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IDAHO PUBLIC
UTILITIES COMMISSION

BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE APLICATION OF IDAHO POWER COMPANY FOR AUTHORITY TO IMPLEMENT RATES FOR ELECTRIC SERVICE TO INCLUDE CAPITALIZED CUSTOM EFFICIENCY INCENTIVE PAYMENTS.	)	CASE NO. IPC-E-12-24 REPLY COMMENTS OF THE IDAHO CONSERVATION LEAGUE

The Idaho Conservation League (ICL) urges the Commission to approve Idaho Power's request to apply the current rate of return on capitalized Custom Efficiency incentives and amortize the recovery of these investments. Below, ICL rebuts the Staff and ICIP arguments questioning the policy of allowing the Company to earn its full rate of return on prudent, used and useful investments. ICL closes by recommending the Commission adopt a reasonable amortization period.

I. Incenting Idaho Power's Pursuit of Cost Effective Energy Efficiency is Fair, Just, and Reasonable.

Capitalizing the Custom Efficiency program incentives is one part of a set of regulatory mechanisms that properly align the utility's financial incentives with ratepayer's interests. It is not a silver bullet to address Idaho Power's current incentive to pursue supply-side resources. Rather, allowing the Company to earn an equivalent rate of return on demand-side and supply-side resources is just one part—a critical part—of aligning financial incentives with the regulatory directive to pursue all cost-effective energy efficiency. Both the Staff and ICIP discount the role that capitalizing certain demand-side investments plays in changing the regulatory paradigm. This change can counter balance the incentive towards supply-side resources.

Staff argues the Company's claim that the opportunity to earn profits on demand side resources would make it more willing to invest in these resources cannot be substantiated.[1] But this argument defies common sense—of course, a chance at profits motivates a firm. A study by Lawrence Berkley National Lab (LBNL) quantifies the impact to utility manager motivations—revenues and returns on equity—that regulatory structures can provide. In *Financial Analysis of Incentive Mechanisms to Promote Energy Efficiency: Case Study of a Prototypical Southwest Utility*, the authors analyze the impacts on customer bills, rates, revenues, and returns on equity for a utility pursuing various levels of energy efficiency and with various incentive mechanisms.[2] This report compares a Business as Usual situation of a utility pursuing supply-side resources, with the same utility implementing efficiency programs designed to achieve energy savings of 0.5%, 1.0%, and 2.0% of sales.[3] Not surprisingly, the LBNL report found that continued pursuit of energy efficiency programs reduces customer bills, but also reduces a utility's earnings and return on equity when compared to the business as usual path.[4] The figure below from the report shows that applying an incentive mechanism mitigates both the impacts to revenues and returns on equity – with cost capitalization being the most modest of the incentives.[5]

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[1] *Staff* at 6.
[2] Peter Cappers, Charles Goldman, Michele Chait, George Edgar, Jeff Schlegel, Wayne Shirley, *Financial Analysis of Incentive Mechanisms to Promote Energy Efficiency: Case Study of a Prototypical Southwest Utility*, Ernest Orlando Lawrence Berkeley National Laboratory (March 2009) (Executive Summary is included at Attachment 1. The full report is available online at: http://eetd.lbl.gov/ea/ems/reports/lbnl-1598e.pdf)
[3] While the prototypical utility in the study faced high load growth, the report includes a sensitivity study for a low load growth situation that shows the same results. *See Appendix E*, included in Attachment 1. (Full appendix available at: http://eetd.lbl.gov/ea/emp/reports/lbnl-1598e-app.pdf)
[4] *Id* at xvii, Table ES-3.
[5] *Id* at xvii – xviii, Figure ES – 4.

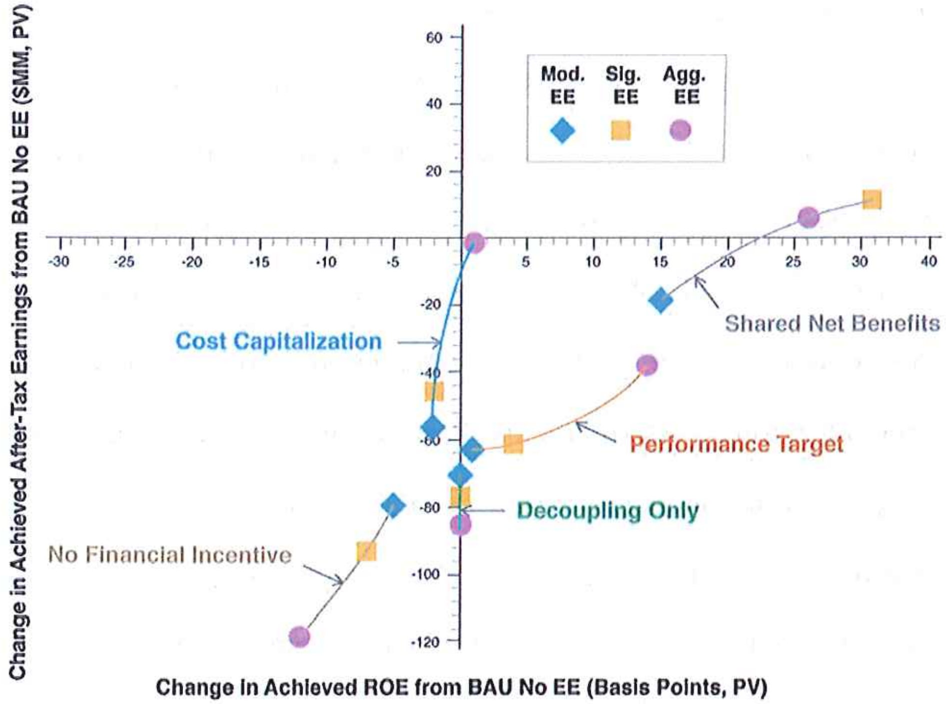

Figure ES- 4. Achieved After-Tax Earnings and Return on Equity (ROE): Impact of energy efficiency portfolios, decoupling and shareholder incentives

This report substantiates the claim that aligning financial incentives with regulatory mandates should improve a utility's willingness to pursue demand side resource options. Or, put another way, the carrot of earning a profit compliments the stick of ordering pursuit of all cost-effective energy efficiency. It is fair, just, and reasonable to apply a modest incentive scheme to balance the utility's desire to meet revenue and earnings targets with the mandate to pursue cost-effective energy efficiency.

II. Incenting Pursuit of Cost-Effective Energy Efficiency Will Counter Balance the Incentive to Pursue Supply-Side Resources.

Staff and ICIP argue that the Company faces an "overriding incentive to invest in supply side resources."[6] But the Staff and ICIP fail to acknowledge this paradigm can be changed, as Idaho Power's proposal in this case moves towards. Of course allowing the Company to earn a

[6] *Staff* at 6; *ICIP* at 3 (utilities "have significant economic incentive—and even a fiduciary duty—to pursue capital investments supported by higher electric use.")

return on one demand-side program is not a silver bullet. The Commission and other stakeholders must remain vigilant to review all supply-side investments and ensure they are the least cost, least risk, and prudent investment for ratepayers. But despite what the Commission decides in the present case, plenty of opportunities remain to exercise this vigilance including the Integrated Resource Plan, Certificate of Public Convenience and Necessity proceedings, general rate cases, and other cost recovery proceedings. While allowing amortization and a rate of return on Custom Efficiency incentives will not, standing alone, defeat the incentive to pursue supply-side resources, it is better than doing nothing as the Staff and ICIP argue.

ICIP tries to raise the Averch-Johnson (A-J) effect as a reason to not approve the application.[7] But just as in IPC-E-10-27, ICIP fails to fully discuss the issue or explain why it is a compelling reason to not provide an incentive for demand side resources.[8] The A-J effect argues that utilities have an incentive to put large capital projects into their rate base if the allowable rate of return exceeds the cost of capital. The incentive occurs because, given a fixed rate of return that exceeds the cost of capital; shareholders earn more on a $1 million investment than a $1 investment. ICIP then makes the unremarkable statement that "utilities profit from selling electricity and from building capital resources to sell electricity."[9] But what ICIP fails to recognize is that the Application in this case is an important step in changing this paradigm. Of course, this is but one-step and stakeholders must remain vigilant to review the incentive towards supply-side resources. But we will never move away from the paradigm on continued load growth without providing an equivalent profit motive for energy efficiency. The Commission should look past ICIP's attempt to raise A-J effect, but then reject a reasonable method to address it. Instead, the Commission should look towards the lessons from the LBNL study—that

[7] *ICIP Comments* at 2 – 3.
[8] *See Hirsch Rebuttal* at 3 - 4, IPC-E-10-27.
[9] *ICIP Comments* at 3.

the proper regulatory structure will ensure sufficient revenues and returns on equity to align shareholder interests with customer's interest in efficient energy services.

ICIP then argues the Commission should address whether Idaho Power or an independent third-party is better suited to operating demand-side programs.[10] Not only is this suggestion far beyond the scope of this case, it does not address the issues ICIP raises. Merely moving demand-side program operation to a third-party does nothing to mitigate Idaho Power's current incentive to invest in supply-side resources. Moreover, this change would reinstitute an incentive for the Company to obstruct complimentary policies likes building codes, tax code changes, education programs, or other public and private initiatives. Instead of moving backwards to an antagonistic relationship with demand-side programs, the Commission should continue to move forward by providing a reasonable financial incentive for pursuing cost-effective energy efficiency.

The Staff and ICIP also argue that approving the Company's Application will cause ratepayers to pay more for these resources. Staff characterizes this as "extraordinary customer funded incentives."[11] ICIP as "artificially and unnecessarily expensive for the ratepayer."[12] The basis of this argument is that allowing the Company to earn its authorized rate of return on a prudent, used and useful investment is somehow extraordinary and artificial. But this argument is just as true for any investment upon which the Company earns a return. Arguing that allowing a rate of return on prudent investments is extraordinary or unnecessary undercuts the premise of the regulatory compact. The opportunity to earn returns unlocks the capital necessary to provide electrical service to customers. Whether this investment falls on the supply or demand side, the proper question is if it is a prudent, used and useful investment in electric service.

[10] *ICIP Comments* at 3 – 4.
[11] *Staff Comments* at 7 - 8.
[12] *ICIP Comments* at 2 - 3.

The Commission has already found the Custom Efficiency payments Idaho Power seeks to earn a return on are prudent.[13] The Commission has ruled previously "that conservation investments should be capitalized in a manner equivalent to the capitalization of generating resources."[14] The Staff has supported this notion before. When supporting the stipulation in IPC-E-10-27 Staff Witness Lobb stated: "to the extent the Company earns a return on some of its supply side resources, Staff believes it is appropriate for the Company to earn a return on some of its demand side resources in a similar manner."[15] Applying the Company's current rate of return to prudent, used and useful investments in Custom Efficiency program is the most ordinary and least artificial manner to align the financial incentives between supply-side and demand-side resources.

III. The Commission Should Continue to Strive for Equality Between Supply- and Demand-Side Resources.

Staff's citation to Order 27660 where the Commission adopted a lower carrying charge for the unrecovered DSM balance confuses the issues.[16] That portion of the decision considered the relative risk of recovery for DSM expenses.[17] This case deals with providing a reasonable incentive to promote Company pursuit of cost-effective energy efficiency. The factors and consideration are different between the two circumstances. In the former, the factors deal with the certainty of utility cost recovery. In the later, the factors deal with balancing the need to attract capital with providing ratepayers fair, just, and reasonable rates. Here the Commission has determined a rate of return for prudent, used, and useful resources in a general rate case.

[13] *Order No. 32667* at 11, IPC-E-12-15.
[14] *Order No. 22299*, U-1500-165; *Order No. 22758*, GNR-E-89-2.
[15] *Lobb Direct* at 2, IPC-E-10-27.
[16] *Staff Comments* at 5 – 6.
[17] *Order 27660* at 10.

This included "a full assessment of all factors impacting the Company's risk."[18] It is fair, just, and reasonable for that rate of return to be applied to the Custom Efficiency incentives.

Staff raises two other issues in arguing against the policy of allowing the Company to earn a return on demand-side resources. Staff points out that not all supply-side resources include the ability to earn a return – specifically Power Purchase Agreements (PPA).[19] But while the Staff cites to "numerous" PPAs they do not attempt to quantify this amount, nor distinguish them from PURPA agreements that are not a voluntary business activity. Just because some business activities do not include a return on investment is no reason to deny the Application. Instead, the Commission should consider whether allowing for a return on investment would incent Idaho Power to pursue demand-side investments.

