COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:	)	
	)	**CASE NO. 2012-00149**
2012 INTEGRATED RESOURCE PLAN OF	)	
EAST KENTUCKY POWER COOPERATIVE, INC.	)	

COMMENTS OF INTERVENOR SIERRA CLUB ON THE 2012 INTEGRATED RESOURCE PLAN OF EAST KENTUCKY POWER COOPERATIVE, INC.

Intervenor Sierra Club hereby comments on East Kentucky Power Cooperative's ("EKPC") 2012 Integrated Resource Plan ("IRP"). EKPC's IRP reflects an outdated approach that ignores significant changes in today's energy markets, and that fails to seize the opportunities presented by the growing availability of low cost demand side management and renewable energy resources. As a result, the IRP fails to incorporate the type of thorough and reasonable planning needed for EKPC to achieve a least cost and least risk energy future for its member cooperatives and ratepayers.

As discussed in detail below, the IRP is a flawed document that fails to satisfy the standards of Kentucky law because, among other things:

- EKPC could achieve far higher levels of energy savings through demand side management ("DSM") than is set forth as a goal in the IRP;
- EKPC failed to provide any evaluation of cogeneration and distributed renewable generation, despite the plain request from the Commission Staff that the company do so;
- EKPC improperly punted the question of retrofitting versus retiring its existing coal units, despite strong evidence that retiring Cooper Unit 1 and the Dale plant would be the most economical option;
- EKPC unreasonably assumes there will be zero cost related to carbon dioxide ("CO_2") emissions over the next fifteen years;
- EKPC never engaged in sensitivity analyses to evaluate how a range of assumptions regarding factors such as load growth, fuel prices, emission allowance prices, etc. would impact the company's resource planning;

- EKPC did not engage in an open and transparent process that recognizes the important role that public input can have in helping to achieve least cost and least risk resource planning.

Until these serious shortcomings in EKPC's IRP are remedied, the reasonableness of the company's future actions relying on this resource planning is suspect. As such, the Commission Staff should find the IRP to be inadequate and require EKPC to address each of these shortcomings in all future resource planning and decision making.

I. IRP Standards

The IRP process in Kentucky is governed by 807 K.A.R 5:058, which requires EKPC to submit every three years a plan that discusses historical and projected demand, resource options for satisfying that demand, and the financial and operating performance of EKPC's system. 807 K.A.R. 5:058 Section 1(2). Core elements of the filing include:

- A base load forecast that is "most likely to occur and, to the extent available, alternate forecasts representing lower and upper ranges of expected future growth of the load on its system" 807 K.A.R. 5:058 Section 7(3).

- EKPC's "resource assessment and acquisition plan for providing an adequate and reliable supply of electricity to meet forecasted electricity requirements at the lowest possible cost." 807 K.A.R. 5:058 Section 8(1).

- The revenue requirements and average system rates resulting from the plan set forth in the IRP. 807 K.A.R. 5:058 Section 9.

As the Commission Staff have stated in reviewing EKPC's last IRP filing:

> The goal of the Commission in establishing the IRP process was to create a comprehensive, but non-adversarial review of demand and supply projections to ensure that all reasonable options for meeting future supply needs were being considered and pursued in a fair and unbiased manner, and that ratepayers will be provided a reliable supply of electricity at the lowest possible cost.[1]

The Staff has further explained that, in reviewing an IRP, its goals are to ensure that:

1. All resource options are adequately and fairly evaluated;

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[1] Kentucky PSC, Staff Report on the 2009 Integrated Resource Plan of East Kentucky Power Cooperative, Inc., Case No. 2009-00106 (Nov. 2010), at 1 (hereinafter "2009 IRP Staff Report").

2. Critical data, assumptions, and methodologies for all aspects of the plan are adequately documented and are reasonable; and

3. The selected plan represents the least-cost, least-risk plan for the end use customers served by EKPC and its member cooperatives.[2]

Evaluation of an IRP should also be guided by the overall requirement that utility rates are "fair, just, and reasonable." KRS § 278.030(1); KRS § 278.040; *Kentucky Public Service Com'n v. Com. ex rel. Conway*, 324 S.W.3d 373, 377 (Ky. 2010). As the Commission recently explained, it has long been recognized that "'least cost' is one of the fundamental principles utilized when setting rates that are fair, just, and reasonable." *In the Matter of: Application of Kentucky Power Co.*, Case No. 2009-00545, 2010 WL 2640998 (Ky. P.S.C. 2010). A utility's rates will almost certainly not be fair, just, and reasonable if they do not result from planning processes that seek to determine the least cost resource plan.

It is with these standards in mind that the Sierra Club offers the following comments.

II. EKPC Could Achieve Far Higher Levels of DSM Savings Than Are Established as Goals in the IRP

The best energy resource from both an economic and environmental perspective is DSM, which uses energy efficiency and demand response programs to reduce the total amount of electricity that a utility needs to produce in order to satisfy its customers' needs. Experience throughout the country shows that well-designed and implemented DSM programs can reduce energy demand by 1% to 2% per year at a significantly lower cost than it takes to produce that same amount of energy. As such, any energy planning process that seeks to achieve the lowest cost energy portfolio should prioritize the implementation of all cost effective DSM.

The Commission has long recognized the value of utilities aggressively pursuing cost-effective DSM, explaining recently that it:

> Recognizes the importance of greater deployment of energy efficiency initiatives to Kentucky's electric generating utilities due to the reliance on low cost coal-fired base load generation. Even though there has been no legislative mandate to adopt its goals, Kentucky's 7-Point Strategy for Energy Independence (Kentucky's Energy Plan) issued in November 2008 includes specific goals for energy efficiency as well as renewables and biofuels by 2025. The Commission also notes that Kentucky's reliance on coal-fired generation will face increasing pressure as costs are incurred to meet proposed and potential new federal environmental regulations.

[2] *Id.* at 2.

> In several administrative cases, the Commission has noted its support for energy efficiency. In addition, in recent cases where utilities were requesting a general increase in base rates, the Commission has questioned utilities regarding their conservation and energy efficiency efforts. In those cases, the Commission has stated its belief that conservation, energy efficiency and demand-side management will become more important and cost-effective as there will likely be more constraints placed upon utilities whose main source of supply is coal-based generation. As a result, the Commission has encouraged all electric energy providers to make a greater effort to offer cost-effective demand-side management and other energy efficiency programs.[3]

Similarly in its report on EKPC's 2009 IRP, the Commission Staff concluded that "EKPC should aggressively pursue new DSM opportunities and implement new DSM programs that are reasonable and cost-effective."[4]

EKPC has pursued some DSM programs and is proposing to implement additional programs to reduce both peak demand and total energy requirements. However, the IRP demonstrates that EKPC is neither achieving nor projecting to achieve anything near the levels of energy savings that are readily achievable, much less pursuing DSM in an aggressive manner.

In the IRP, EKPC states that it "believes an aggressive but reasonable DSM goal would be to pursue approximately 50 MW over a five year period." (IRP at p. 4). In response to information requests, EKPC clarified that the 50MW figure refers to cumulative summer peak demand reduction over the five year period of 2013 through 2017 from non-interruptible DSM programs. (EKPC Resp. to Staff 1-1a). EKPC further explained it expects to achieve 27,848 MWh of energy savings from its DSM programs in 2017, and a cumulative, five year total energy savings of 109,008 MWh. (EKPC Resp. to SC 2-1).

These identified DSM goals do not come close to being "aggressive" or even "reasonable." The 109,008MWh of energy savings represents a savings over five years of only 0.8% of the 13,588,573 MWh of weather normalized net total system requirements by 2017. (IRP at p. 46). The 50MW of summer peak demand reduction[5] represents only a 2.2% reduction of the projected 2017 summer peak demand of 2,292MW. (*Id.* at p. 47). Adding in the DSM savings that EKPC has achieved from 2007 through 2011, the company is planning to achieve a total of 198,421MWh of energy savings, and 104MW of summer peak demand reduction by 2017. Those figures would represent a total of 1.5% energy savings and 4.5% summer peak demand reduction from a decade of DSM programs. While the IRP identifies levels of DSM for

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[3] *In re: Consideration of the New Federal Standards of the Energy Independence and Security Act of 2007*, KPSC Case No. 2008-00408, Oct. 6, 2011 Order, at pp. 21-22 (citations omitted)

[4] KPSC, *Staff Report on the 2009 Integrated Resource Plan of East Kentucky Power Cooperative, Inc.*, KPSC Case No. 2009-00106 (Nov. 2010), at p. 31.

[5] Unless otherwise noted, the peak demand reduction figures discussed here are only for non-interruptible programs and, therefore, do not include EKPC's agreement with Gallatin Steel Company that allows EKPC to interrupt Gallatin's 120MW load for up to 360 hours per year.

the 2018-2026 timeframe that the company considers "theoretical" (*id.* at p. 4), it has not stated what it considers to be a "reasonable" goal for after 2017.

A. EKPC's Own IRP Demonstrates That Far Higher Levels of Cost-Effective DSM Can and Should be Pursued.

In contrast to the 109,008MWh of energy savings and 50MW of peak demand reduction over five years that EKPC erroneously identifies as "aggressive but reasonable," the IRP demonstrates that far higher levels of DSM savings can be cost effectively achieved. The company reports that it evaluated 113 DSM programs through a Qualitative Screening that winnowed the list down to 43 programs. (IRP Tech. Appdx. Vol. 2 at p. 6). Thirty-three of those programs were then subjected to a Quantitative Evaluation in which cost effectiveness was measured in terms of the tests set forth in the California Standard Practice Manual. (*Id.* at pp. 7-9). EKPC then selected 13 existing and 21 new DSM programs for inclusion in the IRP. (*Id.* at p. 10).

In measuring the total impacts that would result from the existing and new DSM programs, EKPC identified both energy savings and peak demand reduction significantly higher than the goals the company identifies. In particular, the company projects that the DSM programs selected for inclusion in the IRP would cost-effectively achieve 183,221MWh of energy savings by 2013, 488,043MWh by 2017, 724,786MWh by 2021, and 818,324MWh by 2026. (IRP at p. 46).[6] These figures represent a total savings of 1.4% of net energy requirements by 2013, 3.6% by 2017, 5% by 2021, and 5.2% by 2026. Similarly, in contrast to EKPC's 50MW summer peak demand reduction goal, the IRP's DSM analysis projects that 208.3MW of summer peak demand reduction is cost-effectively achievable by 2017 through non-interruptible programs, which represents a 9.1% reduction. (IRP Tech. Appdx. Vol. 2 at pp. 13-14). By 2026, 299.1MW of summer peak demand reduction is achievable, which represents an 11.3% reduction from the peak of 2,645MW. (*Id.*). As for winter peak demand, the IRP projects a 175MW reduction by 2017 and 297.4MW by 2026, which represents reductions of 5.6% by 2017 and 8.3% by 2026. (*Id.*).

The IRP rejects the results of EKPC's own study, claiming that they represent only the "theoretical potential for DSM" and that it is "neither prudent nor practical to expect to achieve all of these results." (IRP at p. 4). The IRP provides no explanation for why such results, which are still far below the DSM savings that utilities throughout the nation have been achieving for years, are purportedly not achievable, or why EKPC selected DSM goals that are approximately one-fourth of the energy savings and peak demand reduction that EKPC's own analysis identifies as cost-effectively achievable. Instead, those diminutive goals are presented as a *fait accompli*, despite the fact that the higher levels of DSM identified in the IRP cleared both a Qualitative and Quantitative analysis and passed the cost effectiveness tests set forth in the California Standard Practice Manual.

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[6] Each of these energy savings figures are in addition to the 57,202MWh of energy savings that EKPC reports its DSM programs have achieved from 2007 through 2011.

In response to information requests, EKPC attempts to justify its diminutive DSM goals on the grounds that the IRP DSM study assumes that both the existing and new DSM programs are "fully mature." (EKPC Resp. to Staff 1-1b). EKPC asserts that many of its existing programs "are not currently performing at that theoretical maturity level," and that it "cannot be considered reasonable" to achieve mature level program performance within five years. (*Id.*) The company further notes that its non-interruptible DSM programs have achieved an average peak demand reduction of 4MW per year for the past decade, which is a less than 0.2% reduction in peak demand per year. (EKPC Resp. to Staff 1-1a). Similarly, between 2007 and 2011, EKPC's DSM programs achieved a cumulative energy savings of 57,202MWh, which is 0.47% of EKPC's 2011 energy sales, or an average reduction of 0.08% per year. (IRP at p. 50-51).

