or its 2011 equity capital of $94 million (AEPCo 2009; 2011). The average operating margin over the last four years would cover 185% of the annual debt repayment for the SCR system, and the current equity capital would cover the entire cost of the installation. While it may not be prudent to pay for the SCR project entirely from the current margins and accrued capital, those sources could certainly cover a large portion of the project, including providing a bridge to long-term financing.

Further, the favorable judgment on November 22, 2011 by the federal Surface Transportation Board could dramatically reduce the magnitude of any SCR-related rate increase. The Board found that BNSF Railway and Union Pacific Railroad had charged unreasonably high rail rates to transport coal to power Apache Station and awarded AEPCo roughly $63 million, consisting of a $9.2 million lump sum payment in reparations for 2009–2011 (ordered in April 2012) and about $7.6 million per year in reduced rail rates in 2012–2018. The reduction in delivered fuel costs would offset the entire cost of the SCR system through 2018. [6]

[6]The case was Arizona Electric Power Cooperative, Inc. v. BNSF Railway Company and Union Pacific Railroad Company, Docket No. NOR 42113.

Exhibit 1 to the AEPCo Responses (AEPCo 2012b, third unnumbered page) projects that, without the SCR project, AEPCo's equity capital would rise to $133 million by 2017 and $141 million by 2018, a $47 million increase over 2011. In Exhibit 1, AEPCo assumes that very little of its equity ($1.6 million in 2017 and an additional $3.1 million in 2018) would be used to finance the SCR expenditure, or reduce the rate effect. To the contrary, AEPCo assumes that it would increase its equity by $11 million while it builds the SCR and an average of $11 million annually thereafter, for a total increase of $177 million.

While it is not clear how much equity AEPCo needs for financial stability, the Coop filed a rate case in July 2012 to reduce its depreciation rate for Apache 2 and 3, and did not request any adjustment in rates to increase its retained equity (ACC Application E-01773A-12-0305 and related testimony, included in AEPCo 2012b starting at unnumbered 3 of Part B-3). In that filing, AEPCo projected a 2012 equity ratio of 32%, which it apparently considered adequate (Schedule A-3).[7] In Exhibit 1 of the Responses, AEPCo (2012b, third unnumbered page) starts with an equity ratio in the 27%–32% range in 2017–2021, but then assumes it would raise another $117 million in equity through higher rates in 2022–2031, bringing the equity ratio to a whopping 68% of total capital; see Table 6.

[7]In its 2003 rate-case filing, AEPCo sought to bring its equity ratio closer to the 13.2% mean ratio for generation and transmission cooperatives (Edwards 2009, 8–10).

Table 6: AEPCo's Projected Equity Ratio

	Patronage Capital and Equity				Long Term Debt				
	Base a	with SCR b	Difference c	Change from 2017 with SCR d	Base e	with SCR f	Difference g	% Difference h	**Equity Ratio with SCR** i
2017	$132,907	$131,266	−$1,641		$188,337	$286,649	$98,312	52.2%	31%
2018	$141,164	$136,419	−$4,745	$5,153	$185,622	$369,759	$184,137	99.2%	27%
2019	$146,620	$142,072	−$4,547	$10,806	$180,035	$357,009	$176,974	98.3%	28%
2020	$153,571	$149,612	−$3,959	$18,346	$173,587	$343,008	$169,421	97.6%	30%
2021	$159,992	$157,034	−$2,958	$25,768	$173,983	$335,439	$161,456	92.8%	32%
2022	$167,582	$166,059	−$1,523	$34,793	$168,749	$321,804	$153,055	90.7%	34%
2023	$176,266	$176,637	$371	$45,371	$162,201	$306,398	$144,197	88.9%	37%
2024	$186,514	$189,262	$2,748	$57,996	$154,650	$289,505	$134,855	87.2%	40%
2025	$193,528	$199,163	$5,635	$67,897	$149,346	$274,349	$125,003	83.7%	42%
2026	$202,128	$211,188	$9,060	$79,922	$143,089	$257,703	$114,614	80.1%	45%
2027	$212,575	$225,626	$13,051	$94,360	$135,501	$239,159	$103,658	76.5%	49%
2028	$225,269	$242,909	$17,640	$111,643	$126,170	$218,274	$92,104	73.0%	53%
2029	$240,343	$263,203	$22,860	$131,937	$114,993	$194,913	$79,920	69.5%	57%
2030	$254,706	$283,450	$28,744	$152,184	$104,308	$171,378	$67,070	64.3%	62%
2031	$272,707	$308,037	$35,330	$176,771	$90,866	$144,386	$53,520	58.9%	68%

Notes:

Columns a, b, c, g, and h from AEPCo Responses, Exhibit 1
Column d computed from Column a
Column e = g ÷ h; Column f = e + g
Column i = b ÷ (b + f)

The Coop has not explained why it could not pay some or all of the costs of the SCR installation with the revenues it has scheduled to use for increasing capital.