More directly, Staff argues that the Company proposal does not treat demand-side and supply-side resource equally in two ways.[20] Supply-side resources are not included in rate base until a rate case, while the Custom Efficiency payments would be included annually. And supply-side resources begin depreciating immediately, while the Custom Efficiency programs would not.[21] This issue can be addressed in a simple manner. Custom Efficiency incentives can be booked as a regulatory asset, but only after being deemed prudent would they begin accruing a carrying charge at the overall rate of return. Before prudency, the Company would apply a 1% carrying charge like the balance on the energy efficiency rider account. Regarding depreciation, because the Company proposes an annual cost review, any ratepayer savings gained through deprecation would be negligible. Accounting for supply-side and demand-side resources will never be exactly equal, but allowing for a rate of return only on those investments deemed prudent is a close to equal as possible.

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[18] *Id.*
[19] *Staff Comments* at 7.
[20] *Id.*
[21] *Id.*

IV. THE COMMISSION SHOULD APPROVE A REASONABLE AMORTIZATION PERIOD THAT BALANCES THE INTERESTS OF THE UTILITY AND RATEPAYERS.

ICL agrees with Staff that determining the appropriate amortization period for an intangible asset is "understandably difficult."[22] Both Staff and ICIP raise the concept of the Matching Principle, or aligning the amortization with the useful life of the asset.[23] This concept is fairly easy to apply when considering a tangible asset, but much more opaque when considering an intangible asset. For example, when recovering increased pension payments through rates, the Company proposed three years and the Staff hesitantly supported this to avoid larger increases in future years.[24] ICIP recommended a 5-year amortization merely because it would lower the annual rate increase.[25] The Commission ultimately sided with the Company and Staff.[26] Notably, nothing in the arguments or decision related to the useful life of the asset, although pension accounts are useful for decades. Instead, choosing a fair amortization period rested on balancing a reasonable recovery of prudent investments with mitigating annual rate impacts.

In this case, Idaho Power proposes a four-year amortization of the Custom Efficiency incentives. Staff points out the Company calculates the cost effectiveness of the program based on a 12-year measure life.[27] While Staff does not take a clear position, they do recognize that the intangible nature of the regulatory asset is a consideration.[28] ICIP re-constitutes arguments from the IPC-E-10-27 case where it cited to a prior Commission order directly on point, Order 27660.[29] In that Order, the Commission weighed the arguments for reducing Idaho Power's

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[22] *Staff Comments* at 5.
[23] *Staff Comments* at 5; *ICIP Comments* at 4 – 5.
[24] *Staff Comments* at 2 – 3, IPC-E-11-04.
[25] *ICIP Comments* at 8, IPC-E-11-04
[26] *Order* 32248 at 4, IPC-E-11-04.
[27] *Staff Comments* at 5.
[28] *Id.*
[29] *ICIP Comments* at 4 – 5.

amortization period for recovery of DSM investments from 24 years down to 5 years.[30] In weighing the arguments, the Commission balanced several factors: the useful life of the asset, that the Company does not own the asset, and assuring the customers who benefit also pay for the investment.[31] The Commission also noted, "the mater requires some degree of discretion."[32] The Commission concluded an amortization period of one half the useful life was a "just and reasonable compromise of all the interests concerned."[33]

ICL urges the Commission to exercise its discretion in this case and designate an amortization period no longer than seven years. This is the length the Company, Staff, and ICL agreed was a reasonable compromise in IPC-E-10-27.[34] While shorter than the useful life for cost effectiveness purposes, this length recognizes the risk of recovery the Company faces for this intangible asset. Designating an amortization period that is one-half the useful life strikes a similar balance as the Commission did in Order 27660. And a shorter the amortization period better ensures the customers who benefit from the incentives will pay for them as well. Lastly, extending the amortization period beyond four years will mitigate some of the annual rate impacts for customers. Designating an amortization period no longer than seven years is a reasonable balance of the competing interests.

V. CONCLUSION.

This Application is a simple and fair mechanism to help align the regulatory landscape with this Commission's directive to pursue all cost-effective energy efficiency. Instead of only admonishing the Company towards this pursuit, ICL urges the Commission to align the

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[30] *Order 27660*, IPC-E-97-12. (This Order is on point regarding the proper amortization period. This is distinct from the Staff's attempt to use this Order to support a lower rate of return. *See* page 6 - 7 above.)
[31] *Id* at 4 – 5 (The Commission was not persuaded by Idaho Power's argument about changing regulatory paradigms.)
[32] *Id* at 5.
[33] *Id.*
[34] *See Order 32217* at 3, IPC-E-10-27.

economic incentives for Idaho Power with the interest of ratepayers. Ratepayers remain protected by reviewing the prudency of Custom Efficiency incentives before any collection. The Commission has already approved a rate of return for prudent, used and useful investments in a general rate case. And the Commission has a long history of allowing for rate base additions, setting amortization periods, and approving cost recovery mechanisms outside of general cases. ICL urges the Commission to make the following findings:

(1) Continue to account for Custom Efficiency incentives as a regulatory asset.

(2) Only after the Commission has determined the investments are prudent allow for a carrying charge at current overall rate of return.

(3) Establish an amortization period of no more than seven years.

Respectfully submitted this 11th day of February 2013,

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ATTACHMENT 1

Peter Cappers, Charles Goldman, Michele Chait, George Edgar, Jeff Schlegel, Wayne Shirley

Financial Analysis of Incentive Mechanisms to Promote Energy Efficiency: Case Study of a Prototypical Southwest Utility

Ernest Orlando Lawrence Berkeley National Laboratory
(March 2009)

LBNL-1598E

Financial Analysis of Incentive Mechanisms to Promote Energy Efficiency: Case Study of a Prototypical Southwest Utility

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March 2009

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Acknowledgements

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Executive Summary

Many state regulatory commissions and policymakers want utilities to aggressively pursue energy efficiency as a strategy to mitigate demand and energy growth, diversify the resource mix, and provide an alternative to building new, costly generation. However, as the National Action Plan for Energy Efficiency (NAPEE 2007) points out, many utilities continue to shy away from aggressively expanding their energy efficiency efforts when their shareholder's fundamental financial interests are placed at risk by doing so. Thus, there is increased interest in developing effective ratemaking and policy approaches that address utility disincentives to pursue energy efficiency or lack of incentives for more aggressive energy efficiency efforts.

New regulatory initiatives to promote increased utility energy efficiency efforts also affect the interests of consumers. Ratepayers and their advocates are concerned with issues of fairness, impacts on rates, and total consumer costs. From the perspective of energy efficiency advocates, the quid pro quo for utility shareholder incentives is the obligation to acquire all, or nearly all, achievable cost-effective energy efficiency. A key issue for state regulators and policymakers is how to maximize the cost-effective energy efficiency savings attained while achieving an equitable sharing of benefits, costs and risks among the various stakeholders.

In this study, we modeled a prototypical vertically-integrated electric investor-owned utility in the southwestern US that is considering implementing several energy efficiency portfolios.[1] We analyze the impact of these energy efficiency portfolios on utility shareholders and ratepayers as well as the incremental effect on each party when lost fixed cost recovery and/or utility shareholder incentive mechanisms are implemented. A primary goal of our quantitative modeling is to provide regulators and policymakers with an analytic framework and tools that assess the financial impacts of alternative incentive approaches on utility shareholders and customers if energy efficiency is implemented under various utility operating, cost, and supply conditions.

We used and adapted a spreadsheet-based financial model (the Benefits Calculator) which was developed originally as a tool to support the National Action Plan for Energy Efficiency (NAPEE).[2] The major steps in our analysis are displayed graphically in Figure ES- 1. Two main inputs are required: (1) characterization of the utility which includes its initial financial and physical market position, a forecast of the utility's future sales, peak demand, and resource strategy to meet projected growth; and (2) characterization of the Demand-Side Resource (DSR) portfolio – projected electricity and demand savings, costs and economic lifetime of a portfolio of energy efficiency (and/or demand response) programs that the utility is planning or considering implementing during the analysis period. The Benefits Calculator also estimates total resource costs and benefits of the DSR portfolio using a forecast of avoided capacity and energy costs. The Benefits Calculator then uses inputs provided in the Utility Characterization to produce a "business-as usual" base case as well as alternative scenarios that include energy

[1] Our analysis does not focus on or directly address distribution-only electric utilities, natural gas utilities, and non-utility third-party energy efficiency program administrators (see section 4 for brief discussion of alternatives to utility program administration).

[2] Michelle Chait of Energy and Environmental Economics (E3), is one of the developers of the original NAPEE Benefits Calculator and is a member of the team that prepared this study.

efficiency resources, including the corresponding utility financial budgets required in each case. If a decoupling and/or a shareholder incentive mechanism are instituted, the Benefits Calculator model readjusts the utility's revenue requirement and retail rates accordingly. Finally, for each scenario, the Benefits Calculator produces several metrics that provides insights on how energy efficiency resources, decoupling and/or a shareholder incentive mechanism impacts utility shareholders (e.g. overall earnings, return on equity), ratepayers (e.g., average customer bills and rates) and society (e.g. net resource benefits).

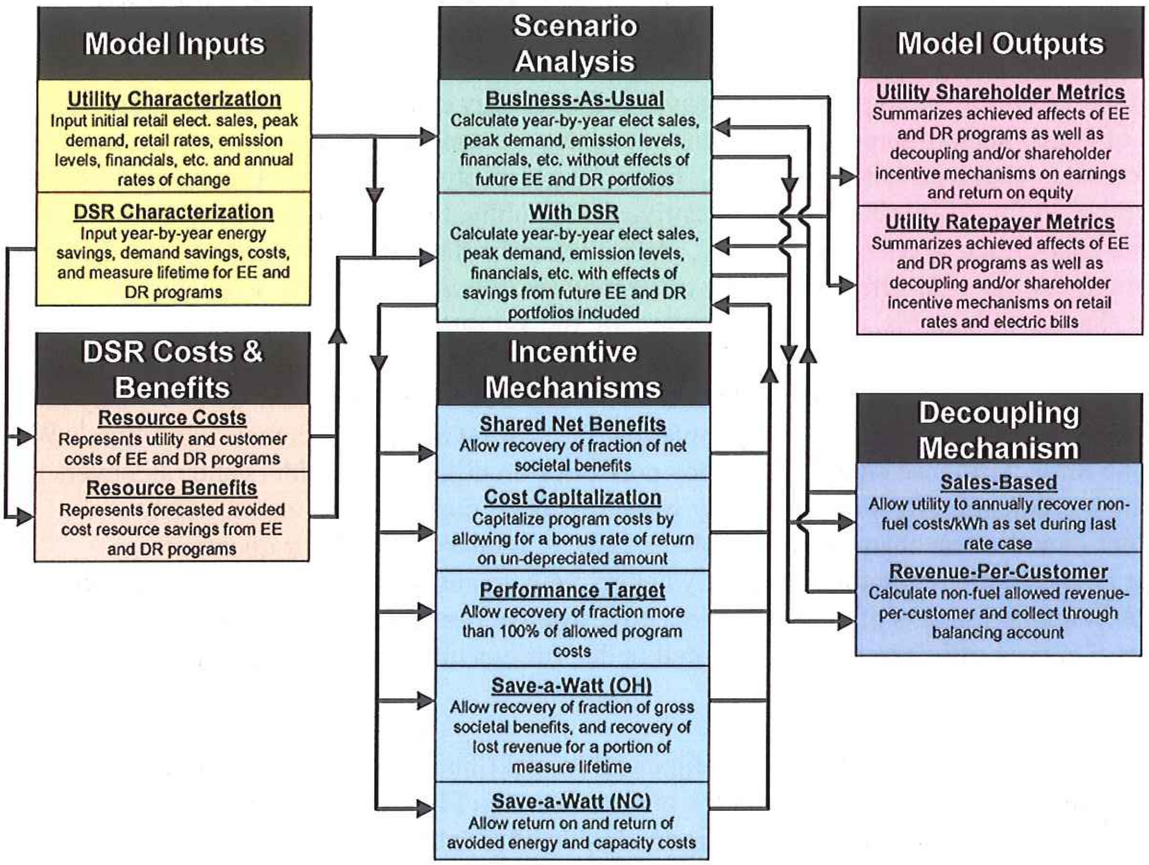

Figure ES- 1. Flowchart for quantitative analysis of EE incentive mechanisms at prototypical utility

We modeled a revenue-per-customer full-decoupling mechanism and five different shareholder incentive mechanisms that reward the utility for successfully implementing their energy efficiency portfolio. Three shareholder incentive mechanisms (Performance Target, Cost Capitalization, and Shared Net Benefits) have been implemented at a number of utilities over the last two decades. These three incentive mechanisms were modeled separately with and without the decoupling mechanism. Two shareholder incentive mechanisms have been proposed by Duke Energy and are more comprehensive in nature, combining several different objectives into a single mechanism. The specific mechanisms that were analyzed are: [3]

[3] For each incentive mechanism, the utility's expected earnings are represented on an after-tax basis. Thus, ratepayers are obliged to pay an incentive mechanism to the utility that is grossed-up for the assumed 38% tax liability faced by the utility (e.g., local, state and federal government taxes).