EKPC appears to be correct that its existing DSM programs are seriously underperforming. But the company has provided no basis for concluding that it cannot ramp those programs up to mature levels over a few years. In fact, it can. For example, Michigan's energy optimization law ramps up the required levels of energy savings for utility from 0.3% in 2009 to 0.5% in 2010, 0.75% in 2011, and 1% per year in 2012 and thereafter.[7] Utilities in Michigan have exceeded those targets in each of 2009 through 2011, with their 2011 energy savings exceeding the level required for 2012.[8] Such savings in 2011 were achieved for a cost of $205 million in program expenditures, and are expected to provide lifecycle savings to customers of $709 million, for a benefit ratio of 3.55 to 1.[9] Similarly, Indiana's energy efficiency requirements ramp up over a few years, with a 2010 goal of 0.3% savings increasing to 0.5% in 2011, 0.7% in 2012, 0.9% in 2013, and 1.1% in 2014.[10] The total annual savings continues to ramp up to 2% in 2019.[11]

EKPC's claim that it cannot ramp its programs up over the next five years also rings hollow because, as EKPC notes in both the IRP and its responses to requests for information, the company has "offered DSM programs since the early 1980s" and has carried out demand reduction programs for at least a decade. (IRP at p. 4; EKPC Resp. to Staff 1-1b). As such, it is far past time for EKPC to bring its programs up to the mature level, rather than continuing to offer suboptimal DSM efforts. While EKPC is apparently planning to take some steps over the next year to improve its DSM programs, the company acknowledges that it has not completed any "formal analysis" of the performance of its DSM programs. (EKPC Resp. to SC 2-24b). In short, there is simply no justification for the company to continue offering only diminutive levels of DSM for another half decade.

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[7] Michigan Public Service Commission, 2012 Report on the Implementation of P.A. 295 Utility Energy Optimization Programs (Nov. 30, 2012), at p. 6, available at http://www.michigan.gov/documents/mpsc/2012_EO_Report_404891_7.pdf.

[8] *Id.*

[9] *Id.* at 2.

[10] Phase II Order, *In re Commission's Investigation, Pursuant to IC § 8-1-2-58, Into the Effectiveness of Demand Side Management ("DSM") Programs Currently Utilized in the State of Indiana*, IURC Cause No. 42693 (Dec. 9, 2009), at 31, available at https://myweb.in.gov/IURC/eds/Modules/Ecms/Cases/Docketed_Cases/ViewDocument.aspx?DocID=0900b631801 23011.

[11] *Id.*

In addition, even if EKPC had justified an inability to fully achieve the levels of DSM savings that its own study identified as cost-effective, no explanation is provided for why the company selected DSM goals that are approximately one-fourth of the levels that are identified in the IRP. The 50MW and 109,008MWh goals appear to be pulled out of thin air, rather than to have been identified through the type of careful evaluation that EKPC should have undertaken when ratepayer money is at stake.

EKPC also notes that "cost control efforts" have resulted in "participant incentive levels for some programs" being "too low to drive participation levels to a mature level." (EKPC Resp. to SC 2-24a). If so, then this is a classic example of being pennywise and pound foolish, as EKPC's own analysis projects that the "theoretical" levels of DSM programs could, if fully implemented, produce $505 million in benefits at a cost of $256 million, for a total net benefit of nearly $250 million. (IRP Tech. Appx. Vol. 2 at p. 3). While EKPC is reportedly planning to increase some of the DSM incentives it is offering, even with those increases the company is only planning to achieve a quarter of what its own study shows it could cost-effectively achieve. Such an approach is plainly not consistent with EKPC's legal duty to ensure that its rates are "fair, just, and reasonable."

B. That EKPC Can Achieve Far Higher Levels of DSM is Also Shown By the EPRI Study that EKPC Commissioned But Never Followed Up On.

The 109,008MWh energy savings and 50MW peak demand reduction by 2017 goals set forth by EKPC are also far short of the realistically achievable potential for EKPC identified by the Electric Power Research Institute ("EPRI"). In October 2009, EPRI was engaged by EKPC to apply a national EPRI study regarding DSM potential to determine the potential for energy efficiency and demand reduction in the EKPC service territory.[12] The national EPRI study likely underestimates the level of DSM savings that is cost-effectively achievable.[13] However, even the EPRI study finds that EKPC could achieve far higher levels of energy savings and peak demand reduction through DSM than EKPC has proposed as its goal for the next five years.

The EPRI study evaluated four types of DSM potential - technical, economic, maximum achievable, and realistic achievable.[14] The most relevant for purposes here is the assessment of realistic achievable potential ("RAP"), which EPRI defined as follows:

> **Realistic Achievable Potential (RAP),** unlike the other potential estimates, represents a forecast of likely customer behavior. It takes into account existing market, financial, political and regulatory barriers that are likely to limit the amount of savings that might be achieved through energy-efficiency and demand-

[12] EPRI, Assessment of Achievable Potential From Energy Efficiency and Demand Response Programs for East Kentucky Power Cooperative (May 2010), produced in EKPC Resp. to SC 2-18 (hereinafter "EPRI Report").
[13] Memo from Synapse Energy Economics to NRDC and Sierra Club (June 26, 2009), attached as Ex. 1; *McKinsey & Co., EPRI and McKinsey Reports on Energy Efficiency: A Comparison* (Oct. 21, 2009), attached as Ex. 2.
[14] EPRI Report at 2-3.

response programs. For example, utilities do not have unlimited budgets for program implementation. There can be regional differences in attitudes toward energy efficiency and its value as a resource. Market barriers can include imperfect information. RAP is calculated by applying a program implementation factor (PIF) to the MAP for each measure. The program implementation factors were developed by taking into account recent utility experience with such programs and their reported savings. The PIF factors developed for the National Study were reviewed with the EKPC program managers and staff and applied to the EKPC MAP estimates.[15]

The EPRI study evaluated DSM RAP for only the residential sector, which makes up approximately 60% of EKPC's load. (IRP at p. 39). The study concluded that by 2015, i.e. after five years, the residential DSM RAP is 160,267MWh of energy savings, while 359,466MWh of savings would be achievable by 2020, and 746,951MWh of savings would be achievable by 2025.[16] These levels of energy savings represent 2.1%, 4.6%, and 8.9% of residential load in 2015, 2020, and 2025, respectively.[17] EPRI also found that DSM RAP could reduce residential summer peak demand by 76MW by 2015, and residential winter peak demand by 198MW by 2015.[18]

In short, despite evaluating only 60% of EKPC's load, the EPRI study found significantly higher levels of energy savings and demand reduction to be achievable than are proposed as "reasonable but aggressive" by EKPC. And in doing so, EPRI specifically considered budgetary limitations and other market barriers that were applied through program implementation factors that EPRI specifically reviewed with EKPC program managers and staff.[19] This provides yet further evidence that the diminutive DSM goals set forth by EKPC are far from what is cost-effectively achievable.

EKPC acknowledges that it "did not make direct use of" the EPRI study in the IRP. (EKPC Resp. to SC 1-44). According to EKPC, there were "several discrepancies" between the EPRI study results and EKPC's DSM evaluation that could not be explained without access to the underlying data and assumptions from the EPRI report. (*Id.*). EKPC, however, has not identified any such specific discrepancies and acknowledges that it "did not request EPRI's underlying data and assumptions" that was purportedly needed to explain such discrepancies. (*Id.*; EKPC Resp. to SC 2nd Supp. 3).

EKPC claims that it used the EPRI study results as an "overall reasonableness sanity check" for its own analysis, and that the results "match up very well." (EKPC Resp. to SC 1-44 and SC 2-18). But the EPRI results match up well only with the results of the IRP DSM analysis that EKPC has deemed "theoretical." The EPRI results significantly exceed the diminutive DSM

[15] *Id.*
[16] EPRI Report at p. 5-2.
[17] *Id.*
[18] *Id.* at pp. 6-2, 6-3.
[19] *Id.* at p. 2-3.

goals that EKPC has actually proposed yet the company has provided no explanation as to why it purportedly cannot achieve levels of DSM savings that EPRI found to be realistically achievable.

C. Experience at Other Utilities and in Other States Shows that Well Over 1% Annual Energy Savings is Cost-Effectively Achievable Through DSM

While the diminutive DSM goals identified by EKPC in the IRP are far lower than what was found cost effectively achievable in the IRP study and in the EPRI Report, it is important to note that none of those sources come close to the greater than 1% per year level of energy savings that EKPC could cost effectively achieve through DSM. For example, as shown in the Figure 1 below, at least 15 states have set cumulative energy efficiency savings goals for 2020 in excess of 10%, which amounts to at least 1% savings per year.

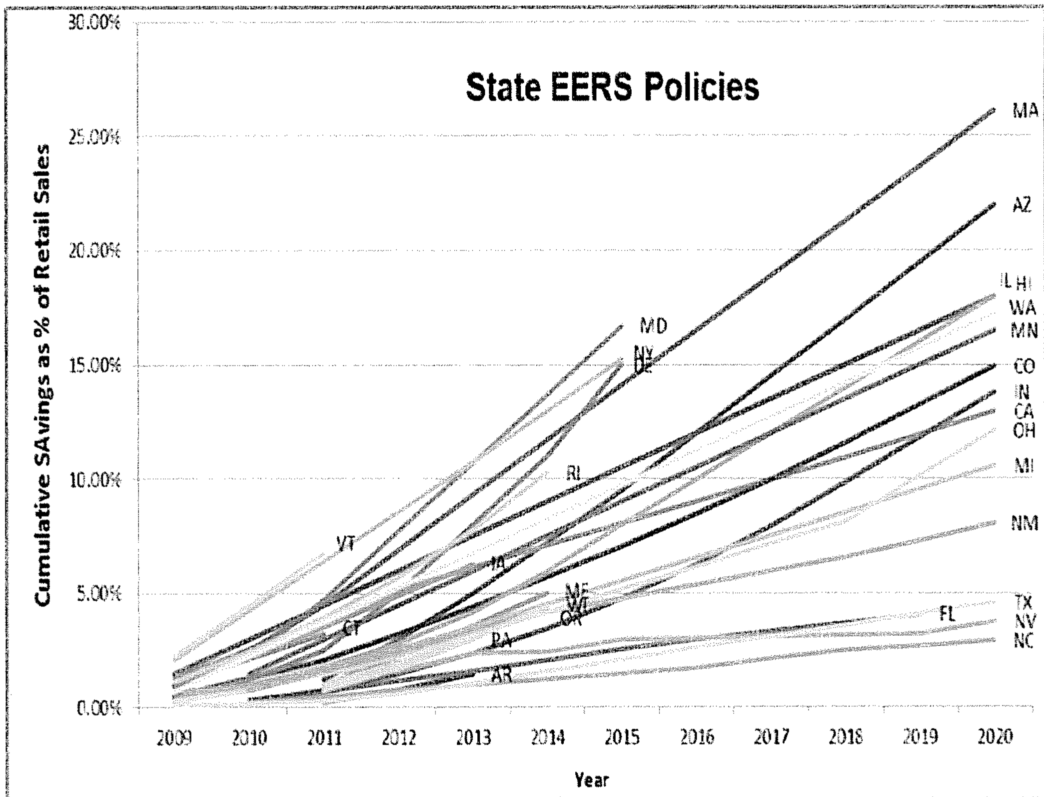

Figure 1 – State EERS Savings Targets[20]

Most states are meeting their energy saving goals, and nine states achieved energy savings of more than 1.2% in 2009 or 2010.[21]

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[20] American Council for an Energy-Efficient Economy, Energy Efficient Resource Standards: A Progress Report on State Experience (June 2011), at 8-9, *available at* http://aceee.org/research-report/u112.
[21] *Id.* at 9.

For example, Ohio passed legislation in 2009 requiring 22% cumulative energy savings by 2025, starting at 0.3% annual savings in 2009, ramping up to 1% annual savings by 2014, and 2% in 2019.[22] A comprehensive analysis by ACEEE, ICF International, Synapse Energy Economics, and Summit Blue Consulting found such savings levels could be "easily" satisfied with "proven utility programs and innovative policies."[23] And American Electric Power recently completed a DSM potential study in Ohio and concluded that utilities could realistically reduce load by more than 20% by 2028 with cost effective DSM.[24]

And in Kentucky, Governor Steven L. Beshear has called for the establishment of an Energy Efficiency Resource Standard that would seek to reduce energy consumption by at least 16 percent below projected 2025 levels, for a savings rate of 1.13% per year.[25] While the Governor's goal is not yet a binding requirement, it provides additional evidence that EKPC could achieve far more cost effective demand reduction through enhanced DSM efforts.

D. EKPC Should Evaluate and Implement Substantially Higher Levels of DSM Than Are Proposed in the IRP.

Based on all of the above, EKPC should evaluate and implement a much more robust DSM program that would save ratepayer money by achieving significantly higher annual reductions of peak energy demand and total energy sales. One way to evaluate the level of DSM that should be pursued is to allow DSM programs to compete against supply side resources on equal footing in any energy planning modeling undertaken by EKPC. In addition, as the Commission has recognized, a DSM potential study, carried out by a third party with stakeholder input, would be an effective way to both determine the amount of energy savings that can be achieved through DSM, and to identify the programs to cost effectively achieve such savings.[26] The available evidence from other states and utilities shows that EKPC should be able to cost-effectively achieve energy savings of at least 1% per year on a consistent basis throughout the IRP planning period. Such energy savings would save ratepayers money not only by reducing the amount of electricity they need to purchase, but also by enabling EKPC to reduce the amount of new or retrofitted power generation capacity that it pursues. In the absence of evaluation and implementation of all cost effective DSM, the prudency of investments in new or retrofitting generation capacity is called into question.