External Resources

The Coop's discussion of its financing sources misstates several critical facts. First, it is not true that loans from the RUS are ultimately "allocated" from United States taxpayers by Congressional action. The Federal Financing Bank borrows money from the private sector as part of Treasury financing, and the RUS charges the full cost of the financing to the cooperatives that borrow from it, plus 0.125%. The RUS loan funds are not raised from taxpayers and are not subsidized by taxpayers.

Second, while AEPCo may be "unclear" on RUS's resources, RUS does not seem to foresee any shortage in funding. The USDA Rural Development Strategic Plan (USDA n.d., 11) includes plans to increase lending for new and improved electric facilities from $6.6 billion in 2009 to $7.1 billion in 201. Each year's spending would be 80–90 times the estimated cost of the Apache SCR system. In its August 2012 "boxscore" summary of Fiscal Year 2012 Loans and Appropriations, RUS (USDA 2012a) reported that, just two months before the end of the fiscal year, it had an appropriation of $6.5 billion of loans from the Federal Financing Bank, of which RUS had approved loans of $1.25 billion and had $2.55 billion in pending requests, leaving a surplus lending capacity of $2.7 billion, over 30 times the cost of the Apache SCR. Considering the importance of Apache to AEPCo and its members, and the fact that the SCR would be required to comply with Federal law, RUS is likely to prioritize a financing request for the Apache SCR.

Third, the National Rural Electric Cooperative Finance Corporation is financed by private investors, not by the resources of "other cooperatives," and it is irrelevant whether "many" other cooperatives "are facing their own financing challenges" to meet environmental requirements. If AEPCo decided not to finance the entire project from retained earnings, and in the unlikely event that RUS was able to fully finance the SCR, there is no reason to believe that AEPCo should have any difficulty borrowing from the National Rural Electric Cooperative Finance Corporation.

Poverty and Environmental Compliance

The Coop portrays its service territory as extraordinarily impoverished, making the following claims:

- The territory of the member coops is representative of rural Arizona, with an income of 72% of the national average (AEPCo 2012a, 8).[8]
- The SCR "would necessitate a substantial long-term increase in AEPCo's rates…borne by members with relatively low incomes." (AEPCo 2012a, 9)
- "Many of AEPCo's ultimate customers consist of fixed-income retirees or subsistence-level agricultural farms." (AEPCo 2012a, 10)
- The "low income profile of AEPCo's service area…may affect the viability of AEPCo as an ongoing generation alternative." (AEPCo 2012a, 12).

As demonstrated above, the long-term increase in the coop rates would hardly be "substantial" and certainly would not endanger the viability of AEPCo. That hyperbole aside, it is true that Arizona is not the highest-income state in the country, and that incomes are lower in rural Arizona than in the urban areas. However, the economic situation in the coop territories is not as extreme as AEPCo suggests, for three reasons.

First, the cost of living in rural Arizona is also lower than the national average. Data from the Council for Community and Economic Research, compiled by city-data.com, estimate that the cost of living in Greenlee County (served by Duncan Valley Coop) is 78% of the national average, in Graham County 83.2%, in Cochise County (served by Sulphur Springs Valley Coop) 84.4%, Mohave

[8]The Coop reports the inverse of this ratio (national income divided by rural Arizona income), which is 1.39.

County 86%, and the rural parts of Pima County about 83% of the national average.[9]

Second, if AEPCo is correct that many of the coop customers are retirees, their lower incomes do not equate directly to lower standard of living, since it is widely recognized that income requirements are typically lower in retirement than during a person's working life [10] For a household with the income of one average rural-Arizona job (more than $40,000 from the USDA Fact Sheet cited by AEPCo 2012a, 8), the replacement ratio is 85%, while for a household with 1.5 or more average jobs preretirement, the post-retirement replacement ratio is about 78% (Aon Consulting 2008). Combined with the lower cost of living, a retired household in rural Arizona would need about 60–70% of the income of an average US preretirement household to maintain the same lifestyle.

Third, rural Arizona is hardly the poorest part of the nation, and many poorer areas have been required to contribute to the costs of emissions reduction. Table 7 compares data from the USDA Fact Sheets (cited by AEPCo Comments at 8) for Arizona and six other states.