- **Revenue-per-customer decoupling:** This mechanism fully decouples utility sales from non-fuel revenues. The actual allowed non-fuel revenue collected by the utility is the product of the average non-fuel revenue requirement per customer at the time of the last rate case and the current number of customers being served. The total non-fuel revenue collected by the utility increases as the number of customers being served changes. A balancing account is used to ensure ratepayers are either debited or credited for under- or over-collection of the authorized non-fuel revenue requirement. A full decoupling mechanism, such as this one, mitigates the potential for lost profit from any under-recovery of fixed costs through a reduction in retail sales between rate cases.
- **Performance Target**: The utility receives a bonus of an additional 10% of program administration and measure incentive costs for achieving program performance goals. Program costs are explicitly recovered in the period expended through a rider.
- **Cost Capitalization**: The utility capitalizes energy efficiency program administration and measure incentive costs over the first five years of the installed measures' lifetime and is granted the authority to increase its authorized ROE (10.75%) for such investments by 500 basis points.
- **Shared Net Benefits**: The utility retains a pre-determined share (15%) of the net resource benefits (i.e. avoided energy and capacity cost benefits minus utility program costs and installed costs of the energy efficiency measures) from the portfolio of energy efficiency programs. Program costs are explicitly recovered through a rider.
- **Save-a-Watt NC**: The utility capitalizes and collects revenues that are set at 90% of the present value of the stream of total avoided cost savings realized over the lifetime of the installed energy efficiency measures. Given the potential revenue stream, under this proposal, the utility waives the right to collect its program costs and any associated lost earnings from reduced sales volume.[4]
- **Save-a-Watt OH**: The utility retains 50% of the present value of the gross benefits from the portfolio of energy efficiency programs. Program costs are to be covered by this payment. An explicit "lost revenue" component is also included that allows the utility to recover the first three-years of savings from each year's implemented measures or up until the time of the next rate case, whichever comes first, valued at the then existing average retail rate (excluding fuel).[5] Duke Energy also agreed to an earnings cap on the contribution made by the incentive mechanism, although the lost revenue component is not included in the earnings cap.

Prototypical Southwest Utility: Physical and Financial Characteristics and Resource Need

We reviewed the physical and financial characteristics of a number of utilities in the southwestern United States and created a prototypical southwest utility for this study. Many

[4] Duke Energy Carolina originally proposed Save-A-Watt in May 2007 to the North Carolina Utility Commission, and subsequently filed a similar proposal in South Carolina and Indiana. Program costs are not explicitly recovered and this mechanism also covers any loss of profit due to a reduction in sales. See Appendic C for a more detailed description of our modeling of Save-A-Watt (NC) in the Benefits Calculator.

[5] Duke Energy Ohio filed a revised Save-A-Watt proposal in Ohio on July 31, 2008, after settling on a similar version of the Save-a-Watt design with the Indiana Office of Utility Consumer Counselor (IOUCC). Lost revenues associated with the successful implementation of energy efficiency are directly accounted for and recovered as a *separate* component of this mechanism. See Appendix D for more detailed description of our modeling of Save-A-Watt (OH) proposal in the Benefits Calculator.

utilities in this region have experienced very high load growth over the last decade. In their most recent resource plans, utilities forecast significant growth in peak demand and sales and a need for new generation resources and additional transmission and distribution system investments. Given this situation, energy efficiency has the potential to become an increasingly important resource that can help mitigate projected load growth and possibly defer (or avoid) the need for new resources.

As shown in Figure ES- 2, our prototypical southwest utility has first-year (2008) annual retail sales of 25,000 GWh, an initial peak demand of ~5,700 MW, which produces a 50% load factor.[6] Sales are forecasted to grow at a compound annual rate of 2.8%, while peak demand is expected to increase at a slightly faster rate (2.9%). These load growth and peak demand forecasts represents our "business-as-usual" scenario if energy efficiency is not implemented (BAU No EE case).

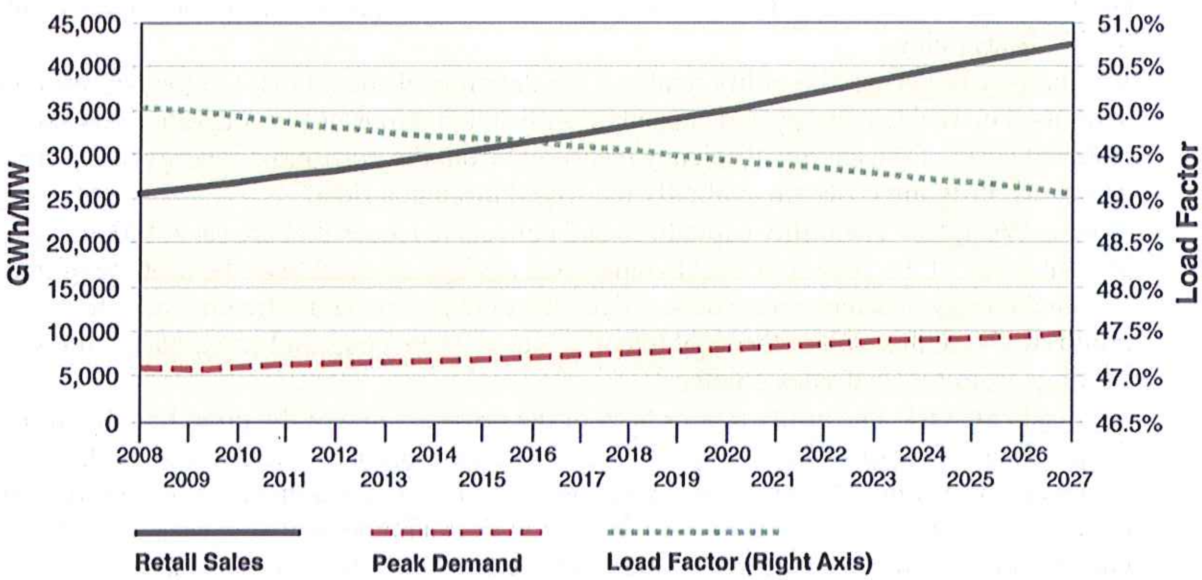

Figure ES- 2. Forecasted retail sales, peak demand and load factor for prototypical Southwest utility: Business-as-usual No EE case

The rapid growth in sales and peak demand requires our prototypical utility to aggressively build new generation plant, bringing a new facility on-line roughly every 2.5 years for the duration of the 20 year analysis period (see Figure ES- 3). To finance these plants, the utility uses an equal mix of debt and equity at a cost of 6.60% for debt and an authorized ROE of 10.75%.

[6] See Appendix A for more information on the approach used to develop our prototypical southwest utility. We relied heavily upon publicly available data (e.g., annual reports, 10-K, FERC Form 1, integrated resource plans) predominantly from Arizona Public Service and Nevada Power.

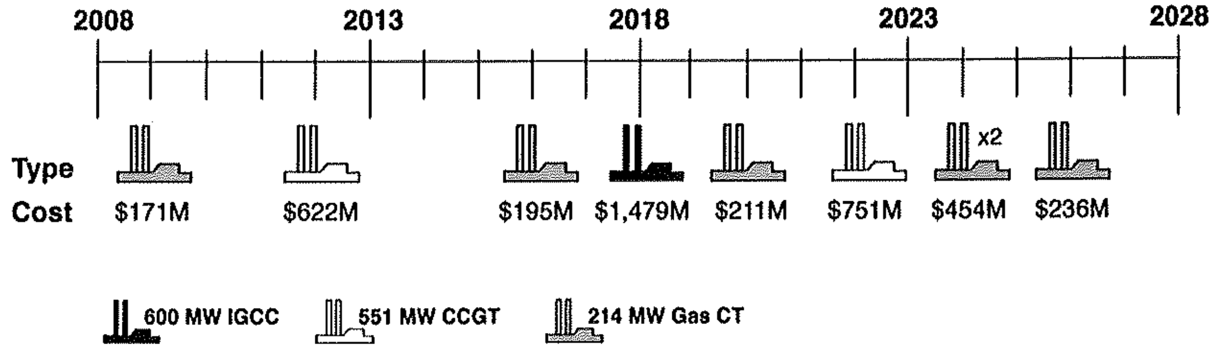

Figure ES- 3. Generation expansion plan for prototypical Southwest utility: Business-as-usual No EE Case

Overall, growth in non-fuel costs outpace growth in collected revenues between rate cases from increased sales by well over a 2:1 margin in nearly all utility budget categories (see Table ES-1).[7] Because costs are increasing more rapidly than revenue growth in the "business as usual" case (without energy efficiency), the prototypical utility experiences sizable earnings erosion between rate cases and is unable to achieve its authorized return on equity (ROE) in non-rate case years. To mitigate this detrimental financial impact, we assume that the utility files a rate case every other year (using a current test year methodology).[8] Under these assumptions, this prototypical southwestern utility has an all-in average retail rate of 9.1 ¢/kWh in 2008, which increases to 18.9 ¢/kWh by 2027. In the business-as-usual case (without energy efficiency), the utility's average return on equity is 10.43%, which is 32 basis points below its authorized level.

Table ES- 1. Prototypical Southwest utility (Business-as-usual No EE case): Major budget expenditures and projected growth

Utility Budget Category	2008 Level ($B)	2017 Level ($B)	2027 Level ($B)	Annual Growth Rate (%)
T&D Capital Expenditure	$0.3	$0.5	$0.7	5.0%
Ratebase	$4.3	$6.7	$11.1	5.1%
Operations and Maintenance	$0.4	$0.8	$2.0	8.8%
Fuel & Purchased Power	$1.2	$2.3	$4.2	6.7%
Annual Revenue Requirement	$2.3	$4.2	$8.1	6.9%
All-In Retail Rate	*9.1 ¢/kWh*	*13.1 ¢/kWh*	*18.9 ¢/kWh*	*3.9%*

[7] Projections of future utility costs (relative to sales growth) are based on the recent historical experience of several southwestern utilities as reported in Annual Reports and FERC Form 1 data.
[8] This frequency of general rate case filings is not without precedent. Arizona Public Service has filed rate cases in three of the last five years (i.e., 2004, 2006 and 2008).

Alternative Energy Efficiency Portfolios

Our prototypical southwest utility is considering implementing three energy efficiency portfolios over a 10 year time horizon, partly in response to initiatives by state regulators who want utilities to more aggressively pursue cost-effective energy efficiency resources (see Table ES- 2):[9]

- Moderate EE Portfolio that achieves a 0.5%/year incremental reduction in annual retail sales after two years and maintains this level of incremental energy savings each year for the next eight years;
- Significant EE Portfolio that achieves a 1.0%/year incremental reduction in annual retail sales after three years and maintains this level of incremental energy savings each year for the next seven years; and
- Aggressive EE Portfolio that achieves a 2.0%/year incremental reduction in annual retail sales after five years and maintains this level of incremental energy savings each year for the next five years.

The measures and programs included in the various EE portfolios are designed to achieve the desired electricity savings goals and also reduce peak period sales. We defined the peak period as 8 AM – 10 PM weekdays, and assumed that about 70% of the electricity savings occur in the peak period. Each portfolio of energy efficiency programs has a weighted-average measure lifetime of 11 years. The energy efficiency portfolios produce peak demand savings over the 10 year time horizon that ranges between 226 MW for the Moderate EE portfolio and 743 MW for the Aggressive EE portfolio. The total resource costs range between 2.5 and 4.0 cents per lifetime kWh for the Moderate and Aggressive EE portfolios, which is much lower than the costs of new supply-side alternatives being considered by the utility.

Table ES- 2. Key features and impacts of alternative energy efficiency portfolios

			Lifetime Impacts				
Energy Efficiency Portfolio	Target % Reduction in Incr. Retail Sales	Ramp-Up Period (Years)	Peak Period Savings (GWh)	Off-Peak Period Savings (GWh)	Peak Demand Savings (Max MW)	Program Admin. Costs (¢/Lifetime kWh)	Total Resource Costs (¢/Lifetime kWh)
Moderate	0.5%/Year	2	10,452	4,479	226	1.6	2.6
Significant	1.0%/Year	3	19,433	8,328	421	1.8	3.0
Aggressive	2.0%/Year	5	34,314	14,706	743	2.7	4.0

[9] Some utilities in the Southwest are currently achieving the savings levels in the Moderate EE portfolio and are ramping up toward the savings goals included in the Significant EE portfolio. Several states (e.g. Connecticut, California, Illinois, Massachusetts, New York, and Wisconsin) have recently adopted long-term savings goals that are comparable to the Aggressive EE portfolio goals.

Key Findings and Conclusions

1. Aggressive and sustained energy efficiency efforts can produce significant resource benefits at relatively low cost to society and utility customers. However, aggressive and sustained energy efficiency efforts will adversely impact utility shareholder interests by increasing the risk of lost earnings between rate cases and decreasing the available earnings opportunities over time.