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[22] Ohio Revised Code § 4928.66.

[23] ACEEE, Shaping Ohio's Energy Future: Energy Efficiency Works (March 2009), at iv, available at http://aceee.org/research-report/e092.

[24] See Public Utilities Commission of Ohio Case No. 09-1089-EL-POR, Market Potential Study filed on 11/12/2009, available at http://dis.puc.state.oh.us/CaseRecord.aspx?CaseNo=09-1089&x=0&y=0.

[25] Governor Steven L. Beshear, 2008, *Intelligent Energy Choices for Kentucky's Future: Kentucky's 7-Point Strategy for Energy Independence*, *available at* http://energy.ky.gov/resources/Pages/EnergyPlan.aspx

[26] *In re Joint Application of Louisville Gas & Electric and Kentucky Utilities Co.*, Case No. 2011-00375, slip op. at 17-18 (Ky. PSC 2012). A good guide for carrying out an energy efficiency potential study is the National Action Plan for Energy Efficiency, *Guide for Conducting Energy Efficiency Potential Studies* (Nov. 2007), available at http://www.epa.gov/cleanenergy/documents/suca/potential_guide.pdf.

E. Efficiency Resources in PJM Base Residual Auctions ("BRA")

1. Energy Efficiency

As explained above, EKPC could and should be doing much more with efficiency as its portfolio of programs is less developed and proportionally smaller than what is achievable and what is being realized in neighboring jurisdictions. Nevertheless, both its current programs and future programs, which should be more aggressive and effective than the initial offerings, have the potential to partially insulate its ratepayers from both reliability risks and the potential for substantial capacity market price increases[27] – but only if EKPC bids the peak savings from its programs into PJM's capacity market. Assuming that EKPC's likely integration into PJM, which has been approved by the Commission, actually occurs, EKPC's electricity supply will be integrally linked to the regional power market and not just the generating capacity that exists in Kentucky. Such integration provides opportunities to provide protection for all EKPC customers from unnecessary rate increases, while at the same time achieving several other desirable outcomes, notably the creation of more Kentucky jobs and the lowest cost solution to reducing the potential environmental impacts caused by the provision of electricity service to EKPC customers. The following sections point the way toward policies and practices within EKPC that will allow the company to pursue such opportunities.

In Response to a request for information made by Sierra Club, David Crews of EKPC stated that EKPC has not assumed integration into PJM in this IRP as the proposed integration has not been approved by the Commission. (EKPC Resp. to SC 2-25). This issue was also not discussed in response to Staff Requests for Information 2-4, which asked general question about the impact of PJM integration on EKPC's DSM programs. EKPC seemingly has declined to evaluate the benefit to its customers of bidding the peak demand savings from its energy efficiency programs into PJM's capacity market auctions. EKPC's decision, if unchanged, will have two major adverse financial consequences for its customers:

1. EKPC customers will forgo a substantial revenue stream from an investment for which they are committed to pay; and

2. EKPC's customers will pay much more than they would otherwise need to pay because they will have to acquire capacity that will be redundant with the capacity savings produced by EKPC's efficiency programs and, more importantly, because the failure to bid efficiency resources into the market on a "price-taking basis"[28] will mostly likely cause the market clearing price for capacity – i.e. the price that will be paid to all capacity that clears the market – to be higher than it otherwise would have been.

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[27] For example, the capacity price in the newly defined and constrained PJM ATSI zone for the 2015/2016 planning year is $357 per MW/day, whereas the capacity price customers are currently being charged for 2012/2013 is only $20.46 per MW/day.

[28] This means that EKPC bid in the energy efficiency capacity resources at zero or a low price to assure that the resources clear the auction.

2. Peak Demand Benefits from Efficiency Programs

In addition to the benefits commonly referred to when discussing efficiency programs, one of the benefits of efficiency programs, now and in the future, is reductions in peak demand. However, at least in the short term, the full value of the peak demand reduction benefit will only be realized if the savings are bid into PJM's capacity market.[29]

It is important to emphasize that the value of these peak demand savings is significant. PJM allows efficiency MW savings to receive capacity payments for four years. The revenue earned from these capacity auctions can then be used to materially offset the cost of implementing energy efficiency programs. When considering a bid into the PJM BRA, it should be emphasized that most efficiency measures last much longer than a year and PJM allows efficiency measures to receive capacity payments for up to four years. After this time, PJM assumes that the efficiency savings have been reflected in load forecasting, and are therefore automatically built into capacity expectations. Bidding these planned resources into the base residual auctions at PJM results in significant revenue for customers to use to offset efficiency program costs.[30]

In addition to the revenue that could be generated by EKPC's efficiency programs, the peak savings from the programs could have a significant impact on the market clearing price that EKPC's customers will pay for all peak capacity. Moreover, these benefits would be realized by EKPC's customers without spending one cent more on efficiency programs than what is required to implement cost-effective programs using traditional cost test scoring (the Total Resource Cost Test, for example).

3. Addressing the Risks of Bidding Efficiency Resources into the Capacity Market

EKPC stated that it was not prepared to bid efficiency resources into the capacity market auctions and lacks any analysis of the issue to date. Thankfully for EKPC's customers, the next Base Residual Auction does not take place until May 2013 and EKPC has ample time to prepare for such bidding. Once the PJM BRA bidding issue has been evaluated, EKPC is likely to recognize a number of potential risks of performing such a bid. To provide the Commission with a more comprehensive understanding of efficiency resources' role in PJM auctions, Sierra Club will address those risks now and explain why they should not discourage EKPC from bidding efficiency resources into the capacity market.

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[29] Preferably into the BRA where clearing prices have historically been higher than in PJM's incremental auctions. See, for instance, The Brattle Group, *Second Performance Assessment of PJM's Reliability Pricing Model*, August 2011, p. 25 Figure 7, available at: http://www.pjm.com/documents/~/media/committeesgroups/committees/mrc/20110818/20110826-brattle-report-second-performance-assessment-of-pjmreliability-pricing-model.ashx.

[30] For example, one MW clearing the 2015/2016 BRA will be paid $49.640 per year ($136 per MW/Day x 365 days).

PJM Manual 18b and Manual 19 allow for the bidding of planned energy efficiency and demand response resources that are not yet installed. As such, there may be a reference made to uncertainty associated with the fact that DSM plans for future years have not been approved, uncertainty about whether the savings they will generate in future years would qualify as capacity resources under PJM's rules, and whether EKPC would be successful in securing sufficient customer participation to meet any obligations it makes. To be fair, there is some risk associated with each of these issues. However, those risks are entirely manageable.

First, EKPC does not yet have clear guidance on efficiency program plans for future years. The Commission should explore ways to provide guidance to EKPC to ensure an ongoing increase to its energy efficiency results in the future. It is worth noting that utilities in other states – such as Commonwealth Edison in Illinois and AEP in Ohio (both which bid into PJM) and National Grid in Massachusetts (which bids into the New England ISO market) – are active participants in regional capacity markets. Both of those utilities (and others like them) likely and necessarily make assumptions regarding continued funding of efficiency programs in years beyond those for which their regulators have approved plans. These bids can be made conservatively (i.e., 90% of projected resources) in order to create bids that hedge against the risk of meeting obligations, but the rewards of participation are extremely beneficial to customers and should not be ignored by EKPC or by the Commission. EKPC can also use the PJM incremental auctions to purchase any shortfalls in its capacity obligations, usually at a lower price.

Second, EKPC could ensure that its future efficiency programs focus on the types of resources that are eligible to participate in PJM's market. This means focusing on customer end-use efficiency, as any savings from transmission and distribution ("T&D") efficiency improvements cannot be bid into the market. This does not, however, justify the Company's potential removal of certain efficiency measures on the grounds that "certain measures within DSM programs may no longer be offered because their major value was in producing winter peak kW savings." (EKPC Resp. to Staff 2-4). Prior to removing measures of this kind, they should be evaluated for cost-effectiveness and for their ability to be included in bids during PJM base residual auctions and/or incremental auctions. EKPC continues its discovery response in saying that "conversely, certain DSM measures which provide summer peak kW savings will likely see their cost-effectiveness improve." However, EKPC makes no reference to ramping up these types of programs. Programs that have the highest impact on PJM capacity auctions should be prioritized, but all cost-effective measures should be implemented as they save customers more money than what they cost to implement.

Finally, the risk of falling short of commitments made in the market is tantamount to the risk of falling short of any stated and approved savings goals. EKPC may simply build contingencies into its efficiency program plans to ensure that it has enough flexibility and resources to respond to and adjust for any unexpected shortfalls in savings. This would allow EKPC the ability to move program funding from unsuccessful programs to more successful programs to ensure the greatest level of savings.

In short, the perceived risks of not bidding any efficiency resources into the capacity market are manageable through appropriate preparation – which is already necessary for meeting any savings goals. And the benefits for EKPC's customers are far too high – potentially reaching hundreds of millions of dollars – for the company to pass up the opportunities created by the ability to bid efficiency resources into the capacity market. It is unfortunate – and perhaps unacceptable for EKPC customers – that EKPC did not assess the potential benefits of bidding efficiency into the PJM capacity market and provide that assessment to the Commission for discussion and eventual mitigation if needed. At a minimum, this should be done early enough to allow thoughtful exploration of the issues without jeopardizing the ability to meet deadlines for bidding into future base residual auctions. If no bid is made, EKPC should be accountable for financial harm done to its customers for its failure to adequately anticipate, prepare for, and participate in the PJM Base Residual Auctions.

F. EKPC Should Provide Detailed Reporting on its Energy Efficiency Programs and their Relationship to the Company's IRP.

The Commission should order EKPC to provide detailed reporting on its energy efficiency programs and their relationship with the Company's overall IRP. At a time when Kentucky is considering increasing investments in energy efficiency to meet a broad range of policy objectives, the need for reporting consistency and transparency for energy efficiency is critical to build understanding and credibility of efficiency as a resource.[31]

1. The Importance of Energy Efficiency Reporting

As utility investments in energy efficiency increase to the levels being recommended by the Sierra Club in these comments, policymakers at the Commission and the Executive and Legislative levels of government and other stakeholders will require publicly available information to track progress towards meeting future utility and state goals. Therefore, establishment of energy efficiency reporting guidelines are a necessary and essential part of an IRP process. Detailed and transparent reporting regimes have followed the development of IRP processes nationwide.[32] A recent regional energy efficiency reporting guidelines effort has taken place in the northeast and has culminated in the development of a document called the "Common Statewide Energy Efficiency Reporting Guidelines."[33]

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[31] When utilities and other groups discuss "energy efficiency as a resource," they are defining efficiency as an energy resource capable of yielding energy and demand savings that can displace electric generation from coal, natural gas, nuclear power, wind power, and other supply-side resources.

[32] For a survey of energy efficiency activity nationwide see Kushler, Nowak and Witte, "A National Survey of State Policies and Practices for the Evaluation of Ratepayer-Funded Energy Efficiency Programs," ACEEE (Feb. 16, 2012), available at http://www.aceee.org/research-report/u122. The report presents the results of a comprehensive national survey of state approaches to the evaluation of utility energy efficiency programs. A total of 44 states, plus the District of Columbia, were found to have formally authorized ratepayer-funded energy efficiency programs in place, and those 45 jurisdictions constitute the population examined in this study.

[33] Common Statewide Energy Efficiency Reporting Guidelines, Version 1.0, Northeast Energy Efficiency Partnerships (Dec. 2010), *available at* http://neep.org/uploads/EMV%20Forum/EMV%20Products/EMV%20Forum%20Statewide%20EE%20Reporting%20Guidelines%2012-30-10.pdf

The Guidelines developed recommend common reporting templates that provide basic information in a format that makes it straightforward to support energy and environmental planning or analyses. The specific uses and users of these Guidelines and reporting templates include:

- State-level tracking of efficiency program impacts against state energy and economic goals, and allowing for the comparison and aggregation of state impacts to multi-state or regional levels;

- Program administrator and regulatory review and comparison of consistently reported costs of saved energy,[34] and the relative effectiveness of energy efficiency programs to help inform more effective program and policy design;

- Air quality regulators, including climate change stakeholders, use of consistently reported efficiency savings data, and access to data sources and supporting Evaluation, Measurement, and Verification ("EM&V")[35] information to inform calculations of avoided emission at state/regional levels; and

- System planner use of consistently reported efficiency data to support regional system plan forecasts, including energy, demand and transmission planning."[36]

2. The Energy Efficiency and IRP Nexus

To improve the ability of utilities and state regulators to track energy efficiency as a resource, the authors of a report on energy efficiency in western resource plans offer specific recommendations for standardizing and improving the availability of information on energy-efficiency impacts in utility resource plans.[37] The report highlights two important quantities:

- "*Total resource requirements*—a load forecast (net of losses but not including reserve margins) that represents the amount of energy or capacity that would be

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[34] ***Levelized Cost per kWh*** = Total Program Costs x CRF/Incremental Annual Net kWh Savings, where Capital Recovery Factor (CRF) = i (1 + i)n/(1 + i)n-1, i = real discount rate, and n = weighted average measure life for portfolio of programs. Program Total Resource Costs Test (TRC) results should also be reported to establish the cost-effectiveness of utility programs. TRC measures the net costs of a demand-side management program as a resource option based on the total costs of the program, including both the participants' and the utility's costs.