Table 7: Income and Poverty Measures, Rural Areas 2010 (2009$)

	Arizona	Alabama	Mississippi	Missouri	West Virginia	Louisiana	Kentucky
Per-capita income	28,180	29,489	28,627	29,608	29,882	30,958	27,763
Earnings per job	41,486	35,853	37,532	34,560	39,618	40,756	35,083
Poverty rate	22.6	21.8	25.8	18.8	20.2	22.4	22.9

Source: USDA (2012b).

While Arizona per-capita income is lower than all the other states except for Kentucky, those differences may be largely due to the retired population, since earnings per job are higher in Arizona than in any of the other states. The rural poverty rate in Arizona is substantially less than in Mississippi, slightly less than in Kentucky, and a little higher than in Alabama and Louisiana.[11]

[9]Pima County has an overall cost of living ratio of 86.5%, but that is largely due to the cost of living in Tucson and the surrounding areas, mostly served by Tucson Electric, with at least half the population of the county and cost of living ratios about 90%.

[10]The reasons generally given for this differential include the lack of social-security taxes, the absence of employment costs (such as commuting costs), the reduction in health-insurance costs due to Medicare, and the ending of contributions to retirement savings.

[11]For some of the earlier years, the Fact Sheets show higher poverty rates for Alabama and Louisiana than for Arizona.

Pollution controls have been required on regulated power plants in all of these states, including cooperative-owned plant, as follows:

- $650 million in controls on the Spurlock and Dale generating stations plants owned by the East Kentucky Power Cooperative under a 2007 consent decree;
- $423 million in environmental controls at the Associated Electric Cooperative's Thomas Hill Energy Center in Missouri;
- $100 million to install selective catalytic reduction at the Associated Electric Cooperative's New Madrid plant;
- $200 million to convert the Associated Electric Cooperative's coal plants to burn low-sulfur coal in 1994;
- $250 million for the utility-proposed controls on the half of the Flint Creek plant owned by the Arkansas Electric Cooperative;
- $390 million for the utility-proposed controls on the 35% of the White Bluff plant owned by the Arkansas Electric Cooperative;
- $3 to $5 billion in pollution controls on plants owned by the TVA (which flows those costs through to cooperatives in Alabama and Mississippi, among other customers) in an April 2011 settlement.

In addition, extensive retrofits have been required at coal plants owned by investor-owned utilities that serve cooperatives. The Coop's claim of special economic circumstances is not supported by the data.

Fourth, in its Response 12, AEPCo (2012b) understates the average per-capita income for the "the zip codes served by AEPCo and its member distribution cooperatives." While AEPCo claims that the average per-capita income for those zip codes is $24,363, that value is the simple average over the 79 listed zip codes of household income per capita for each zip code, even though the various zip codes have populations ranging from nine to 57,091. The actual average of income for the people in the 79 zip codes is the total personal income ($21,837,936,774, or almost $22 billion) divided by the total population (835,608), or $26,134 per capita.[12]

[12]For some reason, AEPCo computed income per capita from household income, rather than the slightly higher personal-income data. Using the AEPCo's household income data, the corrected average income per capita would be $25,983.

The Coop's computation does not appear to include all the zip codes served by its members, such as the following communities:

- Royal Carrizo, Cal., zip code 92561 (served by Anza Electric Coop),
- Garner Valley, Cal. zip code 92549 (served by Anza Electric Coop),
- Hackberry, Ariz. zip code 86411 (served by Mohave Electric Coop),
- Redrock, N.M., zip code 88055 (served by Duncan Valley Electric Coop).

Conversely, AEPCo's analysis includes communities that the distribution coops do not serve at all. Nogales and the surrounding area is served by UniSource Energy Services (an investor-owned utility), but AEPCo includes two Nogales zip codes in the Trico service territory. Since Nogales is much less affluent than the rest of Trico's territory, with a per-capita income of under $17,000, compared to the non-Nogales average of over $27,000, including the 43,000 Nogales residents reduces the Trico average per-capita income by nearly $1,000. The Coop's analysis also includes in the Trico area three low-income zip codes (85706, 85713, and 85714) in the city of South Tucson and surrounding parts of Tucson that are served by Tucson Electric Power. Those 38,800 households comprise more than 20% of the households that AEPCo includes in the Trico analysis.[13]