The net resource benefits to customers if the utility successfully implements the moderate EE portfolio are ~$400M while net resource benefits increase to $860M if the utility implements the Aggressive EE portfolio. These energy efficiency portfolios are all very cost effective, producing benefit/cost ratios ranging from 1.7 to 2.6, making them attractive resources from a societal perspective. Ratepayers also would realize a sizable reduction in their aggregate bills as the utility produces and purchases less electricity and defers the need for future supply-side investments. Yet, these investments would have otherwise generated additional earnings for the utility. By replacing them with (EE) investments that by themselves provide no contribution to a utility's bottom line, we found that the utility's earnings decrease by roughly $70M to $110M over the planning horizon and actual achieved ROE drops by 4 and 11 basis points for the Moderate and Aggressive EE portfolios respectively, compared to its ROE of 10.43% in the business-as-usual (BAU) No EE case (see Table ES- 3).

Table ES- 3. Benefits to Customers vs. Business Reality of Energy Efficiency to the Utility

Energy Efficiency Portfolio	Total Resource Benefits ($B)	Total Resource Costs ($B)	Net Resource Benefits ($B)	Benefit Cost Ratio	Customer Bill Savings ($B)	Achieved After-Tax ROE
None	N/A	N/A	N/A	N/A	N/A	10.43%
Moderate	$0.67	$0.26	$0.41	2.6	$1.10	10.39%
Significant	$1.22	$0.55	$0.67	2.2	$1.69	10.36%
Aggressive	$2.06	$1.20	$0.86	1.7	$2.37	10.32%

2. Introducing a decoupling mechanism removes a short-run financial disincentive to energy efficiency by improving the ability of a utility to earn its authorized return between rate cases. Shareholder incentive mechanisms can improve the utility's longer-term business case for aggressive and sustained energy efficiency when success is measured on the basis of ROE rather than the absolute level of earnings.

The introduction of a revenue-per-customer decoupling mechanism fully offsets the decrease in ROE that occurs if the utility implements any of the EE portfolios. With a revenue-per-customer decoupling mechanism, the ROE is 10.43% for each EE portfolio, which is comparable to the utility's ROE in the BAU No EE case (see Figure ES- 4).[10] Not surprisingly, the utility's ROE

[10] With costs still growing faster annually than the number of customers, the revenue-per-customer decoupling mechanism is unable to collect enough from each customer between rate cases to allow the utility to increase earnings up to its authorized ROE. We assumed that the sales growth rate is equal to the customer growth rate; this means that electricity use per customer is neither increasing nor decreasing over time. The consequence of this

increases if the utility successfully implements its EE portfolios under a shareholder incentive mechanism. Our results suggest that as the level of savings grows from energy efficiency (i.e. from Moderate to Aggressive EE portfolio), the greater is the increase in ROE. For example, if the utility implements the Moderate EE portfolio, the utility's ROE increases by 3-4 basis points with our Performance Target and Cost Capitalization incentive and by 13 basis points with the Shared Net Benefits mechanism. The ROE increases by 15 to 23 basis points if the utility successfully implements the Aggressive EE portfolio. Given our assumed design features, Shared Net Benefits yields the greatest increase in ROE for the utility (see Figure ES- 4).

However, if we focus on the utility's after-tax earnings, the picture looks quite different. Utility earnings for any EE portfolio and shareholder incentive mechanism, except Shared Net Benefits, are $2M to $60M lower compared to the business-as-usual No EE case (see Figure ES- 4). These results illustrate an important tension for utility shareholders/managers. Conceptually, finance theory suggests that the preferred metric to assess the value of alternative resource options to utility shareholders is their incremental impact to net earnings per share (EPS) on a risk-adjusted basis. We did not explicitly model EPS impacts because it would have required assumptions regarding the timing and number of equity shares issued. We have therefore measured the impact of incentive mechanisms on shareholder value using earnings and ROE metrics. For shareholder incentive mechanisms that do not require the utility to issue new equity shares (i.e., all incentive mechanisms except Cost Capitalization), incentive mechanisms increase earnings and ROE relative to the case where no financial incentive is provided. The Cost Capitalization mechanism increases rate base equity; the ROE in this case reflects this higher equity balance.

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assumption is that when a revenue-per-customer decoupling mechanism is applied, the growth in collected revenue between rate cases is the same as the growth in collected revenue that occurs in the "business-as-usual" No EE case. Given the frequency of rate cases, the application of the RPC decoupling mechanism when EE is implemented results in the utility achieving the same return on equity as when no energy efficiency was undertaken.

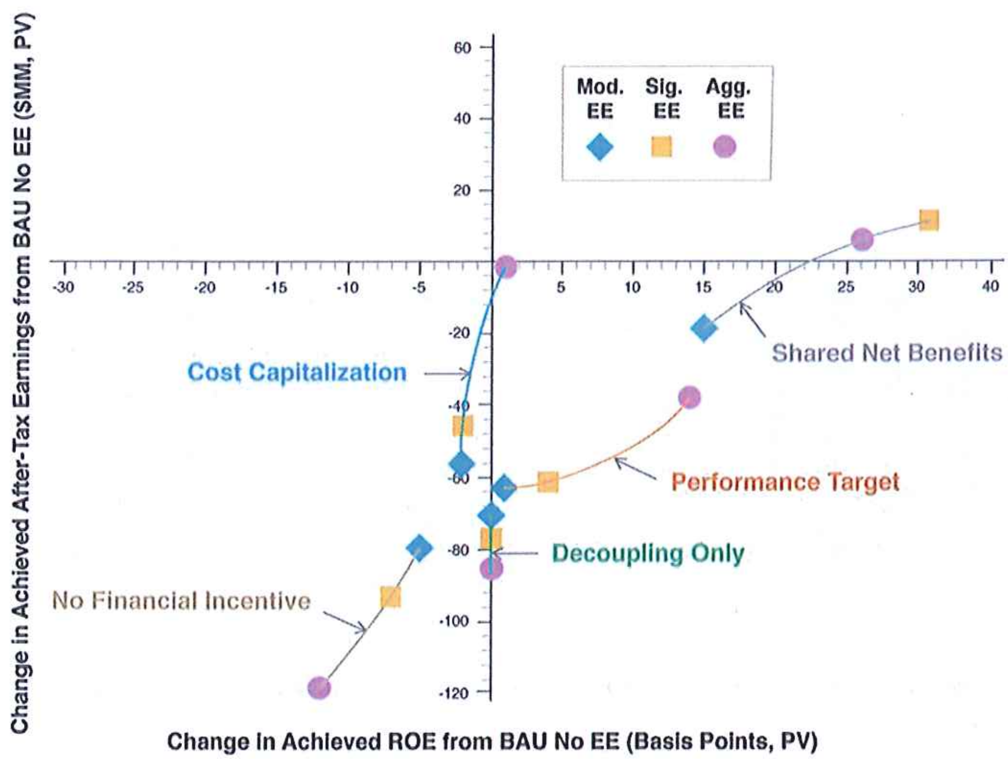

Figure ES- 4. Achieved After-Tax Earnings and Return on Equity (ROE): Impact of energy efficiency portfolios, decoupling and shareholder incentives

3. Average utility bills would decrease by 3-6% if the utility successfully implements the energy efficiency portfolios in conjunction with decoupling or these shareholder incentive mechanisms compared to the "business-as-usual" No EE case.

Customers are interested in the magnitude of bill savings from energy efficiency and potential rate impacts. With an EE portfolio included in the utility's resource mix, ratepayers capture the reduction in fuel and purchased power costs immediately through a fuel adjustment clause. Moreover, due to the higher cost of supply-side resources (see Table ES- 1), the deferral value of energy efficiency increases with larger and deeper savings levels. The frequency of rate cases (i.e., biennial) allows consumers to capture the majority of these non-fuel cost savings (between 76% and 88%). Aggregate bill savings for all customers in the form of a lower revenue requirement range between $1.0B for the Moderate EE portfolio to $2.32B for the Aggressive EE portfolio over the 20-year planning horizon (see Figure ES- 5). On a percentage basis, ratepayer bills as a whole drop by ~3-6%, even with a decoupling or a shareholder incentive applied.

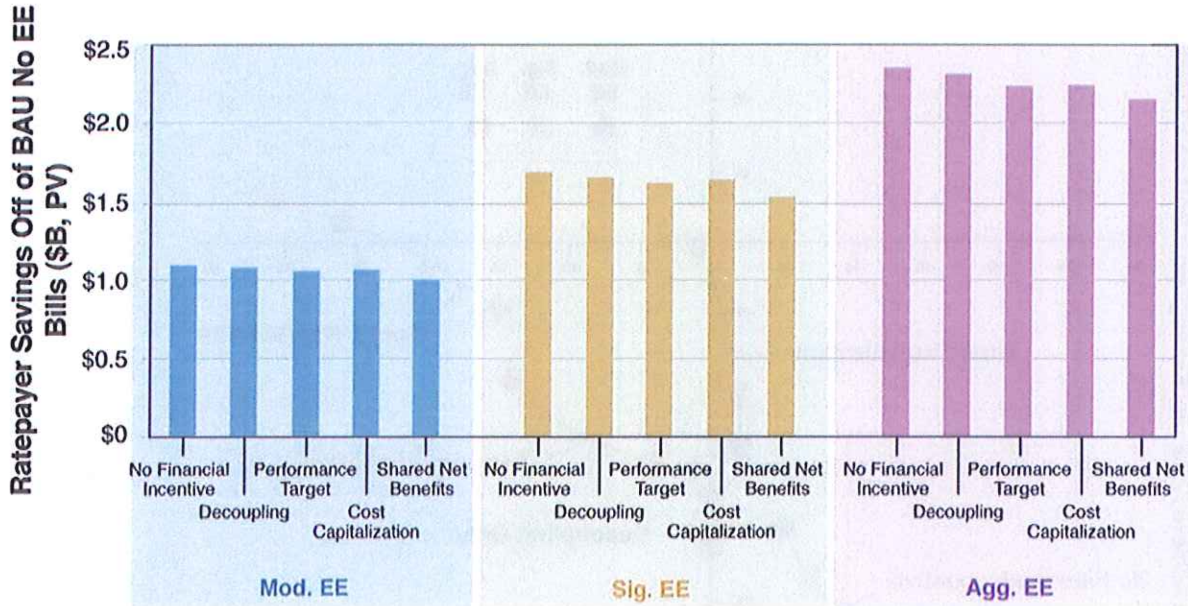

Figure ES- 5. Ratepayer bill savings: Impact of energy efficiency portfolios, decoupling and shareholder incentives

4. The three EE portfolios have a modest effect on average retail rates over the 20-year planning horizon, even with the added cost of a decoupling or shareholder incentive.

Without decoupling or shareholder incentives, retail rates actually drop by 0.1 mills/kWh for the Moderate EE portfolio and increase only minimally by 1.0 to 3.5 mills/kWh under the Significant and Aggressive savings goals (see Figure ES- 6). If the utility implements the Significant EE portfolio and decoupling or incentive mechanisms are adopted, average retail rates increase by 1.0 to 1.4 mills/kWh compared to the Business As Usual No EE case. Average rates increase by 3.6-4.2 mills/kWh if decoupling or incentive mechanisms are available in the Aggressive EE portfolio. On a percentage basis, average retail rates are about 0.07% to 2.2% higher in 2027 (the end of the planning horizon) if the utility implements the Significant or Aggressive EE portfolio with shareholder incentives compared to rates in the Business-As-Usual No EE case.

Why are average retail rates higher if the utility implements the Significant or Aggressive EE portfolio compared to the Business-As-Usual No EE case? To analyze rate impacts, we examined changes in the utility's cost of service among the different scenarios. We found that the bulk of the reduction in the utility's cost of service due to energy efficiency comes from reduced generation-related expenses (i.e., savings of between $1.0B to 2.8B for the Moderate or Aggressive EE scenario). T&D-related cost savings are relatively small (~$250M), in part because of our modeling assumption that energy efficiency programs only have a limited ability to defer T&D investments. Thus, retail rates associated with generation costs decrease, but are offset somewhat by the increase in rates to recover energy efficiency program costs. Rates associated with transmission and distribution-related costs also increase for the three EE portfolios because T&D costs must be recovered over a reduced sales base (and because T&D

cost savings from energy efficiency are less than the reduction in consumption associated with energy efficiency). The net impact of these changes to the various rate components results in a modest increase in the all-in retail rate (from 0.1 to ~4 mills/kWh) if the utility implements various EE portfolios with a shareholder incentive and recovers its revenue requirement.[11]

As a practical matter, participants in the utility's energy efficiency program would have lower utility bills as savings from installed measures would more than offset the small increase in rates. Non-participants would see their utility bills increase by <1 to 2%, but over a 10-year period there would be few non-participants, particularly if the utility implements the Significant or Aggressive EE portfolio. In thinking about the modest rate impact if the utility implements the Significant or Aggressive EE portfolio, it is also important to note that we have assumed that there is no uncertainty in the costs of the supply resources added in the Business-As-Usual (BAU), No EE case. For example, if new supply-side resources cost more than is projected in the utility's BAU resource plan because of cost overruns, this also would put upward pressure on rates in the BAU No Case, which would reduce the likely rate impacts of an EE portfolio.