[35] Evaluation, Measurement and Verification (EM&V) demonstrates the value of energy efficiency programs by providing accurate, transparent and consistent assessments of their methods and performance. Evaluators analyze energy savings and identify causes and effects. They also may recommend program goals and funding levels. They draw on many sources of information, both qualitative (such as focus groups) and quantitative (such as meter readings and demographic surveys).

[36] *Id.* at 3.

[37] Hopper, Goldman, and Schlegel, "Energy Efficiency in Western Utility Resource Plans: Impacts on Regional Resource Assessment and support for WGA Policies," Lawrence Berkeley National Laboratory, August 2006.

required to meet projected demand in the absence of any energy-efficiency strategies; and

- *Net resources for load*—a load forecast net of all projected energy-efficiency resources (i.e., *total resource requirements* minus the impacts of energy-efficiency programs, appliance standards and building codes)."[38]

The following recommendations by the report authors provide guidance to utilities in developing these two important load forecast quantities, as well as other important information to support regional resource assessment activities.

1. Provide information on all demand-side resources (energy efficiency and other demand-side resources) included in the resource plan, by type of resource.

2. Clearly identify which types of energy efficiency strategies are included in the resource plan—i.e., ratepayer-funded energy efficiency programs, building energy codes, and appliance efficiency standards.

3. Treat energy efficiency as an explicit, load-modifying resource.

4. Clearly and separately identify the effects of energy-efficiency measures installed during the resource plan analysis period, and the residual effects of measures installed in the pre-plan period.

5. Describe the relationship between near-term energy-efficiency program plans and long-term goals/targets for energy efficiency.

6. Provide both energy savings (MWh or GWh) and summer coincident peak demand reductions (MW) for energy-efficiency resources.

7. Provide annual effects of energy-efficiency resources by program year and by calendar year.

8. Provide energy-efficiency savings data for all years of the resource plan analysis period.

9. Include key metrics describing the relationship between the energy-efficiency resources and key resource issues in the resource plan.

10. Clearly identify the basis or criteria for determining the level of investment in energy-efficiency resources in the plan.

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[38] *Id.* at xiii.

11. As the new NERC reliability standards are implemented, work with appropriate NERC …committees and subcommittees to ensure that demand-side management data reporting protocols and definitions are consistent across NERC… and state/regional assessments as well as utility resource plans."[39]

In summary, the Sierra Club believes that only by integrating energy efficiency reporting into the Company's overall IRP reporting as highlighted above will the full benefits of the IRP process be realized by Kentucky consumers.

3. The "Stimulating Energy Efficiency in Kentucky" Effort and Energy Efficiency Reporting

The Sierra Club is aware of, and has participated in, the "Stimulating Energy Efficiency in Kentucky" ("SEEK") effort in Kentucky. One of the goals of this effort is to "establish a voluntary reporting mechanism to collect data from industries on energy efficiency upgrades and successes, potentially housed at [an] independent organization."[40]

The purpose of the reporting initiative identified by SEEK are:[41]

- Measure progress toward the Governor's Energy Efficiency goals, and to provide talking points for the Governor and state officials;
- Demonstrate at the state level, and nationally, the success of Kentucky's programs, one of leaders in the Southeast region;
- Demonstrate and document the positive performance of the utilities with respect to wise use of ratepayers' funds and benefits they provide to Kentucky and their customers;
- Sharing of best practices, performance and support reasonable, fact based planning towards future goals; and
- Provide for a collaborative reporting structure.

The reporting coming out of the SEEK effort is voluntary.[42] The Kentucky Department for Energy Development and Independence will be the repository of data and they will analyze and report summaries of statewide utility energy efficiency data.[43]

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[39] *Id.*

[40] July 2012 "Stimulating Energy Efficiency in Kentucky" Collaborative Stakeholder Meeting #3: Developing a Kentucky Action Plan for Energy Efficiency slide presentation, page 16, available at: http://energy.ky.gov/Programs/SEE%20KY/July%202012%20Meeting/Stakeholder%20Meeting%203%20powerpoint_FINAL.pdf.

[41] *Id.* at 26.

[42] There is currently no mandate in Kentucky for utilities to extensively report on their energy efficiency programs.

The information that is contemplated to be reported will include:

- Basic utility information
- Annual utility data
- Programs
- Program metrics/performance[44]

The data elements will include annual utility data such as:

- Energy type, i.e. natural gas or electricity
- Energy sold – residential, commercial, and industrial (in mcf or MWh)
- Number of customers - residential, commercial, and industrial
- Program costs - residential, commercial, and industrial
- Utility peak season, i.e. winter or summer[45]

Detailed energy efficiency program data will be reported as follows:

- Program name, description
- Sector
- Time frame and budget
- Projected annual savings
- Total Resource Cost (TRC) Test value
- Program approval date[46]

Finally the program metrics targeted are:

- Gross incremental annual energy savings
- Winter and/or summer demand savings
- Program participation (and type) – e.g. number households participating, number of CFLs, number of load control devices, etc.
- Reporting time frame – the accommodation of staggered Calendars[47]

To date, American Electric Power, Duke Energy, EKPC (the aggregate of all G&T coops), Louisville Gas and Electric, TVA, Big Rivers and Kentucky Utilities have all agreed to report.[48]

The Sierra Club commends the Midwest Energy Efficiency Alliance, state agencies, utilities and other stakeholders for identifying energy efficiency reporting as a critical element in

[43] *Id.* at 27.
[44] *Id.*
[45] *Id.* at 29.
[46] *Id.* at 30.
[47] *Id.* at 31.
[48] *Id.* at 32.

an IRP and overall, we support and seek to contribute to the energy efficiency reporting regiment being developed by the SEEK effort in Kentucky.

4. Energy Efficiency Reporting Regimes in Other States

Most states with energy efficiency resource standards[49] or with significant expenditures in energy efficiency require detailed reporting. The reporting usually consists of quarterly reporting of program activities administered and implemented followed by an annual report. For example, Southern California Edison's ("SCE") annual report states that "SCE continues to work closely with the Commission, state, regional, and other stakeholders to achieve the State's Strategic Vision and Goals to ensure that: (1) all cost-effective, reliable and feasible energy efficiency measures and actions are implemented in an integrated approach, (2) strategies, programs, measures and institutional structures must provide long-term energy savings and (3) energy efficiency will generate significant reductions in greenhouse gas emissions, as adopted in the California Energy Efficiency Long-Term Strategic Plan."[50] The Report then goes on to provide detailed information on:

- Energy Savings
- Emission Reduction
- Expenditures
- Cost-Effectiveness
- Bill Payer Impacts
- Green building Initiative
- Shareholder Performance Incentives
- Savings by End-Use
- Commitments (programs to be installed in 2010 and beyond)[51]

The SCE reporting process in California is fairly typical of the energy efficiency leading states and regions.[52] In Ohio, utilities report quarterly on their program implementation activities to their respective collaboratives and the Commission conducts an annual review to ensure utilities are in compliance with the state's energy efficiency resource standards. If it is determined that minimum requirements are not attained, a penalty may be assessed.[53]

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[49] Energy Efficiency Resource Standards (EERS) establish specific, long-term targets for energy savings that utilities or non-utility program administrators must meet through customer energy efficiency programs.
[50] Southern California Edison Company's (U 338-E) 2010 Annual Report For 2009 Energy Efficiency Programs, (June 30, 2010), *available at* http://asset.sce.com/Regulatory/Energy%20Efficiency%20Filings/2010_SCE_AnnualReport.pdf.
[51] *Id.*
[52] See for example the detailed reports put out by the Vermont Efficiency Investment Corporation or the Northwest Power and Conservation Council.
[53] The rules governing resource plans are found in Ohio Administrative Code 4901:5-5-06. It is a part of the long-term forecast report filed pursuant to rule 4901:5-3-01 of the Administrative Code, which states that an electric utility shall include a resource plan as defined in Rule 4901:5-5-01.

The reporting regime in a particular state can be specified in state statute, state rule, or stem from a Commission Order.

5. Best Practices Energy Efficiency Reporting Template and Processes

Kentucky is poised to benefit from the data reporting experiences of those states in the east and west coast that developed IRP processes decades earlier.[54] For example, a review of several utility IRPs found important shortcomings in the reporting of data in the resource plans:

- *Lack of clarity*—the treatment of key information (e.g., whether and how energy-efficiency impacts were included in load forecasts) was often difficult to discern;

- *Inconsistencies across resource plans*—inconsistent treatment and reporting of energy efficiency impacts across resource plans confounded comparative review and analysis of results;

- *No information on non-programmatic efficiency*—the plans only reported savings from energy-efficiency programs (i.e., the effects of standards and codes were not reported);

- *Program details provided for a limited time period*—most plans only reported effects of programs proposed for implementation during the resource plan period (i.e., pre-plan effects were not reported), and a few only reported savings for the initial years of the plan; and

- *Under-reporting of capacity impacts*—several Pacific Northwest utilities did not report the capacity (MW) savings from energy-efficiency resources.[55]

The reporting process elements recommended below are constructed from the best practices in the country.

6. Establishing an EKPC Reporting Process

Once EKPC expands the implementation of their energy efficiency programs, the Commission Staff and other stakeholders will want to be kept abreast of the programs' progress. The Sierra Club recommends that energy efficiency reporting continue to be developed jointly by the Company and the Collaborative. The time table for reporting energy efficiency programs should be quarterly, which is the reporting regime in Ohio and other states undertaking large investments in energy efficiency. An annual report should be made publicly available in the first

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[54] The origin of utility-sector energy efficiency programs traces back to the energy crises in the 1970s, when a new concept of "energy conservation" emerged to help customers cope with soaring energy prices. Over time, this led to the development of an expanded set of customer energy efficiency programs provided by electric and natural gas utilities.

[55] Op. Cit. at viii.

quarter of the year following the program year completed. The Sierra Club also recommends that the "Common Statewide Energy Efficiency Reporting Guidelines"[56] be used by EKPC (supplemented by the reporting requirements coming out of the SEEK effort discussed earlier). The template reporting forms start on page 11 of the report and goes through page 34. The template forms cover the following areas:

1. Reporting of Electric and Gas Energy and Demand Savings

Table 1.0: Description of Reported Energy Savings
Table 1.1: Incremental Annual Energy Savings
Table 1.2: Lifetime Energy Savings
Table 1.3: Electric System Demand Savings
Table 1.3.1: Summer Peak Annual Demand Savings
Table 1.3.2: Winter Peak Annual Demand Savings

2. Reporting of Electric and Gas Energy Efficiency Expenditures

Table 2.1 Efficiency Program Funding Sources
Table 2.2: Electric and Gas Efficiency Expenditures
Table 2.3: Cost of Saved Energy

3. Reporting of Air Emissions Impacts

Table 3: Avoided Emissions

4. Reporting of Jobs Impacts

Table 4: Job Impacts from Energy Efficiency Investments

5. Coordination with National Energy Efficiency Reporting Efforts

6. Incorporating Energy Efficiency Into System Planning

For clarity and consistency, and to inform readers of specifically what each reporting element in a template represents, a table of supporting definitions precedes each template.

The Sierra Club is confident that such a detailed, transparent, and consistent reporting process will meet the internal needs of the utility and satisfy the information needs of the Commission, elected officials, and other stakeholders.[57]

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[56] Northwest Energy Efficiency Partnerships, Common Statewide Energy Efficiency Reporting Guidelines – Version 1.0 (Dec. 2010), available at: http://neep.org/uploads/EMV%20Forum/EMV%20Products/EMV%20Forum%20Statewide%20EE%20Reporting%20Guidelines%2012-30-10.pdf.

[57] It is interesting to note that the Ohio Commission opened an energy efficiency reporting docket No. 09-714-EL-UNC that sought to adopt a template for energy efficiency and peak demand reduction programs. Unfortunately that

III. EKPC's IRP Fails to Evaluate the Potential for Cogeneration and Distributed Renewable Generation.

EKPC's IRP is also deficient because it is almost utterly devoid of any evaluation of using cogeneration and distributed renewable generation to help meet some of the company's energy needs. Instead, EKPC's analysis perpetuates an overreliance on coal and natural gas with only a small sprinkling of other energy resources. As a result, EKPC is once again missing an opportunity to save money, create jobs in Kentucky, and avoid environmental risk by aggressively pursuing a range of renewable energy options.