The Coop also includes the entire populations of zip codes for which it serves only a small portion. For example, 43% of the population used for AEPCo's analysis of income of the residential customers of Duncan Valley Electric Coop is in zip code 88045, which includes Lordsburg, N.M. Lordsburg is served by Texas–New Mexico Power, not the coop. Lordsburg had a 2010 population of 2,797 and a 2009 pre-capita income of $15,094 (CityData.com 2012), compared to AEPCo's (2102b, Response 12, unnumbered 3) of 3,193 population and an average pre-capita income of $18,504 for the entire 88045 zip code in 2011. If these estimates are all accurate and consistent, the 396 people in zip code 88045 outside Lordsburg (many of whom would be served by Duncan Valley) must have had an average income of $42,588. In this particular case, AEPCo seems to have overstated the number of persons in a low-income zip code served by one of its distribution coops and included a population in the zip code that is lower-income than the coop's customers in the zip code.

[13]We cannot determine which of the other Tucson zip codes included in AEPCo's analysis are actually served by Tucson Electric, rather than Trico.

In Response 12, AEPCo (2012b) reports incomes for a group of households that is about 2.4 times more numerous than the number of residential customers the distribution coops actually serve. See Table 8. We relied on the number of residential customers from EIA data for 2010; the Arizona distribution coops reported very similar values to the Arizona Corporation Commission as of December 2010 (Duncan Valley Electric Cooperative 2010; Graham County Electric Cooperative 2010; Mohave County Electric Cooperative 2010 Sulphur Springs Valley Electric Cooperative 2010; Trico Electric Cooperative 2010; Arizona Electric Power Cooperative 2010).

Table 8: AEPCo's Overestimate of Coop Households

	Coop Residential Customers	AEPCo-Reported Households	AEPCo Overstatement of Households Served
Anza	4,152	16,523	298%
Duncan Valley	1,882	2,879	53%
Graham County	7,603	14,562	92%
Mohave	34,672	36,894	6%
Sulphur Springs Valley	41,454	49,927	20%
Trico	37,806	187,867	397%
Totals	127,569	308,652	142%

Notes:
Customer number from EIA Form 861 database.
2010. Reported Households from AEPCo (2012b, Response 12).

In its Response 12, the Coop uses about the right number of households for Mohave but overstates the number of residential households for the other coops by 20% to 400%.

We have not been able to determine all the zip codes served by the distribution coops, or the portion of each zip code that they serve (where the zip code is split with another utility), so it is not clear whether the Coop's sampling of zip codes further distorted the results of its analysis.

We have not been able to compare income by zip code from other rural utilities in low-income states, because AEPCo used a proprietary source for the income estimates, public sources report values different than those reported by AEPCo, and lists of zip codes served by rural coops (or other utilities) are not generally available.

Miscellaneous Responses

In its comments, AEPCo (2012a) raises a variety of miscellaneous claims regarding the costs and impacts of installing SCR. None of AEPCo's claims support the Coop's argument that installing SCR will have a severe impact on Apache.

While the Coop "has no outside investors [and] must necessarily pass its costs through to…retail customers" (AEPCo 2012a, 8), nearly all utilities pass their costs on to retail customers. The Coop appears to be under the impression that shareholders of investor-owned utilities absorb the costs of environmental retrofits; this is not the case. The Coop's freedom from outside investors and income taxes reduce the cost of compliance compared to the costs for a similarly situated investor-owned utility.

The Coop "cannot abandon the units and expect to serve its loads adequately and reliably" (AEPCo 2012a, 9). Most utilities facing BART requirements are installing controls rather than abandoning their generation plants. In many cases, the units subject to BART make up as large a proportion of the utility's generation fleet as Apache 2 and 3 do for AEPCo (about 60%). If AEPCo decides to repower or replace its coal units, it will have five years to do so.

"Unlike many other utilities, AEPCo is…not in a position to 'spread' the cost of proposed BART technologies either over other plants in its fleet (there are none)" (AEPCo 2012A,11). This is a semantic argument. The Coop has no other power *plants*, but the Apache plant has several gas-fired combustion turbine and steam units, not subject to BART. In other utilities, those units might be at other locations, with other names.

The suggestion that requiring SCR on Apache "would jeopardize AEPCo's long-term existence if it causes the cost of power provision to substantially exceed

that available from…other cooperatives that AEPCo's existing Class-A and -D members could join" is a complete fabrication. The Class-A members have contracts to take the entire output of Apache 2 and 3 through the end of 2035 (AEPCo 2012b, Responses 4 and 13), while the only Class-D member, Valley Electric Association, does not purchase any firm power from AEPCo and only has a service contract for scheduling and trading services (Minson, 133), which would not be affected by the costs of Apache 2 and 3.

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