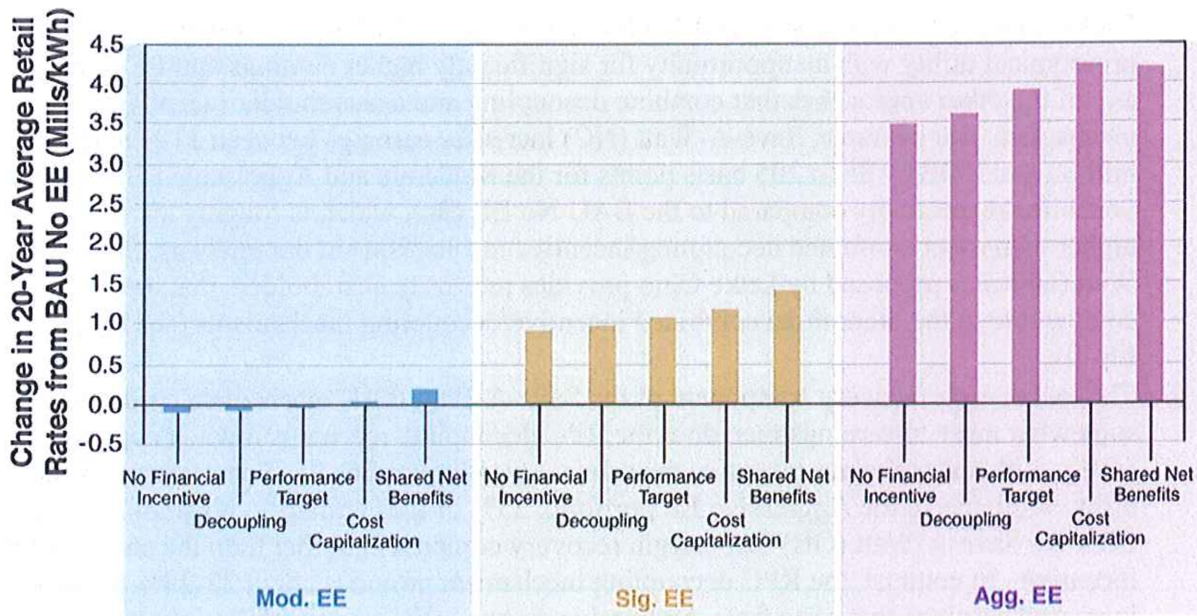

Figure ES- 6. Retail Rates: Impact of energy efficiency portfolios, decoupling and shareholder incentives

5. Combining a decoupling mechanism with a shareholder incentive further improves the business case for energy efficiency for the prototypical utility; alternatively, the proposed Save-A-Watt (NC) mechanism provides the utility with the opportunity for much higher earnings and ROE.

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[11] We portray an all-in retail rate where the entire revenue requirement is collected through volumetric charges. For this reason, the change in retail rates is a function of how the revenue requirement is reduced relative to the reduction in retail sales. If the revenue requirement is falling at a slower rate than sales are dropping, retail rates must increase for the utility to successfully collect its authorized revenue requirement at that level of retail sales.

We also analyzed the impacts on earnings, customer bills and rates, and net resource benefits if a Performance Target, Cost Capitalization or Shared Net Benefits shareholder incentive is implemented in conjunction with an RPC decoupling mechanism or alternatively, if one of the Save-a-Watt approaches proposed by Duke Energy is implemented. The Save-a-Watt mechanisms (as filed separately in North Carolina and Ohio by Duke Energy) provide for some internal recovery of lost revenue (either explicitly in Ohio or implicitly in North Carolina) along with an opportunity for additional earnings. We highlight several key results:

- The utility's ROE improves if it implements any of the EE portfolios and has both a decoupling and shareholder incentive mechanism compared to the BAU No EE case (see Figure ES- 7). For any EE portfolio, the Cost Capitalization mechanism generally provides the utility with the smallest increase in ROE compared to other incentive mechanisms because the utility must issue additional equity to cover the capitalization of program costs. The combination of decoupling and shareholder incentives can create conditions for utility shareholders and managers to pursue energy efficiency as a "profit center" for this prototypical Southwest utility.
- Under all three EE cases, Save-A-Watt (NC) as proposed by Duke Carolina provides the prototypical utility with an opportunity for significantly higher earnings and ROE than any of the other approaches that combine decoupling and a shareholder incentive mechanism. For example, Save-A-Watt (NC) increases earnings between $194 and $538 million and ROE by 86 to 205 basis points for the Moderate and Aggressive EE portfolios respectively compared to the BAU No EE case, which is roughly six times higher than other combined decoupling/incentive mechanisms in our analysis. Save-A-Watt (Ohio) as proposed by Duke Ohio provides returns to shareholders that are comparable to the other three combined incentive/decoupling mechanisms (see Figure ES- 8).
- The lost margin recovery component of the Save-A-Watt (OH) mechanism contributes somewhat more to earnings than does the RPC decoupling mechanism when applied jointly with a shareholder incentive mechanism (see Figure ES- 9). For example, if the utility implements the Aggressive EE portfolio, 35% of the earnings contribution comes from the Save-A-Watt (OH) lost margin recovery component, rather than the shareholder incentive. In contrast, the RPC decoupling mechanism provides about 22-29% of the increased earnings that arise from Aggressive energy efficiency portfolio investments when implemented in conjunction with a Performance Target, Cost Capitalization, and Shared Net Benefits incentive.
- Depending on the EE portfolio, average retail rates are about 1-4 mills/kWh higher over the 20 year period compared to the BAU No EE case for all incentive mechanisms except Save-a-Watt NC, where rates are 9.0 mills/kWh higher in the Aggressive EE portfolio (see Figure ES- 9).

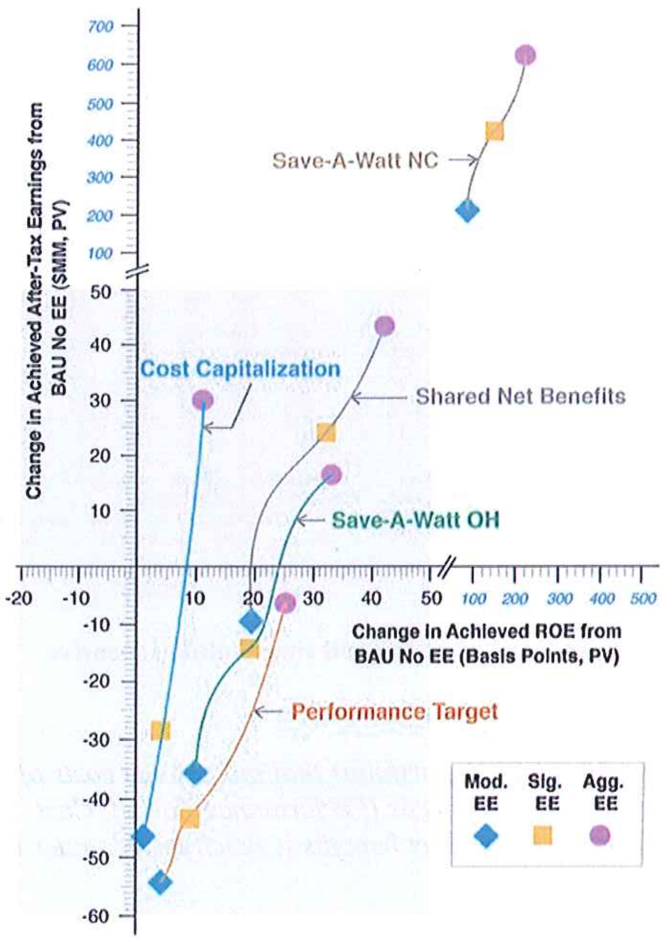

Figure ES- 7. Earnings and return on equity (ROE): Combined effect of fixed cost recovery and shareholder incentive mechanisms

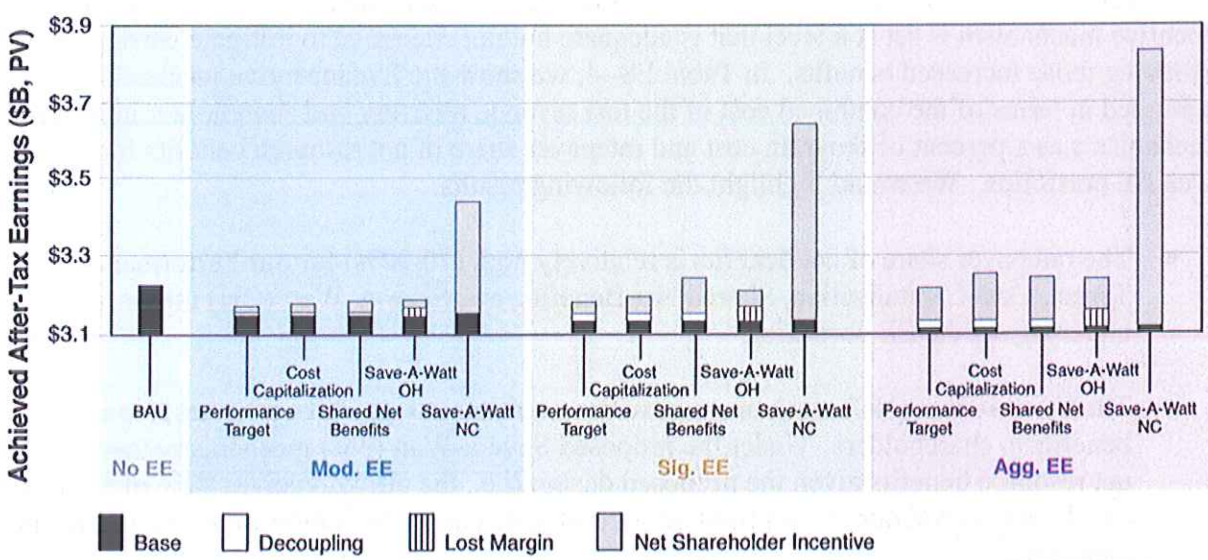

Figure ES- 8. After-tax earnings: Combined effect of fixed cost recovery and shareholder incentive mechanisms

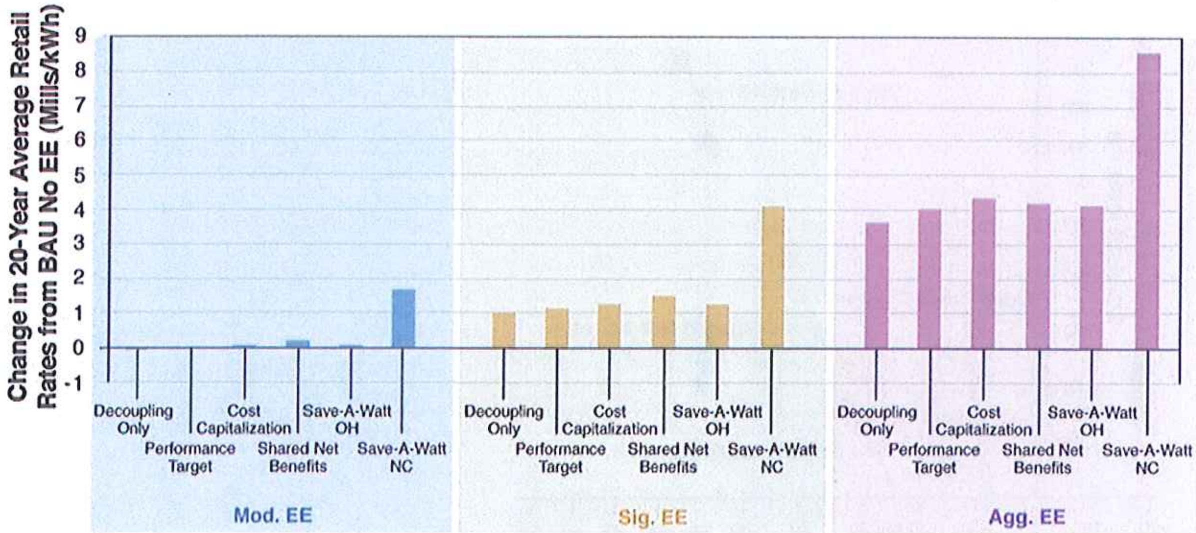

Figure ES- 9. Retail Rates: Combined effect of fixed cost recovery and shareholder incentive mechanisms

6. Ratepayers receive 70-90% of the net benefits from EE portfolios that include the costs of decoupling and one of three shareholder incentive mechanisms (Performance Target, Cost Capitalization, Shared Net Benefits); ratepayer's share of net benefits is much lower under the Save-A-Watt (NC) proposal.