Cogeneration, also referred to as combined heat and power ("CHP"), is the use of heat that is created by an industrial or commercial process to generate electricity. Because such heat would typically otherwise be wasted, CHP provides a great opportunity to save money and conserve resources while also generating electricity. The Staff recognized the potential benefits of CHP in their report on EKPC's 2009 IRP, stating that:

> EKPC should provide a specific discussion of the existence of any cogeneration within its service territory and the consideration given to cogeneration in its resource plan.[58]

In the present IRP, however, EKPC simply notes that there is a single cogeneration facility in its service territory, that there has been "limited opportunity for the addition of cogeneration," and that "due to the limited nature of qualified cogeneration facilities and potential for generation, EKPC does not include cogeneration in its resource plan." (IRP at 21-22). In response to requests for information, EKPC declined to produce or even identify any analysis of the "availability, feasibility, or cost of existing or new cogeneration" in its service territory. (EKPC Resp. to SC 1-11a). As for the basis of its claim that there is a "limited opportunity for the addition of cogeneration," EKPC offers the circular reasoning that the fact that the company "currently has one cogeneration facility located within its service territory" demonstrates that there is limited opportunity. (EKPC Resp. to SC 1-11b). Of course, the fact that EKPC has apparently failed to look for additional CHP opportunities does not mean they do not exist.

It is true that there is currently very little CHP in the state of Kentucky. For example, a May 2011 report found that there were only seven CHP sites, with a total capacity of 121.9MW, in the entire state, and that no new CHP site had been installed in the state since 2002.[59] By

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proceeding has not yet been finalized so that energy efficiency reporting in Ohio lacks the consistency that exists in other states.

[58] 2009 IRP Staff Report at p. 50.

[59] Pew Environment Group, Combined Heat and Power: Energy Efficiency to Repower U.S. Manufacturing (May 2011), at p. 1, *available at* http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Fact_Sheet/CHP_KENTUCKY_HI-RES_5.11.11.pdf.

contrast, Texas has 17,834MWs of installed CHP capacity, Louisiana has 6,782MWs, and Michigan has 3,487MWs.[60] Similar levels of CHP are possible in Kentucky, as a recent study found that the Commonwealth has the potential for 3,000 to 8,000MW of installed CHP capacity, which could generate between 13.2 and 35.4 million MWhs of electricity.[61]

In order to achieve such levels of CHP in Kentucky, there will need to be significant policy changes, removal of market barriers, and incentives.[62] Utilities, such as EKPC, will also need to play a leading role in helping identify, develop, and finance CHP opportunities in their service territories.[63] And the resource planning stage is where such effort to increase CHP should be documented and planned for the future. Unfortunately, EKPC did not do so.

EKPC takes a similarly dismissive approach to distributed renewable generation in its IRP. Distributed generation is power generated at or near the source of consumption, rather than in large, centralized power plants. Such generation provides a number of advantages, including avoiding or minimizing the cost and inefficiency of transmission and distribution, and helps encourage the development of renewable resources such as solar and wind power. In their report on EKPC's 2009 IRP, the Staff found that that "EKPC should provide a detailed discussion of the consideration given to distributed generation in the resource plan."[64] Rather than doing so, however, EKPC notes that there is only one distributed generation source in its service territory and then offers the circular reasoning that "due to [sic] immature nature of the development of distributed generation resources, no consideration is given by EKPC to distributed generation in the resource plan." (IRP at 22).

But the fact that EKPC is apparently uninterested in promoting and pursuing distributed generation does not mean it cannot or should not be pursued. The electric infrastructure in Kentucky generally, and EKPC specifically, is especially well suited to distributed generation due to the prevalence of rural electric cooperatives in which electricity is likely to be generated and distributed more locally than in other areas.[65] A recent study found that there is the potential for 5,639MW of solar photovoltaic, 1,120MW of solar hot water, and 61MW of community wind development in Kentucky, which could generate a total of 17.3 million MWhs of electricity per year.[66] And neighboring states such as Ohio and Tennessee both already have far more distributed solar generation than Kentucky.[67]

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[60] Rory McIlMoil, Nathan Askins, and Jason Clingerman, The Opportunities for Distributed Renewable Energy in Kentucky (Jun 18, 2012), at p. 46 (hereinafter "Opportunities in Kentucky"), *available at* http://www.downstreamstrategies.com/documents/reports_publication/DS_ky_distrib_energy_opportunities.pdf.
[61] *Id.* at pp. 49-51.
[62] *Id.* at p. 48.
[63] ACEEE, Why Utilities Are an Essential Partner for a Strong CHP Future (Oct. 18, 2012), *available at* http://www.aceee.org/blog/2012/10/why-utilities-are-essential-partner-s.
[64] 2009 IRP Staff Report at p. 51.
[65] Opportunities in Kentucky, at pp. 6-8.
[66] *Id.* at p. 20.
[67] *Id.* at p. 26, Figure 8.

As with CHP, there will need to be significant policy changes, removal of market barriers, and incentives in order to achieve anything close to the distributed renewable generation potential.[68] And utilities, such as EKPC, need to play a leading role in helping identify, develop, and finance distributed generation opportunities in their service territories, instead of simply blowing such options off on the grounds that they do not already exist. Instead, EKPC should be using the IRP process as a forum in which to identify the steps needed to pursue additional distributed renewable generation and to set forth a plan for implementing those steps.

IV. EKPC Has Improperly Punted Evaluation of Retiring Versus Retrofitting its Dale and Cooper 1 Units Even Though the Available Evidence Suggests that Retirement is Almost Certainly the Least Cost Compliance Option

This IRP is taking place at a time when the economics are shifting heavily against EKPC's primary source of power – coal. Such shift is occurring for three primary reasons. First, the coal fleet is aging, with many coal units having operated for 40, 50, or 60 plus years. As these units age, the amount of capital investments and maintenance needed simply to keep the units operational is increasing. Second, in order to comply with existing and expected environmental standards, utilities are facing the need to install pollution controls on coal units that they intend to continue operating. Third, alternatives to coal power generation – including DSM, renewable energy, and natural gas combined cycle – are becoming increasingly available and often less expensive than coal. As a result of these developments, utilities throughout the country are deciding whether to continue investing in aging coal units or to retire those units and replace them with newer, better, and cleaner energy resources. In many cases, those utilities are concluding that retirement and replacement of coal units is the economically preferable option.

In its IRP filing, EKPC nods in the direction of the economic issues facing its coal units, noting that "it is faced with investing a significant amount of capital in its older Dale and Cooper 1 units to comply with proposed environmental regulations or to replace that capacity with a more economic alternative in 2015." (IRP at p. 6). But the IRP provides little insight as to what approach EKPC is likely to take with regards to those aging units, and the company's responses to requests for information make the situation even murkier.

As a result of its resource modeling, EKPC identified five top resource plans. (IRP at p. 162). But only one of those plans – Case 5 – identifies an environmental modification to a single existing coal unit, Cooper Unit 1. No information is provided in the IRP as to whether the other plans concluded, or even evaluated, whether retirement or retrofit of EKPC's aging coal units was lowest cost, or as to what conclusions were reached regarding the other coal units in Case 5. EKPC's responses to requests for information provided no further clarity on this issue. For example, in response to a question regarding whether its modeling assumed retirement or retrofit of EKPC's coal units, the company responded that it "has no plans to retire" any of its coal units and that none of the five cases presented included emissions controls with the exception of the addition of a dry scrubber on Cooper Unit 1 under Case 5. (EKPC Resp. to SC 1-17). This

[68] *Id.* at pp. 68-81.

response makes no sense, however, as Cooper Unit 1 and Dale both will need to either install controls or retire within the next few years. A valid resource planning process would recognize that reality and evaluate how EKPC should proceed under various planning scenarios.

Based on EKPC's responses to requests for information, it appears that the IRP provides no analysis of retirement-versus-retrofit of the Dale and Cooper 1 units because the company is still trying to determine its plan for bringing those units into compliance with applicable environmental standards. Rather than provide an evaluation of those issues in the IRP, EKPC apparently decided to use a new natural gas combined cycle plant ("NGCC") as a stand in on the theory that the company would not spend more on retrofits of its coal units than it would cost to build a new NGCC. (EKPC Resp. to SC 2-4a.iii).

Sierra Club is gladdened to hear that EKPC is apparently not simply assuming that it will retrofit its aging coal units and, instead, is considering whether to retire those units. However, the approach taken in the IRP is inadequate for at least three reasons. First, the choice should not simply be between retrofitting an aging coal plant and building a new NGCC. Instead, EKPC should evaluate a combination of a wide array of options – such as increased DSM, wind, solar, market purchases, existing NGCC capacity, etc. – as alternatives to retrofitting Dale and Cooper 1. Only through such an evaluation can the least cost resource plan be identified.

Second, it is unclear what further analysis EKPC needs to carry out regarding Cooper Unit 1 compliance as EKPC has "committed in the Regional Haze compliance plan" to install a dry scrubber and a fabric filter on Cooper Unit 1 in order to satisfy the Clean Air Act's Best Available Retrofit Technology ("BART") requirements. (IRP at p. 176). The compliance plan referenced by EKPC arises from the Clean Air Act's regional haze provisions, which set as a goal the "prevention of any future, and the remedying of any existing, impairment of visibility in the mandatory class I Federal areas which impairment results from manmade air pollution." 42 U.S.C. §7491(a)(1). States are required to submit implementation plans ("SIPs") that "contain such . . . measures as may be necessary to make reasonable progress toward meeting the national goal" if they host federally protected areas or if the emissions of a facility located within a state "may reasonably be anticipated to cause or contribute to any impairment of visibility" for a protected area located beyond their borders. 42 U.S.C. §7491(b)(2). Such SIPs must include, among other thing, the establishment of emission limits reflecting the installation of BART for major stationary sources that were in existence on August 7, 1977 and began operating after August 7, 1962 and that emit air pollutants that may reasonably be anticipated to cause or contribute to any impairment of visibility in a Class I area. 42 U.S.C. § 7491(b)(2)(A).

On June 25, 2008, Kentucky submitted to U.S. EPA a proposed regional haze SIP that included, among other things, a requirement that EKPC install on Cooper Units 1 and 2 wet flue gas desulfurization ("FGD") and a wet ESP in order to control filterable particulate matter ("FPM") emissions to a level of 0.030lb/mmBtu. On May 28, 2010, at the request of EKPC, Kentucky revised its regional haze SIP proposal to require dry FGD and a fabric filter (frequently referred to as a baghouse) to achieve the same 0.030lb/mmBtu FPM limit on Cooper Units 1 and 2. On March 30, 2012, U.S. EPA approved Kentucky's proposed regional haze SIP, specifically noting that such SIP included the requirement that Cooper Units 1 and 2 install dry

FGD and fabric filter controls and established 0.030lb/mmBtu FPM limit as an "appropriately adopted and enforceable SIP limit and part of the BART determination" for Cooper Units 1 and 2.[69] As a result, the requirement for EKPC to install dry FGD and fabric filter controls on Cooper Unit 1 is an enforceable requirement of Kentucky's SIP. 40 C.F.R. 52.920(e).

Despite these facts, EKPC claims that it "cannot identify specific controls that will be installed on Cooper 1," apparently because the company surmises that Kentucky DAQ is "currently considering whether to revise its Regional Haze SIP to adopt" U.S. EPA's position that the Cross State Air Pollution Rule ("CSAPR") can supplant the BART requirements. (EKPC Resp. to SC 1-24 and 2-6a). EKPC, however, could not identify any evidence to support such claim (*id.* at 2-6a), which is misguided at best.

For one thing, the CSAPR better than BART rule that EKPC references purports to exempt coal units from the need to install BART for SO2 and NOx emissions. It does not apply to BART for PM emissions, which is what the limits and control requirements for Cooper Units 1 and 2 set forth in Kentucky's regional haze SIP seek to address. Similarly, the Kentucky SIP already relies on CSAPR (after its precursor, the Clean Air Interstate Rule was reversed by the U.S. Court of Appeals for the D.C. Circuit) to exempt a number of coal units from needing to install controls for SO_2 and NOx emissions. As such, there is no basis for concluding that Kentucky DAQ is planning to try to amend its regional haze SIP to rescind the control requirements for Cooper Unit 1 that were established even when CSAPR and CAIR were at issue. In addition, the U.S. Court of Appeals for the D.C. Circuit recently vacated CSAPR so there is presently no basis upon which Kentucky DAQ could attempt to say that CSAPR is better than BART. In short, under the binding Kentucky regional haze SIP, which has been approved by U.S. EPA, EKPC must install a dry scrubber and fabric filter on Cooper 1 in order to continue operating that unit after 2015. Such needed controls, along with whatever additional controls are needed to bring Cooper 1 into compliance with all other existing and expected environmental standards, should have been evaluated in the IRP.

A third problem with EKPC's agnostic approach to whether its Dale and Cooper 1 units will be retrofit or retired is that even a cursory look demonstrates that retirement of those units is almost certainly the lowest cost compliance option. EKPC projects capacity factors for Cooper 1 of only 8-28% for 2012 through 2015 (IRP at 65), which along with the fact that the unit is nearly 50 years old suggests that investment of the money needed to install and operate a dry scrubber and fabric filter on Cooper 1 would not be economic.

Similarly, the Dale units are between 52 and 58 years old, and the plant is hardly running. According to data in the U.S. EPA's Clean Air Markets Database, through the end of September 2012, Dale Unit 1 had operated year to date for a total of 517 hours, and Dale Unit 2 has operated for 482 hours. EKPC projects capacity factors of 0% for 2012-2014 and 1% in 2015 for Dale Units 1-3. (IRP at pp. 63-64). For Dale Unit 4, EKPC projects capacity factors of 0% in 2012 and 2013, 2% in 2014, and 4% in 2015. (*Id.*). In December 2007, the consulting firm

[69] U.S. EPA, Approval and Promulgation of Implementation Plans; Commonwealth of Kentucky; Regional Haze State Implementation Plan, 77 Fed. Reg. 19,098-01, 19,106 (Mar. 30, 2012).

Burns & McDonnell found that the fixed O&M costs for the Dale units were $38.05 per kw, versus EKPC's coal-fleet system average O&M cost of $27.83.[70] Variable O&M costs for the Dale units were double the EKPC coal-fleet system average.[71] One can only assume that the O&M costs for the Dale units have increased further as the units aged over the past five years.

It simply makes no sense to invest significant amounts of capital in coal units that are so old and small, and that are operating so little. In fact, EKPC's own analysis from 2008 confirms that reality. As part of seeking a certificate of public necessity for installing controls on Cooper Unit 2, EKPC conducted an analysis of the 20-year net present value of retrofitting Cooper Unit 2 versus retiring Dale and other options. That analysis concluded that the company's least cost option, with an NPVRR of just under $7.6 billion, was a plan involving the retirement of the Dale plant. That amount compares to the NPVRR of just over $8 billion for the plan that EKPC pursued of putting a dry scrubber on Cooper Unit 2.[72] Installing scrubbers on both Cooper Units would have taken the total NPVRR to more than $8.5 billion.[73] And it is important to note that since EKPC completed the 2008 analysis, a number of factors have moved in the direction of making continued operation of aging coal plants even less economical while making other energy resources more cost-effective. For example, in its 2008 analysis, EKPC projected that natural gas price per mmBtu would range somewhere between $6.31 and $11.50 in 2012, and rise to between $11.94 and $21.75 by 2035.[74] But natural gas prices today are around $3.50 per mmBtu, and the U.S. Energy Information Administration predicts that natural gas prices will remain (measured in 2011 dollars) below $4 per mmBtu through 2018, around $5.40 per mmBtu in 2030, and below $8 per mmBtu as far out as 2040.[75] Such shifted market conditions have created a situation where continued operation of coal units the size and age of Dale and Cooper Unit 1 is not economically supportable.

Determining the most economically efficient resource portfolio requires a comprehensive and detailed assessment of the feasibility, availability, and costs of a wide variety of options. This assessment must include a full understanding of all of the costs that are associated with specific options, such as retrofitting potentially inefficient and aging coal plants to make them compliant with environmental regulations, as well as understanding and evaluating the costs and the risk of costs that can reasonably be anticipated for specific options. The IRP submitted by EKPC does not satisfy these basic standards but instead punts these issues to a future proceeding. That is not the approach that should be taken as part of a robust resource planning process.

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[70] Burns & McDonnell, Report on the Power Plant Assessment Study (Dec. 2007), at p. 3-4, submitted to the Kentucky PSC in Case No. 2008-00472.
[71] *Id.* at p. 3-5.
[72] EKPC, Cooper/Dale Study Report (Oct. 31, 2008), at p. 27, submitted to the Kentucky PSC in Case No. 2008-00472.
[73] *Id.*
[74] EKPC Response to Staff Data Request 1-6 in Kentucky PSC Case No. 2008-00472.
[75] U.S. Energy Information Administration, Annual Energy Outlook 2013 Early Release Overview (Dec. 5, 2012), at p. 5, *available at* http://www.eia.gov/forecasts/aeo/er/pdf/0383er%282013%29.pdf.

V. EKPC Should Factor In a Range of Potential CO_2 Costs Rather Than Assuming Such Cost Will Be Zero

A serious shortcoming in the IRP is EKPC's assumption that there will be zero cost related to the emissions of CO_2 over the planning period. EKPC currently generates the vast majority of its electricity from coal, which is the most carbon-intensive energy source there is. As such, EKPC and their ratepayers have significant exposure in the event that a price is placed on CO_2 emissions or that environmental standards require reductions in those emissions. Given the significant environmental impacts that result from CO_2 emissions, it remains highly probable at some time during the planning horizon under consideration in this IRP that EKPC will need to either reduce their CO_2 emissions or pay a fee for such emissions. As such, it is in the best interest of the ratepayers for EKPC to factor that likelihood into their planning and to begin taking cost effective steps now to reduce such emissions.

A regulatory cost related to CO_2 emissions is likely to come in one or both of two forms. First, it remains likely that there will be a federal price on CO_2 as part of a cap-and-trade type system in which overall CO_2 emissions are capped and then major sources of CO_2 emissions are able to purchase and trade CO_2 pollution allowances. Second, U.S. EPA is in the process of finalizing greenhouse gas New Source Performance Standards ("NSPS") under the federal Clean Air Act. As proposed, the NSPS would require new sources, and existing sources that carry out modifications, such as the installation of pollution controls that increase greenhouse gas emissions over a certain threshold, to take particular steps to limit their CO_2 emissions. In conjunction with this NSPS rule, EPA is slated to issue emission guidelines regarding greenhouse gas emissions from existing electric generating units.[76] These regulatory approaches are likely to establish a cost for emitting CO_2 or to achieve required reductions in such emissions.

In the IRP, EKPC takes the position that the cost of CO2 emissions over the next 15 years will be zero. In its evaluation of "theoretical" levels of DSM, EKPC purports to factor in externalities of power generation through a "societal cost test." The company acknowledges, however, that it assigned a value of $0 per MWh to such externalities to reflect EKPC's "current assessment of likely value placed on carbon dioxide over the 15 year planning period." (IRP Tech. Appdx. Vol. 2 at 15). In response to requests for information EKPC acknowledges that no forecasts or projections of future CO2 costs, taxes, or emission allowance prices have been developed by or for EKPC. (EKPC Resp. to SC 1-48). Instead, EKPC's zero carbon cost is apparently nothing more than speculation based on the fact that carbon legislation has not been passed so far. (EKPC Resp. to SC 1-43).

In contrast to EKPC's speculative certainty, many other utilities are continuing to assume a future price on CO_2 emissions and to plan accordingly. For example, in a recent filing in Indiana, the President of Duke Energy testified that:

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[76] Settlement Agreement between EPA and various states and Environmental Groups (*New York v. EPA*, D.C. Cir. No. 06-1322, and *American Petroleum Institute v. EPA*, D.C. Cir. No. 08-1277), *available at* http://www.epa.gov/carbonpollutionstandards/pdfs/boilerghgsettlement.pdf.

> The Company continues to believe that carbon constraints will eventually be implemented by Congress. The EPA, with the backing of the U.S. Supreme Court in the *Massachusetts v. EPA* decision, has already launched its regulatory program. The Agency recently issued its proposed new source performance rule for greenhouse gas emissions, which will impact future power plants that, today, do not have a Prevention of Significant Deterioration ("PSD") permit. We expect that EPA will also propose a greenhouse gas regulatory program for existing power plants, but we do not know when or how stringent that proposal will be. These regulations, even without congressional action, are potentially significant and thus, it remains reasonable to consider greenhouse gas constraints as part of the Company's 20-year resource planning process.[77]

Consistent with Duke's testimony, many utilities specifically incorporate a range of potential future CO_2 costs into their resource planning, as shown in Table 2 below in which Synapse Energy Economics ("Synapse") documents the mid-range CO_2 price per year assumed by utilities in Kentucky, Idaho, Missouri, South Carolina, Tennessee, New Mexico, Nevada, etc. in public utility commission filings over the past three years.

[77] In re Duke Energy Indiana, Indiana Utility Regulatory Commission Cause No. 44217, Testimony of Douglas F. Easamann (June 28, 2012), at 11-12, *available at* https://myweb.in.gov/IURC/eds/Guest.aspx?tabid=28.

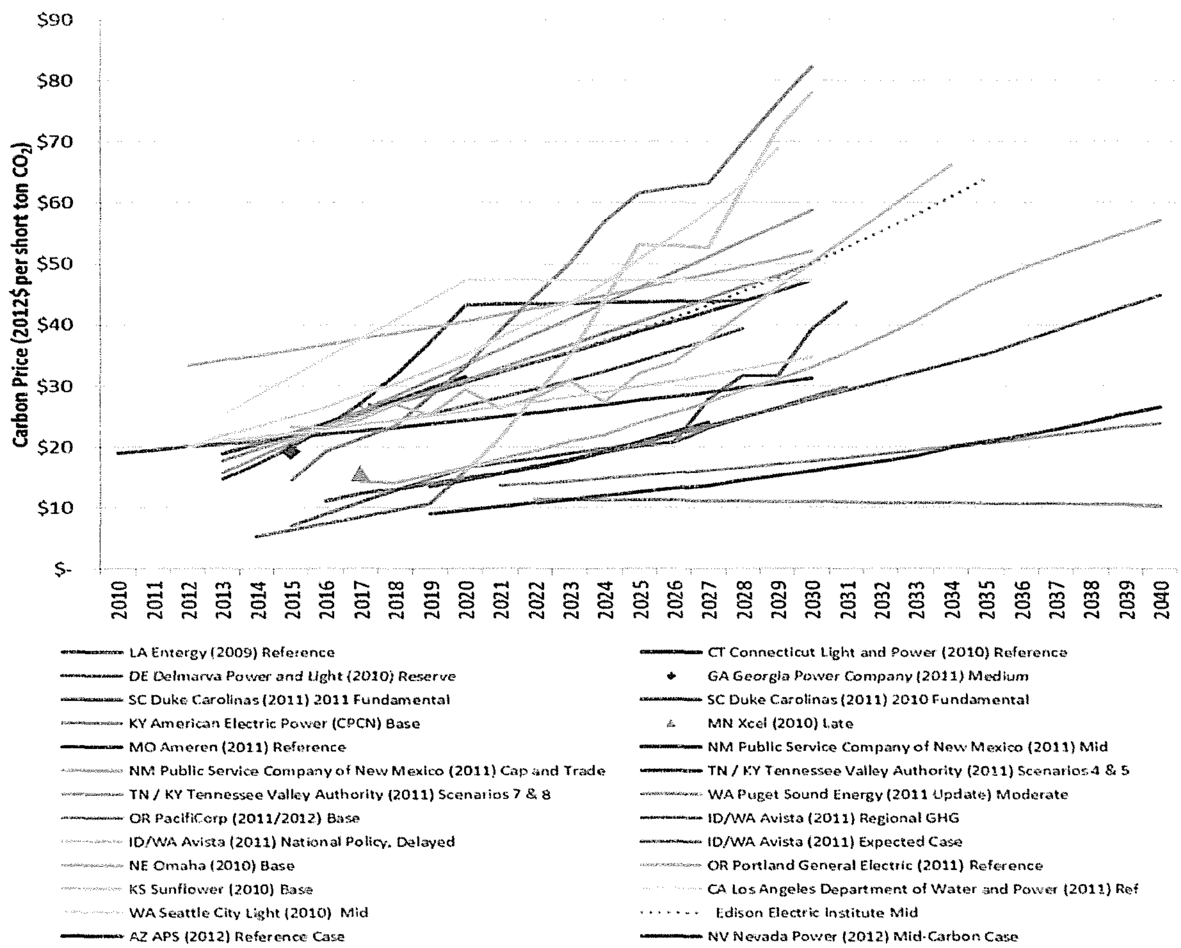

Table 2: Assumed CO2 Prices in Recent Utility Commission Filings[78]

There is uncertainty about what the precise future cost of CO2 emissions will be. But the proper way to address such uncertainty is not to pretend, as EKPC has, that one can know with certainty that the cost will be zero. Instead, prudent utility planning calls for carrying out sensitivity analyses that assume a range of different CO_2 prices and assigning reasonable probabilities to each scenario so that the lowest cost plan or plans for approaching likely future scenarios can be identified.

Synapse has developed just such a range of CO_2 prices that would be appropriate for use in energy resource planning. Synapse's analysis assumes that CO_2 prices begin in 2020 and projects a low, mid, and high price scenario.[79] Under the low scenario, the CO2 price starts at $15 per ton in 2020 and gradually increases to $35 per ton in 2040.[80] Under the mid scenario,

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[78] Synapse Energy Economics, 2012 Carbon Dioxide Price Forecast (Oct. 4, 2012), at 19, *available at* http://www.synapse-energy.com/Downloads/SynapseReport.2012-10.0.2012-CO2-Forecast.A0035.pdf.
[79] Synapse Report at pp. 20-21.
[80] *Id.*

the CO_2 price starts at $20 in 2020 and increases to $65 per ton in 2040.[81] And in the high case, the CO_2 price begins at $30 per ton and increases to $90 per ton in 2040.[82] In 2011, EKPC's coal units emitted approximately 12.4 million tons of CO_2. If EKPC were continuing to emit a similar amount of CO_2 in 2020, the Synapse CO_2 price forecast would project that EKPC would face between $186 million and $372 million in CO_2 costs. Those costs would escalate every year, and would range between $372 million and $1.116 billion in 2040.