In assessing the relative merits of decoupling and shareholder incentive proposals, state regulators may consider equity and fairness issues such as the share of net resource benefits provided to customers vs. shareholders and the potential impact of an incentive mechanism on the overall level of EE program costs. Fairness may be achieved when the cost of a shareholder incentive mechanism is set at a level that is adequate but not excessive to mitigate barriers to achieving those increased benefits. In Table ES- 4, we show the five incentive mechanisms expressed in terms of the combined cost of the lost revenue recovery and shareholder incentive mechanisms as a percent of program cost and ratepayer share of net resource benefits for the three EE portfolios. We would highlight the following results.

- The ratepayer share of net benefits is relatively high (70-90%) for our Performance Target, Cost Capitalization, Shared Net Benefits, and Save-A-Watt (OH) mechanisms under any of the EE portfolios.
- The Save-a-Watt (NC) mechanism provides a substantial amount of the net resource benefits to shareholders. Under the proposed Save-a-Watt (NC) mechanism, there are no net resource benefits given the proposed design (i.e., the utility receives 90% of avoided cost benefits) and our assumptions about customer cost contribution for energy efficiency measures.[12]

[12] Net total resource benefits are negative for the proposed Save-A-Watt (NC) mechanism because it provides the utility with 90% of the avoided cost benefits in its revenue requirement which when combined with our EE program

- In terms of impact on overall EE program costs, the incentive mechanisms that are tied to underlying program budgets (i.e., Performance Target and Cost Capitalization) represent about 21% to 26% of program costs across the three EE portfolios. Under the Shared Net Benefits mechanism, the larger the net resource benefits, the larger the incentive (in total dollars) given to shareholders, although the incentive is smaller relative to EE program budgets. The utility's share of net benefits represents a significant share of program costs (58-70%) for the Moderate and Significant EE portfolios, and would increase program costs by about 33% for the Aggressive EE portfolio (as the benefit/cost ratio drops due to more expensive measures necessary to achieve deeper savings levels). The Save-A-Watt (NC) mechanism, as designed, would provide an earnings opportunity for the utility that represents a very high share of program costs. For example, earnings exceed program costs by 33% to 171% for our prototypical southwest utility under the Save-A-Watt (NC) proposal.

Table ES- 4. Metrics used to assess the cost and fairness of jointly implementing fixed cost recovery and utility shareholder incentives

	Ratepayer Share of Net Resource Benefits			Fixed Cost Recovery and Pre-Tax Incentive as % of Program Cost		
Incentive Mechanism	**Mod. EE**	**Sig. EE**	**Agg. EE**	**Mod. EE**	**Sig. EE**	**Agg. EE**
Performance Target	90%	88%	79%	26%	25%	23%
Cost Capitalization	90%	89%	80%	24%	23%	21%
Shared Net Benefits	72%	72%	70%	70%	58%	33%
Save-a-Watt OH	81%	79%	72%	49%	43%	30%
Save-a-Watt NC	-8%	-14%	-23%	271%	232%	133%

7. The design of a decoupling and shareholder incentive mechanism (e.g. earnings basis) can significantly influence its value and perceived costs and risks to utility shareholders and ratepayers. In assessing the relative merits of proposed incentive mechanisms, PUCs should consider and analyze quantitative metrics that reflect the interests and concerns of both shareholders and ratepayers (e.g., ratepayer share of net resource benefits, impact on EE program costs, target increase in ROE that rewards superior performance in achieving EE goals). This approach can provide insights on the design of incentive mechanisms that create a sustainable business model for the utility to aggressively pursue energy efficiency while effectively balancing ratepayer interests.

Up to this point, we have defined the earnings basis for each shareholder incentive mechanism at levels that are representative of their application in one or more states (e.g. California, Nevada, Massachusetts, Connecticut) or proposed by a utility (in the case of Duke's Save-A-Watt mechanisms). Our analysis suggests that results for each incentive mechanism are strongly

design assumption that customers pay ~50% of incremental measure costs yield negative net resource benefits from a societal perspective.

influenced by our choices with respect to earnings basis (e.g. the utility's share of net benefits, % of program costs awarded for achieving a performance target, equity kicker for Cost Capitalization).

An alternative approach would be for a regulatory commission to indicate its willingness to consider shareholder incentive mechanism proposals that provide utility shareholders with the opportunity to earn a specified, targeted increase in the utility's after-tax ROE if the utility successfully achieves its energy efficiency savings goals while retaining a minimum specified share of net resource benefits for ratepayers. This approach could lead a regulatory commission to make an implicit determination on the issue of "how much is enough" to motivate utility management to achieve superior performance in administering a portfolio of energy efficiency programs. An important by-product of this approach is that it potentially sets an upper limit on the financial (and rate) impacts of a shareholder incentive mechanism, which may be important to certain stakeholders. For simplicity, we illustrate this approach excluding the potential impacts of a decoupling mechanism on the design (and earnings basis) of a shareholder incentive mechanism.[13]

Assume that the regulatory commission's policy goals are to capture a significant portion of the resource benefits of energy efficiency for ratepayers while developing a sustainable business model for the utility to aggressively pursue energy efficiency. To illustrate this concept, we assume that a PUC decides that an energy efficiency incentive mechanism should provide at least 80% of the net resource benefits to ratepayers while providing the utility with an opportunity to increase its after-tax ROE by a maximum of 20 basis points compared to the BAU No EE case. The tradeoff between ratepayer and shareholder benefits associated with the Performance Target, Shared Net Benefits and Save-a-Watt (NC) mechanisms are shown in Figure ES- 10.[14] We offer the following observations:

- In the Moderate EE portfolio, the utility can not achieve a 20 basis point improvement in its ROE without receiving a larger share of the net resource benefits (i.e., 30% of net resource benefits). This would result in ratepayers receiving less than the 80% target share of net resource benefits set forth by the PUC. If the 80% share of net benefits for ratepayers is considered as a binding constraint to obtain the support of customer groups, then the utility would not be eligible for a shareholder incentive in the Moderate EE case. Alternatively, the utility may propose a lower ROE target to partially address these concerns (e.g. increase ROE by 5 basis points for achieving Moderate savings goals), while still providing an improved business case for EE at this lower level of savings.

[13] A PUC could also decide to institute a decoupling mechanism and also offer the utility an opportunity to increase earnings by a targeted amount (e.g., 10 or 20 basis points); this would change (and reduce) the earnings basis for each shareholder incentive accordingly.

[14] Cost Capitalization requires additional equity to be issued; thus, the utility's achieved return on equity will be diluted for the same contribution to earnings as are provided by other shareholder incentive mechanisms. This aspect of the Cost Capitalization mechanism makes comparisons across different shareholder incentive mechanisms with respect to improvements in ROE more challenging (see Appendix F). We also exclude the Save-a-Watt Ohio mechanism from this aspect of the analysis because the mechanism has several different design features (i.e., share of gross resource benefits, lost fixed cost recovery time period) that make construction of comparable mechanisms to Performance Target, Shared Net Benefits, and Save-a-Watt NC challenging.

- If the utility achieves the savings targets in the Significant and Aggressive EE portfolios, a mechanism can be constructed whereby ratepayers and shareholders both receive their "fair share" of the benefits. If the utility achieves the desired 1% reduction in annual retail sales in the Significant EE portfolio, then a mechanism can be designed such that the utility's ROE increases by 20 basis points while ratepayers retain 80% of the net resource benefits. If the utility achieves the Aggressive EE portfolio savings target, then ratepayers could receive an additional 2% of net resource benefits (i.e. 82%), while still providing the utility with a 20 basis point improvement in its after-tax ROE from a shareholder incentive mechanism.

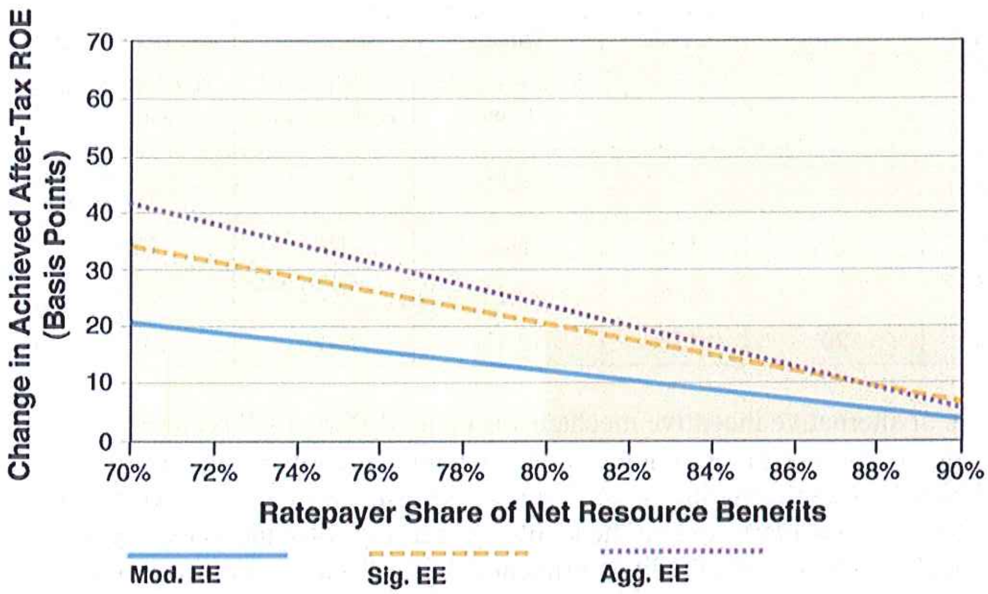

Figure ES- 10. Tradeoff between Ratepayer and Shareholder Benefits for Alternative EE Portfolios with a Performance Target, Shared Net Benefits, and Save-A-Watt (NC) mechanism

- Not surprisingly, the earnings basis for several of the incentive mechanisms that meet our PUC's illustrative policy goals criteria are substantively different than the original designs (see Table ES- 5). For the Shared Net Benefits mechanism, the utility's share of net resource benefits (which is the earnings basis) does not change much between the Significant and Aggressive EE portfolios (11-12%) and turns out to be roughly comparable to the original design of our Shared Net Benefits mechanism (15%).[15] In contrast, the earnings basis for the Performance Target and Save-A-Watt mechanism change significantly if savings targets are increased from 1% to 2% and the utility's target increase in ROE is set at a maximum of 20 basis points.

[15] Because the net resource benefits are effectively monetized and converted into increased earnings for the utility via the shareholder incentive, there are now three parties that must share the net resource benefits: shareholders, ratepayers and the government by way of taxes. This explains why the earnings basis for this mechanism when added to the share of net resource benefits retained by ratepayers is less than 100%.

- These results also suggest that an earnings basis of ~40% of avoided costs for Save-A-Watt (NC) for our prototypical utility would put it on a more comparable basis with the other three incentive mechanisms in terms of a 20 basis point target ROE bonus (and the ratepayer share of net resource benefits), which is substantially lower than Duke Carolina's proposed earnings basis (i.e., 85%-90% of avoided costs).

Table ES- 5. Key Metrics and Design Criteria for Desired Incentive Mechanism

	Ratepayer Share of Net Resource Benefits	Change in After-Tax ROE from BAU No EE (Basis Points)	Incentive as % of Total EE Program Costs	Shareholder Incentive Mechanism Earnings Basis Level		
				Performance Target	Shared Net Benefits	Save-a-Watt NC (Revised)
Earnings Basis				*% of Program Cost*	*Utility % of Net Benefits*	*% of Avoided Costs*
Original Design				*10.0%*	*15.0%*	*90.0%*
Mod. EE	N/A	N/A	N/A	N/A	N/A	N/A
Sig. EE	80%	20	41%	25.3%	12.4%	36.1%
Agg. EE	82%	20	19%	12.1%	11.2%	43.7%

Quantitative analysis of alternative incentive mechanisms under different EE scenarios, including consideration of metrics that provide insights on equity and fairness issues (e.g., contribution to shareholder wealth, sharing of net resource benefits between ratepayers and shareholders and the percentage mark-up that the additional earnings provide in excess of program costs) are useful tools that can facilitate prudent design of shareholder incentive mechanisms and can help align the interests of various parties in promoting energy efficiency.