Prudent utility planning compels the conclusion that EKPC should be taking steps (such as retiring rather than retrofitting coal units and increasing DSM and renewable energy) now to minimize and avoid such likely future CO_2 costs to the greatest extent that is cost-effectively possible. In order to do so, EKPC needs to start factoring low, mid-range, and high CO_2 price projections, such as those set forth by Synapse, into all aspects of its integrated resource planning and other utility decision making.

VI. The IRP Fails to Address Uncertainties Through the Use of Sensitivity Analyses.

An overarching concern about the IRP is an apparent failure of EKPC to assess the uncertainties and risks attendant in resource planning through sensitivity analyses. A resource plan that is projected to have the lowest life cycle cost under one set of assumptions regarding critical factors may or may not also be the best under another set of assumptions. Factors for which changed assumptions can make a material difference to the performance of resource plans include, but are not limited to:

(1) load growth
(2) fuel prices
(3) emission allowance prices
(4) market energy and capacity prices
(5) capital costs
(6) environmental and regulatory risks

Robust utility planning addresses the risk and uncertainty inherent in planning through the use of sensitivity analyses that measure the impact of a range of different input scenarios combined with an assignment of probabilities to each scenario.

EKPC's IRP does not set forth any such sensitivity analyses. EKPC contends in the IRP that its resource modeling did run multiple iterations to evaluate a range of five different loads, and varied fuel and market prices. (IRP at pp. 158, 161-62). But nowhere in the IRP are any of those varied loads, fuel, or market prices detailed, nor is there any discussion in the IRP of how the preferred resource plan would change if, for example, natural gas prices or demand are lower than assumed in EKPC's proposed resource plan, or if CO_2 prices are higher than the zero dollar figure assumed by EKPC. And in response to requests for information, EKPC made clear that it

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[81] *Id.*
[82] *Id.*

"performed no sensitivity analyses" regarding energy sales, peak demand, load, natural gas prices, coal prices, CO_2 prices, natural gas combined cycle construction costs, renewable energy costs, DSM, or energy market prices. (EKPC Resp. to SC 1-47). In addition, in response to a request for the input and output files for each sensitivity analysis considered as part of this resource planning process, EKPC responded that "there were no sensitivity analyses considered as part of this resource planning process." (EKPC Resp. to SC 1-7).

Without such sensitivity analyses the IRP provides no useful information regarding how EKPC's resource plan would change under different scenarios, or to ensure that the identified resource plan properly accounts for and manages the risk and uncertainty inherent in resource planning. As such, the IRP should be revised to include: (1) a thorough inventory and description of the relevant risks, together with an assessment of their probabilities, (2) an objective analysis of how those risks impact the performance of various resource plans individually and in combination, (3) development of a plan relying on a portfolio of resources that manages risk and uncertainty to a reasonable level while delivering the lowest life-cycle cost over the fullest possible range of plausible future scenarios.

VII. EKPC Has Failed To Carry Out an Open, Transparent, and Collaborative Process During The IRP Proceeding.

The IRP rules in Kentucky establish an open and transparent process for resource planning in the state. As the Staff has recognized, those rules establish a "comprehensive, but non-adversarial" process in which interested parties can participate by intervening in the proceeding, submitting requests for information to the company, and filing comments on the IRP. The goal of this process is to help "ensure that all reasonable options for meeting future supply needs were being considered and pursued in a fair and unbiased manner, and that ratepayers will be provided a reliable supply of electricity at the lowest possible cost.[83]

This open and transparent IRP process is consistent with the wide recognition of the importance of stakeholder involvement in resource planning and in the development and implementation of DSM programming For example, in a recent report, the National Action Plan for Energy Efficiency noted the importance of engaging all stakeholders when trying to realize long-term goals of achieving energy efficiency, explaining that:

> To achieve the full potential for energy savings and the related societal benefits, many parties need to work together toward the Vision. Energy efficiency policies and programs affect numerous parties, including local, state, and federal governments; utilities; customers; energy efficiency product and service providers; manufacturers; builders; architects; environmental groups; energy system operators; labor advocates; the financial community; and economic development groups. Educating and soliciting input from all key parties, either

[83] Kentucky PSC, Staff Report on the 2009 Integrated Resource Plan of East Kentucky Power Cooperative, Inc., Case No. 2009-00106 (Nov. 2010), at 1.

> through local, state, and regional collaboratives or through other outreach efforts, will greatly increase the economic and environmental benefits achieved through energy efficiency.[84]

Similarly, the Public Utilities Commission of Ohio has recognized the benefit of a collaborative working group in stating:

> The Commission has encouraged the formation of utility-stakeholder collaboratives because we believe that collaborative investigations may provide valuable insights into new and emerging issues. The collaborative provides an opportunity for technical staff and experts from different stakeholders to establish common vocabulary, identify key issues needing further exploration, gather lessons learned and new ideas from programs in Ohio and other states, discuss the implications of independent research, exchange data and seek to resolve factual questions. The Commission notes, however, that we do not see the primary goal of a collaborative to be a negotiated settlement of the issues in any given proceeding, and we do not believe that proceedings in Commission cases should be unduly delayed until a collaborative reaches a consensus. Where there are genuine disputes of policy, facts or the law, the Commission is prepared to hear and resolve such issues.[85]

Unfortunately, EKPC has taken a different approach in the context of this IRP. Instead of being open and transparent, the company took two sets of steps that appear designed to discourage effective participation in the IRP process. First, EKPC has used Sierra Club's intervention in the IRP proceeding as an excuse to exclude Sierra Club from the DSM and Renewable Energy Collaborative ("Collaborative") that EKPC and 16 other parties formed in March 2011. This Collaborative was formed as part of a Stipulation reached between Sierra Club, EKPC, and other parties in case number 2010-00238. The Collaborative was created with the intent to "evaluate potential sources of renewable energy for use on EKPC's system along with demand side management options, and determine which would be commercially applicable, financially beneficial and viable for EKPC's customers." It was agreed that the Collaborative would meet quarterly for two years, with possible extension by agreement of the participants, and that Collaborative meetings would be open to the public.

Despite these agreements, ever since Sierra Club intervened in the present IRP process, EKPC has refused to hold a Collaborative meeting with Sierra Club in attendance, thereby forcing other Collaborative members to either not have meetings or to agree to the exclusion of Sierra Club. Such an approach by EKPC is contrary to an open and transparent approach to resource planning, especially in light of the fact that the agreement forming the Collaborative specifically states that Collaborative meetings are to be open to the public. Sierra Club certainly hopes that moving forward EKPC will restart the Collaborative process with all interested

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[84] National Action Plan for Energy Efficiency – A Vision for 2025: A Framework for Change, November 2008, page 5-3. http://www.epa.gov/cleanenergy/energy-programs/napee/resources/vision2025.html.
[85] Public Utilities Commission of Ohio Case No. 09-1947-EL-POR, Opinion and Order (Mar. 23, 2011).

parties, will extend the process beyond its initial two years, and will not require participants to choose between the Collaborative and appropriate participation in PSC proceedings.

EKPC has also hindered an open and transparent process here by providing only grudging responses to information requests submitted by Sierra Club. As recounted above and in the two motions to compel Sierra Club filed in this proceeding, EKPC's responses to information requests were untimely and lacking in detail, relied on hyper-technical readings or baseless objections[86] to avoid presenting information, and were often provided only after repeated follow up. Such approach to responding to requests for information is not consistent with the goals of discovery or with the "comprehensive, but non-adversarial" nature of an IRP proceeding. Sierra Club certainly hopes that it will not be the approach that EKPC takes in future PSC proceedings.

VIII. Conclusion

In order to ensure that EKPC goes down the path of the lowest cost approach for meeting their customers' energy needs, EKPC should address and correct the above errors in their IRP.

Respectfully submitted,

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Dated: January 14, 2013

[86] Most recently, EKPC refused to produce certain requested stack test data on the grounds that such data is purportedly protected from disclosure by attorney client privilege. *Resp. of EKPC to Revised Second Motion of Sonia McElroy and Sierra Club to Compel EKPC to Response to Intervenors' Initial Requests for Information*, KPSC Docket No. 12-0149 (Dec. 20, 2012) at p.2. According to EKPC, the stack test data was collected as part of an "engineering study performed to allow attorneys representing EKPC to understand the technical issues necessary to provide effective advice on compliance options for future Clean Air Act regulations including the Mercury and Air Toxics Standards." But even assuming arguendo that such engineering studies were somehow entitled to attorney-client privilege, such privilege extends only to communications, not to facts. *See, e.g., Upjohn Co. v. U.S.*, 449 U.S. 383, 395-96 (1981). The stack test data are facts, rather than privileged communication and, as such, should have been produced.

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CERTIFICATE OF SERVICE

I certify that I had filed with the Kentucky Public Service Commission and served a copy of this **COMMENTS OF INTERVENOR SIERRA CLUB ON THE 2012 INTEGRATED RESOURCE PLAN OF EAST KENTUCKY POWER COOPERATIVE, INC.** via electronic mail and U.S. Mail on January 14, 2013 to the following:

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EPRI and McKinsey Reports on Energy Efficiency: A Comparison

The Electric Power Research Institute (EPRI) and McKinsey & Company recently released separate reports on the topic of energy efficiency in the United States. McKinsey's Unlocking Energy Efficiency in the U.S. Economy released in July 2009 analyzes the NPV-positive potential for energy efficiency, identifies barriers to capturing that energy efficiency opportunity, and explores the solutions that could address those barriers. EPRI's Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S. released in January 2009 provides analysis of the Technical and Economic potential for energy efficiency, then uses historical energy efficiency program performance to estimate Maximum Achievable and Realistic Achievable Potential for energy efficiency.

Despite differences in methodology and potential sizing, both reports are in agreement on the following key messages:

- Energy efficiency offers a vast low-cost energy source for the U.S.
- Significant and persistent barriers to energy efficiency exist and will need to be addressed on multiple levels to stimulate demand for energy efficiency measures
- New sources of no- and low-carbon energy generation will still be necessary in conjunction with energy efficiency as part of a portfolio of energy solutions.

EPRI and McKinsey reports approach the question of energy efficiency from different perspectives: EPRI focuses on understanding existing programs and best practices to capture energy efficiency and analyzing likely achievability based on current experience. McKinsey focuses on understanding the opportunity available, and exploring ways to significantly change the status quo in ways that will overcome the significant barriers currently facing the energy efficiency opportunity.

Additionally, EPRI and McKinsey employ different methodologies, with differences in scope, technologies considered, and assumptions in characteristics of these technologies. These factors lead to differences in the sizing of the energy efficiency potential. Comparing EPRI's estimate for Economic potential of 473 TWh in the year 2020 to McKinsey's estimate for NPV-positive potential of 1080 TWh for the same year yields the following four sources of difference[1]:

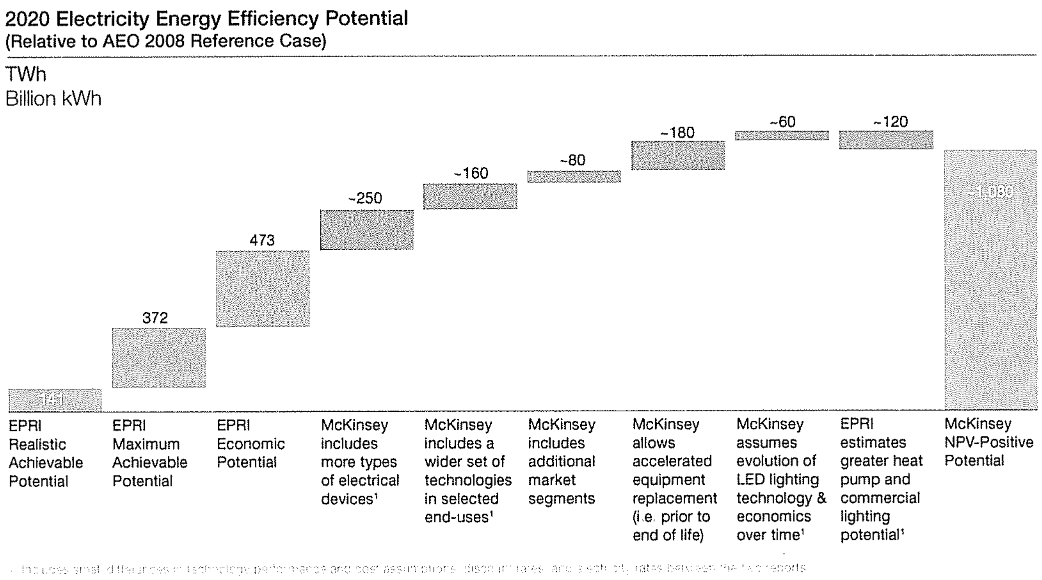
- *McKinsey report addresses additional end-uses of energy.* The McKinsey report included within its scope additional sources of end-use energy consumption, such as: community infrastructure (e.g., street lighting, traffic lighting, water distribution facilities, waste water treatment plants and telecom infrastructure); additional industrial processes; additional categories included in residential and commercial electronic devices and small appliances; and additional commercial and residential building shell measures. These differences in scope (which on the chart include the additional market segments, additional types of electrical devices, and a wider set of technologies utilized in some end-uses) account for 490 TWh of the higher potential in the McKinsey report.
- *McKinsey report allows accelerated deployment of energy-efficient technology prior to end of life.* If the energy savings produced by an efficiency measure would fully pay for itself (i.e., total levelized cost including capital, operation and maintenance, and energy costs of the new measure is less than the current stock's levelized energy cost only), then the current stock is replaced with the new technology in McKinsey's methodology, but not in EPRI's calculations. For example, McKinsey allows an incandescent bulb to be replaced with a CFL or LED without waiting for the incandescent bulb to reach its natural end of life replacement cycle if this cost-effectiveness test is met. This acceleration drives an additional 180 TWh in the potential found in the McKinsey report. (Note: this is in essence a timing difference between the two

1 Both the EPRI Economic and McKinsey NPV-Positive potentials are expressed relative to the U.S. Energy Information Administration's *2008 Annual Energy Outlook Reference Case forecast of U.S. electricity consumption for the year 2020*

reports, as both methodologies would ultimately recognize cost effective savings to the extent they use similarly efficient technologies)

- *EPRI report applies existing technology performance and economics, while McKinsey report assumes advancement of technology and economics over time.* The EPRI report utilizes current, verifiable, technology cost and efficiency data through the forecast horizon. The McKinsey report, in contrast, uses datasets from the National Energy Modeling System that factor in conservative technology cost and efficiency improvements overtime. In general, this means that technologies decrease in cost over time in the McKinsey methodology (e.g., LED light bulbs will be more expensive in the near-term, and trend down over time with manufacturing scale and expected deployment, as well as improvements in their technology). This difference in underlying data accounts for another 60 TWh of increased potential found in the McKinsey report.
- *EPRI report uses more aggressive assumptions in the technology characteristics of some technologies, a lower discount rate, and customer-specific retail rates to value the energy saved.* The calculation of economic potential requires assumptions in the discount rate, the value of energy saved, and the technology characteristics of the measures being utilized. EPRI uses a 5% discount rate while McKinsey employs a 7% discount rate, which has the effect of making measures generally more economic in EPRI's analysis. In addition, McKinsey employs industrial retail rates as a proxy for the avoided cost of energy, while EPRI uses customer-specific (i.e., participant) retail rates. Lastly, for some technologies (e.g., heat pumps and commercial lighting), EPRI has differing technology assumptions that make these measures economic, driving additional potential from the McKinsey report, which does not consider these technologies economic. Contrary to the prior three differences, this difference causes EPRI to find a higher potential than the potential found in the McKinsey report. These differences in methodology drive an increase in the potential found by EPRI of 120 TWh

Comparison between EPRI and McKinsey energy efficiency potential calues, year 2020



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Memorandum

To: NRDC and Sierra Club

From: Synapse

Date: June 26, 2009

Re: Critique of the EPRI *Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S.: 2010 - 2030*, dated January 2009

The Electric Power Institute (EPRI) published a technical report in January 2009 entitled *Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S.* The study purports to calculate the percentage of energy efficiency and demand response that can be achieved in the US by 2030. This summary memo provides a critique of this technical report. It should be noted that this critique references solely the Executive Summary of this report, as that is the only portion that has thus far been made available for our analysis. Based on that portion of the study, however, we believe that EPRI makes assumptions and uses methodologies that likely underestimate the achievable potential for energy efficiency programs over the next twenty years.

New codes, standards, and regulatory policies for energy efficiency are not considered in the EPRI assessment of achievable efficiency.

EPRI estimates of savings from energy efficiency are for codes, standards, and voluntary utility-operated programs that are currently in existence. They do not include new building codes, efficiency standards for equipment and/or appliances, new utility-sponsored programs, or programs administered by states or third parties. These new codes and standards will likely include measures that are not considered in this study, and may also increase the penetration rate of existing measures to a level that is much higher than that assumed by EPRI.

Estimates of energy efficiency savings are limited by the use of existing technologies only.

EPRI bases its estimates of energy efficiency savings on types of technology that are currently commercialized and cost-effective, e.g. lighting, appliances, etc. and it does not account for any innovations in these technologies over time or the addition of new technologies.

Existing equipment is assumed to be in use through the end of its useful life. However, energy-efficiency incentives can encourage early retirement in favor of more efficient equipment.

EPRI assumes that energy efficiency technologies will not "instantaneously or prematurely"[1] replace existing equipment, but rather will be phased-in as devices reach the ends of their useful lives. Utility or government incentives, however, may lead to the replace of these less efficient devices well before the end of their useful lives.

The useful life of energy efficiency devices is assumed by EPRI to be less than 15 years, while the period of this study is 20 years. Some efficient devices installed prior to the study period or at the beginning of the study period will reach the end of their useful lives well before 2030, but because EPRI allows for no new technologies as replacements, no new opportunities for energy efficiency can be created.

Estimates of savings include energy efficient technologies, but do not include as many energy efficient processes as may be practicable.

Energy efficient *technologies* are the drivers behind EPRI estimates of savings. These estimates include few energy efficient *practices* or *processes*. This criticism applies especially to estimates of industrial savings. EPRI's estimates include only motor, lighting and heating improvements made by industrial customers. Including the wide variety of available industrial process improvements, as well as improved system designs for buildings, would increase estimates of energy efficiency potential.

The assumption that incremental costs for energy efficiency technologies will remain constant is flawed.

EPRI holds costs for energy efficiency technologies constant over the 20 year study period. This causes two errors in the estimates for economically achievable energy efficiency potential. The first errors occurs due to the fact that costs for technologies that are currently commercially available are likely to fall over time, and estimates of energy efficiency potential can therefore be achieved at a reduced cost. The second error occurs because certain efficiency technologies may fall into the efficiency category of "Technical Potential" which represents the amount of energy efficiency that could occur if all homes and business adopted the most efficient technologies available irrespective of cost. Technologies that are too expensive, while they may be available, are unlikely to be adopted by consumers. As the cost for these technologies falls, however, they are more likely to pass screens for economic cost-effectiveness and move into the efficiency category of "Economically Achievable Potential" and actually be put into service.

Use of the Participant Cost Test may not properly measure cost-effectiveness, and may therefore underestimate achievable potential.

The Participant Cost Test is one example of the cost-effectiveness screens mentioned above that measures cost of a program from the perspective of the customer. Most customers pay a flat rate per kWh of electricity, and so this test ignores savings that occur during peak hours of the day, e.g. those related to more efficient measures for space

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[1] Electric Policy Research Institute. *Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S.: 2010 – 2030. Executive Summary*. January 2009. page 8.

cooling. The particular test also does not account for benefits that accrue due to avoided demand. Peak energy and avoided demand savings are much more valuable from a utility or total resource perspective, and efficiency measures that result in these types of savings would pass the corresponding screens for cost-effectiveness – the Utility Cost Test and the Total Resource Cost Test – that would not pass the Participant Cost Test.

EPRI assumes a relatively flat electricity price forecast in real dollars through 2030.

As electricity prices rise, customers are more likely to commit to energy efficiency measures, resulting in increased energy savings. Peak energy savings and avoided demand are also much more valuable as prices increase.

To summarize, EPRI makes many flawed assumptions in its report, holding technological progress, incremental cost of technologies, and national electricity prices flat over time. Maximum energy efficiency potential as estimated by EPRI reaches 8% energy savings by the year 2030, and the realistic savings estimate is only 5% in 2030. EPRI's estimate represents an incremental load savings of approximately 0.2% per year. While average energy efficiency savings was 0.24% in 2006, as reported by the American Council for an Energy-Efficient Economy (ACEEE) and cited by EPRI in its study,[2] it is critical to note that this is an average across the entire United States, and therefore includes states that are attempting absolutely no energy efficiency. This consequently brings down the national average by a significant margin. The most important critique of EPRI's estimate, therefore, is that *in practice*, many jurisdictions are *already* beating 0.2% savings per year by a wide margin, some by more than an order of magnitude. As reported by FERC in April 2009, the following states are leading the nation in their goals for energy efficiency:[3]

- Minnesota: 1.5% annual savings from prior year's sales to 2015;
- Ohio: reduce peak demand 8% by 2018 and achieve energy savings of 22% between 2009 and 2025;
- Maine: 10% energy efficiency by 2017;
- Massachusetts: 25% of electric load from demand response and energy efficiency by 2020;
- Maryland: 15% reduction in electricity use and peak from 2007 levels by 2015;
- New York: 15% reduction in electric use by 2015 from levels projected in 2008; and
- Vermont: 2% annual energy savings between 2009 and 2011.

[2] Electric Policy Research Institute. *Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S.: 2010 – 2030. Executive Summary*. January 2009. page 7.
[3] Federal Energy Regulatory Commision. *Electric Market Overview: Energy Efficiency Resource Standards (EERS) and Goals*. Updated April 3, 2009.

Attachment No. 3
List of Analysis of Proposed Federal Greenhouse Gas Legislation

The Energy Information Administration of the U.S. Department of Energy's ("EIA") assessment of the *Energy Market and Economic Impacts of S. 280, the Climate Stewardship and Innovation Act of 2007* (July 2007). Available at http://www.eia.doe.gov/oiaf/servicerpt/csia/pdf/sroiaf(2007)04.pdf.

The October 2007 Supplement to the EIA's assessment of the *Energy Market and Economic Impacts of S. 280, the Climate Stewardship and Innovation Act of 2007.* Available at http://www.eia.doe.gov/oiaf/servicerpt/biv/pdf/s280_1007.pdf

The EIA's assessment of the *Energy Market and Economic Impacts of S. 1766, the Low Carbon Economy Act of 2007* (January 2008). Available at http://www.eia.doe.gov/oiaf/servicerpt/lcea/pdf/sroiaf(2007)06.pdf

The EIA's assessment of the *Energy Market and Economic Impacts of S. 2191, the Lieberman-Warner Climate Security Act of 2007* (April 2008). Available at http://www.eia.doe.gov/oiaf/servicerpt/s2191/pdf/sroiaf(2008)01.pdf.

The U.S. Environmental Protection Agency's ("EPA") *Analysis of the Climate Stewardship and Innovation Act of 2007 – S. 280 in 110th Congress* (July 2007). Available at http://www.epa.gov/climatechange/economics/economicanalyses.html.

The EPA's *Analysis of the Low Carbon Economy Act of 2007 – S. 1766 in 110th Congress* (January 2008). Available at http://www.epa.gov/climatechange/economics/economicanalyses.html.

The EPA's *Analysis of the Lieberman-Warner Climate Security Act of 2008 – S. 2191 in 110th Congress* (March 2008). Available at http://www.epa.gov/climatechange/economics/economicanalyses.html.

Assessment of U.S. Cap-and-Trade Proposals by the Joint Program at the Massachusetts Institute of Technology ("MIT") on the Science and Policy of Global Change (April 2007). Available at http://web.mit.edu/globalchange/www/MITJPSPGC_Rpt146.pdf.

Analysis of the Cap and Trade Features of the Lieberman-Warner Climate Security Act – S. 2191 by the Joint Program at MIT on the Science and Policy of Global Change (April 2008). Available at http://mit.edu/globalchange/www/MITJPSPGC_Rpt146_AppendixD.pdf.

The Lieberman-Warner America's Climate Security Act: A Preliminary Assessment of Potential Economic Impacts, prepared by the Nicholas Institute for Environmental Policy Solutions, Duke University and RTI International (October 2007). Available at http://www.nicholas.duke.edu/institute/econsummary.pdf.

U.S. Technology Choices, Costs and Opportunities under the Lieberman-Warner Climate Security Act: Assessing Compliance Pathways, prepared by the International Resources Group for the Natural Resources Defense Council (May 2008*).* Available at http://docs.nrdc.org/globalwarming/glo_08051401A.pdf.

The Lieberman-Warner Climate Security Act – S. 2191, Modeling Results from the National Energy Modeling System – Preliminary Results, Clean Air Task Force (January 2008). Available at http://lieberman.senate.gov/documents/catflwcsa.pdf.

Economic Analysis of the Lieberman-Warner Climate Security Act of 2007 Using CRA's MRN-NEEM Model, CRA International, April 2008. Available at http://www.nma.org/pdf/040808_crai_presentation.pdf.

Analysis of the Lieberman-Warner Climate Security Act (S. 2191) using the National Energy Modeling System (NEMS/ACCF/NAM), a report by the American Council for Capital Formation and the National Association of Manufacturers, NMA, March 2008. Available at http://www.accf.org/pdf/NAM/fullstudy031208.pdf.