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Financial Analysis of Incentive Mechanisms to Promote Energy Efficiency: Case Study of a Prototypical Southwest Utility

Technical Appendices

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Environmental Energy Technologies Division

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Appendix E. Sensitivity Analysis

We also conducted sensitivity analysis to explore the impact of key market and regulatory uncertainties and risks on our prototypical utility, shareholder earnings, and customer bills and rates. The base case results identified trends and effects associated with the combination of different shareholder incentives, a decoupling mechanism, and three different EE portfolios. In the sensitivity cases, we vary key financial and physical assumptions from the base case and examine changes to the earnings formula in each shareholder incentive to better understand impacts on shareholders and customers. Specifically, we looked at three different scenarios:

1. **Low Growth Utility**: Utility growth rates in energy and peak demand sales and some utility cost categories are lower than the base case, in order to assess results for utilities with slower rates of load growth (see Table E- 1).
2. **Utility Build Moratorium**: We assume that a state PUC requires its utilities to acquire new generation resources using competitive procurements with private power producers, rather than through building new generation assets that can be put into ratebase. The utility relies solely on purchased power to meet future incremental resource needs. This scenario may be reflective of the situation facing distribution utility (that has divested generation) (see Table E- 1).
3. **Higher Cost Utility**: We assume that the utility's previous supply-side investment decisions and lower operating efficiency have substantially increased the utility's current cost of service, producing higher retail rates (compared to the base case) that are more representative of regions outside the Southwestern U.S. (see Table E- 1).

Table E- 1. Change in utility characteristic over analysis period relative to Base Case

	Low Growth Utility	Utility Build Moratorium	Higher Cost Utility
Retail Electric Sales	↓	⇔	⇔
Peak Electric Demand	↓	⇔	⇔
Customers	↓	⇔	⇔
Fuel Costs	⇔	↑	⇔
O&M Costs	↓	↓	↑
CapEx Costs	↓	↓	↑
Rate Base	⇔	↓	↑

E.1 Low Growth Utility Sensitivity Case

Many jurisdictions across the country are experiencing much lower load and peak demand growth than is currently observed in and forecast for the southwest. The influx of new residents is generally slower in these regions than for our prototypical utility and thus the expansion of local businesses to meet this lower consumer demand is also reduced. Such a slowing of the economy, relative to the fast-paced southwest, would be expected to reduce the rate of growth in O&M budgets, defer the need for constructing new generation facilities, and mitigate some T&D system upgrades and expansion.

If the utility's growth in customers, energy, and demand, as well as its non-fuel budgets, are altered to be slower than the base case, the dominant effect from implementing energy efficiency is to impact the timing of the resource expansion plan.[22] Similarly sized energy efficiency portfolios have a greater impact on mitigating load and peak demand growth for the Low Growth utility compared to the prototypical utility under base case assumptions (Figure E- 1). After five years of energy efficiency programs, the Low Growth utility has offset nearly all growth in electricity sales with the Aggressive EE portfolio and 65% of its peak demand expansion. By 2017, the Low Growth utility has actually bent its sales forecast line down by implementing this EE portfolio, achieving over a 120% reduction in growth, and mitigating nearly 85% of its incremental peak demand. In contrast, the prototypical utility under base case conditions is able to offset about 73% of load growth and 49% of the growth in peak demand.

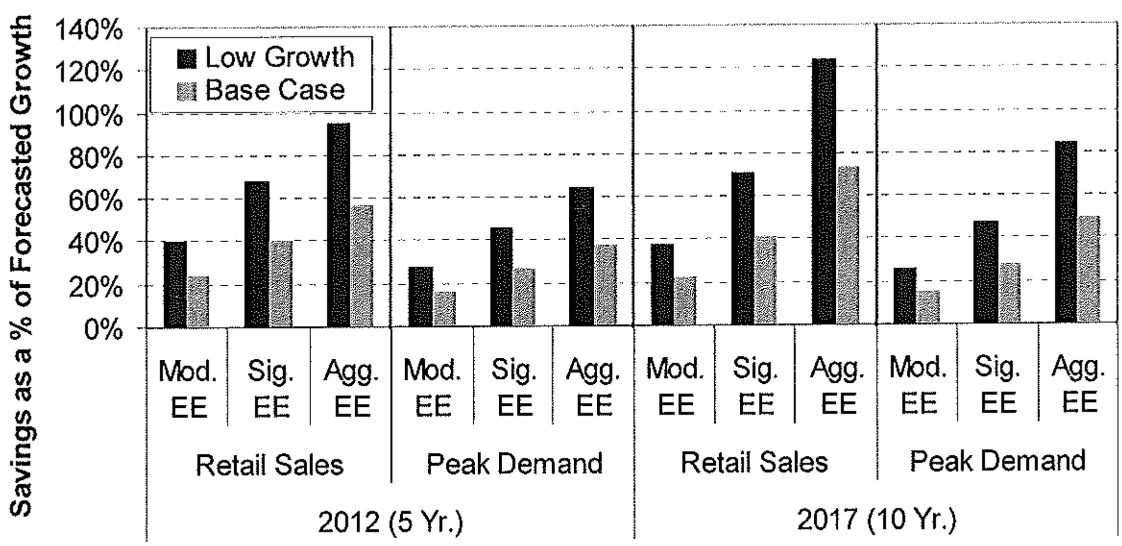

Figure E- 1. Growth in retail sales and peak demand offset by energy efficiency

The significant effect on sales and peak demand growth of the Aggressive EE portfolio at the Low Growth utility defers the need for new power plants and growth-related upgrades to the

[22] In all figures and tables in this appendix, the "Base Case" refers to the results summarized in section **Error! Reference source not found.**.

T&D infrastructure further into the future than is observed in the base case.[23] In the base case, the prototypical utility defers the need for additional generation facilities by one year due to the introduction of any of the three energy efficiency portfolios. However, in the Low Growth sensitivity case, the utility reduces load and peak demand growth so much in response to the Aggressive EE goals that it is able to defer the construction of its supply side assets by two years starting with the 551 MW combined-cycle gas turbine plant, which is originally scheduled to go online in 2015 but now is not needed until 2017 (see Figure E- 2).

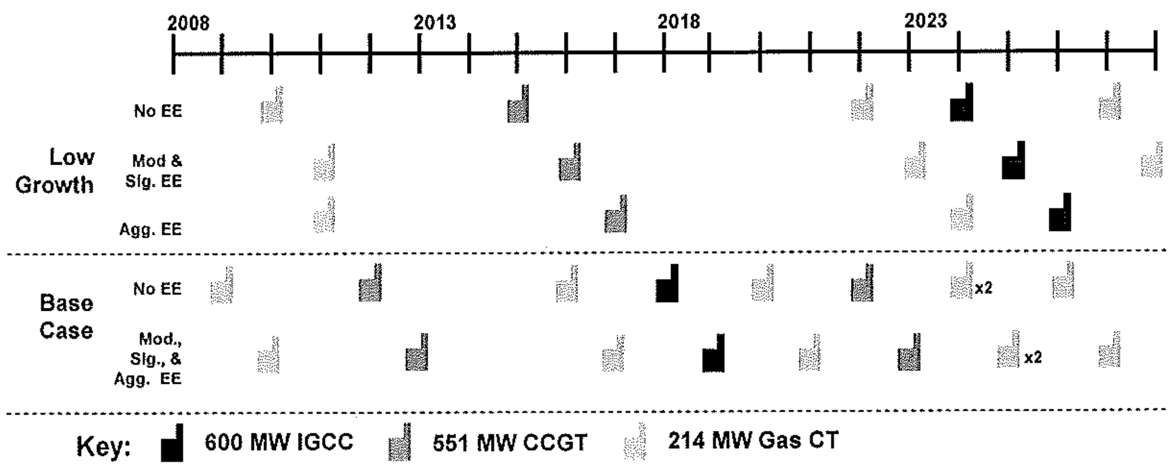

Figure E- 2. Timing of major generation plan additions for Low Growth utility

For example, if the Aggressive EE portfolio is implemented, investment dollars are pushed out further into the future at the Low Growth utility which lowers the annual capital expenditure budgets for new generation facilities and results in a lower basis for calculating utility returns. A substantially smaller rate base produces lower earnings for the utility, especially in relation to one where plants are only deferred one year, as occurs in the base case (Figure E- 3). The $145MM reduction in earnings for the low growth case under an Aggressive EE savings target is caused by the sizable reduction ($270MM) from its generation capital expenditure (CapEx) budget.

[23] Due to the differences in demand and energy growth rates assumed in the Low Growth sensitivity case in relation to the Base Case, there are substantial differences in the size, technology and timing of planned supply-side additions, as indicated above. This has consequences for the size of the utility's generation capital expenditure budget, but not for the timing of any deferral due to the implementation of energy efficiency. The deferral of the plants is strictly driven by an assessment of when the plant is originally needed (i.e., No EE) and when that same level of peak demand is reached once energy efficiency savings are realized. The model assesses this timing decision at an annual level, so deferrals are pushed out further into the future than they might be in reality.

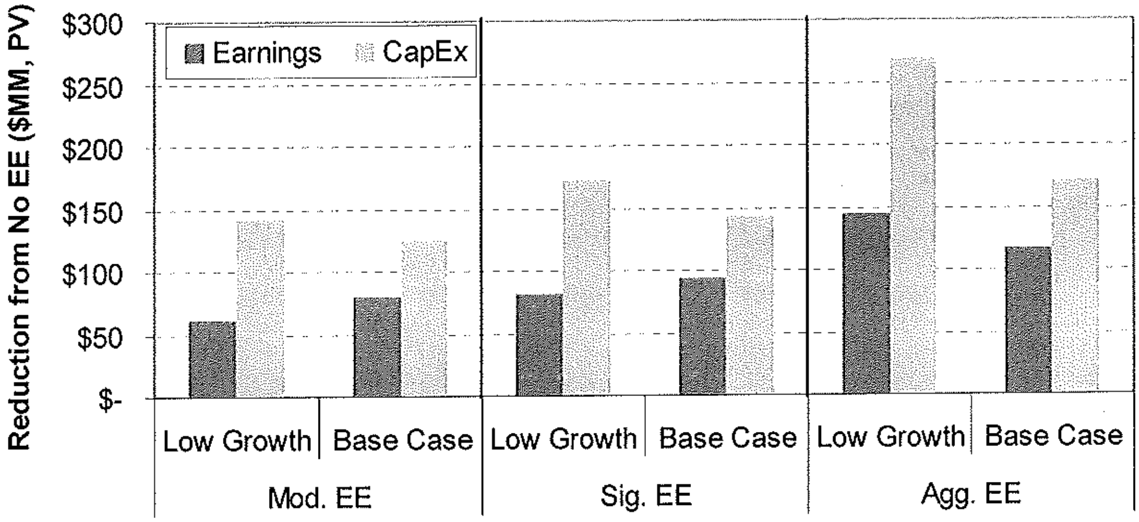

Figure E- 3. Reduction in earnings and CapEx for Low Growth utility

With less capital invested, the utility is able to issue substantially less equity (~$200MM) which, from an ROE perspective, greatly offsets the reduction in earnings. As illustrated in Figure E- 4, ROE is barely affected by the Aggressive EE portfolio in the Low Growth utility, in spite of the sizable drop in earnings – ROE falls by only two basis points relative to the rate of return that is achieved by the prototypical utility under base case assumptions implementing the same EE portfolio. Given the Low Growth utility's reduction of $270MM in earnings and 14 basis points in ROE when implementing the Aggressive EE portfolio, it is unlikely utility managers will focus on pursuing the Aggressive EE portfolio unless they can be financially compensated to either be better off, or at least achieve comparable levels of financial success.

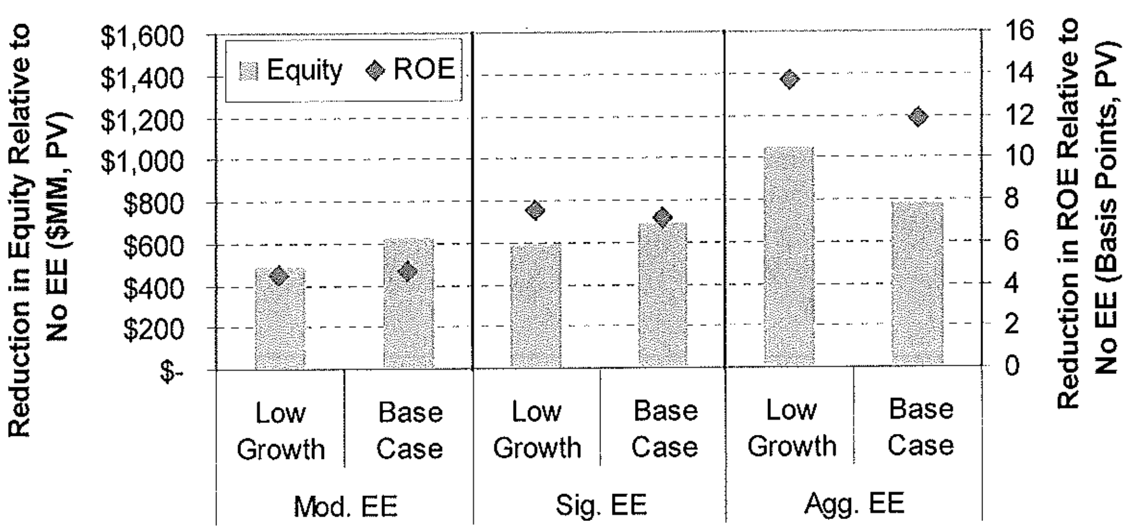

Figure E- 4. Reduction in equity and ROE for Low Growth utility

If the utility implements a decoupling mechanism, the financial benefits that are received by the Low Growth utility are not dramatically different from the base case. The rate of utility growth does not greatly affect achieved ROE once decoupling is applied, leaving the utility 1 basis point or less below what they would have achieved if energy efficiency was eschewed completely (Figure E- 5).

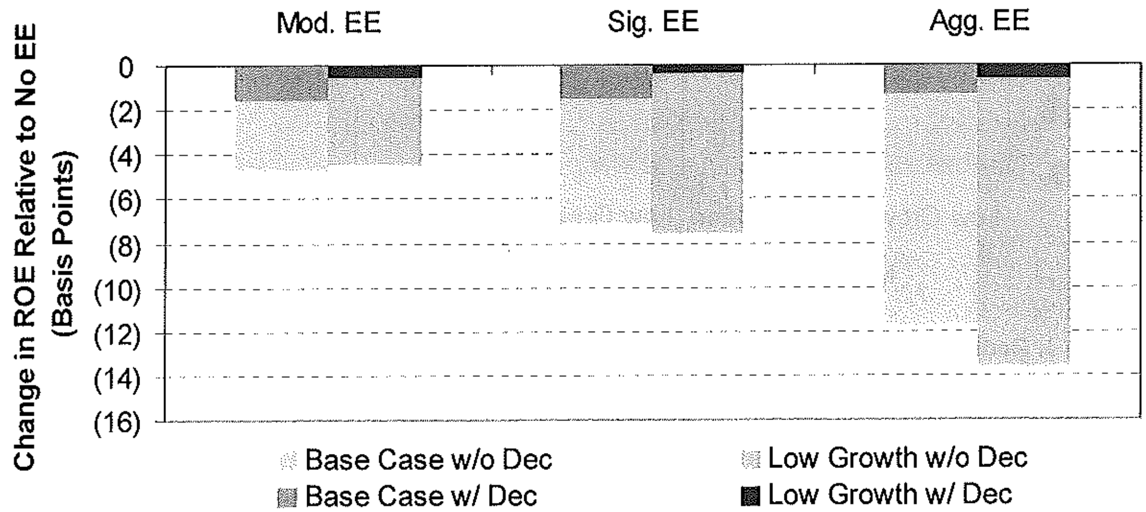

Figure E- 5. Effect of decoupling on change in ROE relative to No EE case

If a utility shareholder incentive mechanism is linked with the implementation of a decoupling mechanism, the Low Growth utility's change in earnings (Figure E- 6) and ROE (Figure E- 7) from EE is very similar to that achieved by the prototypical Southwest utility in the Base Case. As the level of EE savings increases at the Low Growth utility, earnings generally increase across all shareholder incentive mechanisms, except the Shared Net Benefits mechanism. In that case, the reduction in earnings, as observed for the Aggressive EE portfolio in Figure E- 4, is bigger than the contribution to earnings from both the decoupling and Shared Net Benefits shareholder incentive mechanisms. On the other hand, ROE is always improved with the introduction of a decoupling mechanism (see Figure E- 5), so applying a shareholder incentive in addition simply elevates the achieved return even more, but does so comparably across the two utilities.

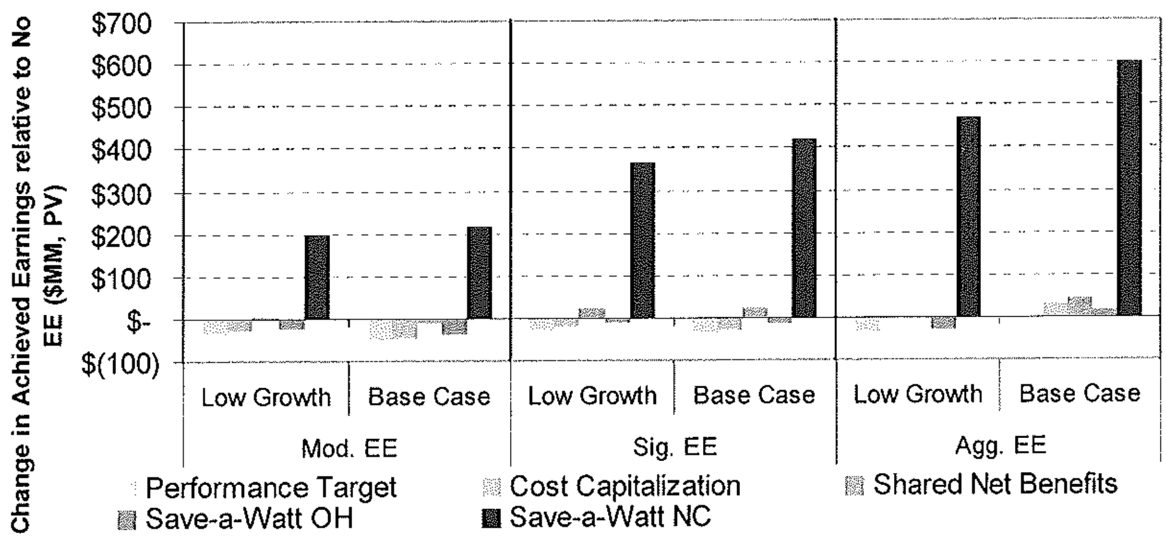

Figure E- 6. Effect of decoupling or shareholder incentives on achieved earnings for Low Growth utility

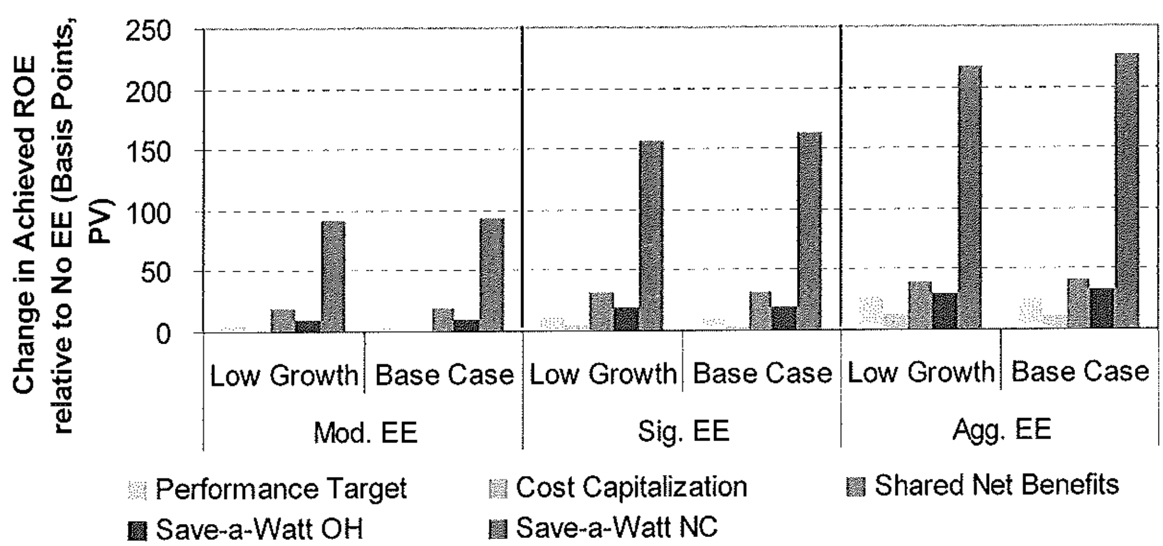

Figure E- 7. Effect of decoupling or shareholder incentives on achieved ROE for Low Growth utility

From the customer perspective, there are also relatively minor differences in bill savings (Figure E- 8) and retail rates (Figure E- 9) between the two cases and across the different shareholder incentive mechanisms. In general, as the level of EE savings increases, the Low Growth utility experiences slightly lower bill savings relative to the base case if the same shareholder incentive is applied. On the other hand, the impact on retail rates are generally higher in the Low Growth utility when either the Moderate or Significant EE portfolios are implemented, but drops below the base case for most shareholder incentive mechanisms when the Aggressive EE savings are achieved.

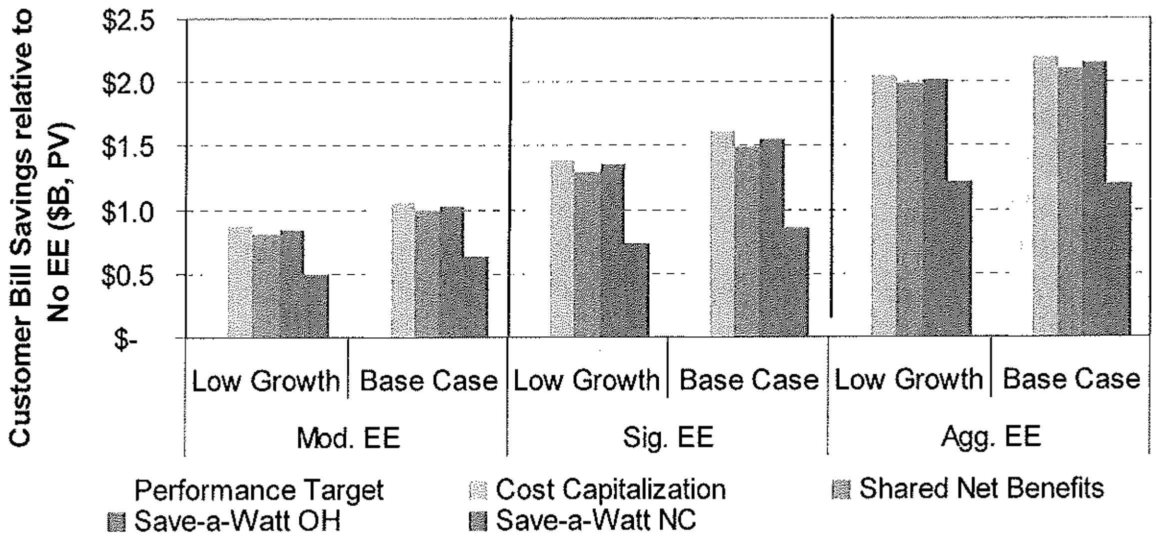

Figure E- 8. Effect of decoupling or shareholder incentives on customer bill savings for Low Growth utility

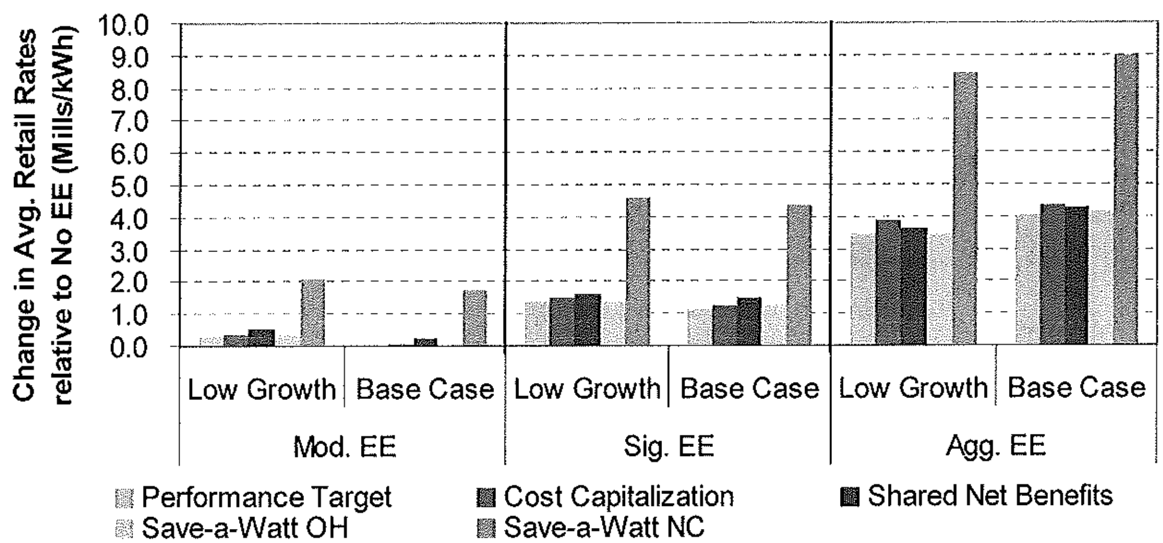

Figure E- 9. Effect of decoupling or shareholder incentives on average retail rates for Low Growth utility

E.2 Utility Build Moratorium Sensitivity Case Results

In some jurisdictions, state PUCs require utilities to meet some or all new generation resource needs through competitive procurements involving contracts with private power producers,

CERTIFICATE OF SERVICE

I hereby certify that on this 11th day of February 2013, I delivered true and correct copies of the foregoing REPLY COMMENTS OF THE IDAHO CONSERVATION LEAGUE to the following persons via the method of service noted:

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