Making the Case for Energy Efficiency Policy Support: Results from the EPA / DOE "Energy Efficiency Benefits Calculator"

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ABSTRACT

This paper presents key findings developed using the publicly available "Energy Efficiency Benefits Calculator" that was developed as part of the National Action Plan for Energy Efficiency (Action Plan).[1] We calculate the financial impacts associated with pursuing aggressive energy efficiency programs, the type of programs that are being pursued in several states to reduce greenhouse gas emissions. The financial impacts include the energy cost savings, expected change in retail electric and gas rates, change in utility earnings and return, and reduction in air emissions including NOx, SOx, PM10, and CO2. The analysis allows variation of key policy drivers such as the financial support of energy efficiency programs and treatment of lost utility revenue through decoupling or revenue adjustment mechanisms.

Results support the Action Plan premise; "Improving energy efficiency in our homes, businesses, schools, governments, and industries is one of the most constructive, cost-effective ways to address the challenges of high energy prices, energy security and independence, air pollution, and global climate change."

Cases for different utility types in different locations are presented to contrast results between US regions with predominantly coal or natural gas fueled generation on the margin, high and low energy costs, and fast and slow growth. In addition to the cases presented, the paper will introduce the analysis tool which is available for free on the Action Plan website.[2] Using the tool, policy-makers, utilities, and other organizations can develop their own cases and evaluate sensitivities to major assumptions.

A National Action Plan for Energy Efficiency

A Leadership Group of more than 50 leading privately, publicly, and cooperatively owned electric and gas utilities, utility regulators, and diverse stakeholders leads the Action Plan. The group is co-chaired by Marsha Smith, Commissioner of the Idaho Public Utilities Commission and 1st Vice President of the National Association of Regulatory Utility Commissioners, and Jim Rogers, President and Chief Executive Officer of Duke Energy. The U.S. Department of Energy and U.S. Environmental Protection Agency facilitate the work of the Leadership Group. In its first year (2006), the Action Plan published a detailed report, including a set of 5 key recommendations to increase investment and attention in cost-effective energy efficiency. As of March 2007, more than 90 organizations have announced public statements in support of the Action Plan and made commitments to advance energy efficiency across 47 states. Now in the second year, the Action Plan is supporting these commitments with analysis tools, information, and regional workshops to support actions that promote energy efficiency. The

[1] Energy and Environmental Economics, Inc. developed the Energy Efficiency Benefits Calculator under contract to the U.S. Environmental Protection Agency and based on guidance from the Action Plan Leadership Group.
[2] See http://www.epa.gov/cleanenergy/actionplan/eeactionplan.htm

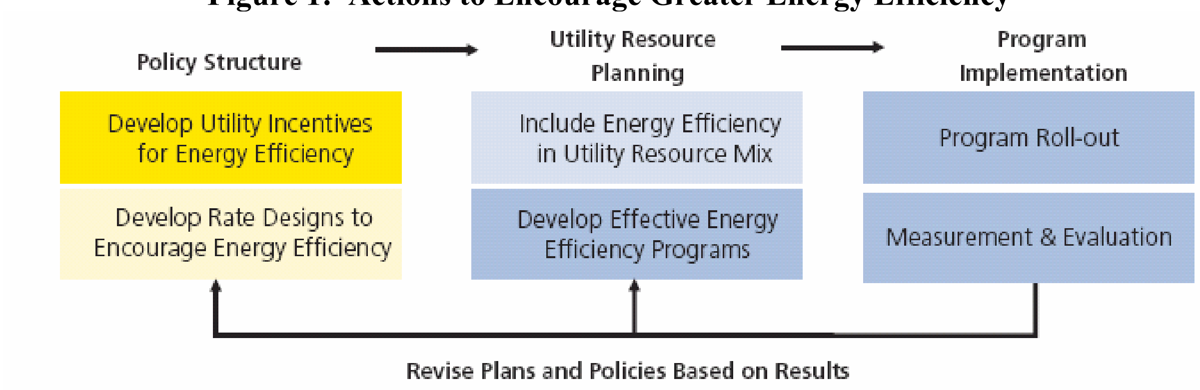
analysis tool used for this paper, the 'Energy Efficiency Benefits Calculator,' was developed as part of the year one Action Plan effort.

The five main recommendations in the Action Plan report are listed below. The Action Plan report discusses a number of options to consider for each recommendation, with discussion on approaches currently used across the country.

1. Recognize energy efficiency as a high priority resource
2. Make a strong, long-term commitment to cost-effective energy efficiency as a resource
3. Broadly communicates the benefits of and opportunities for energy efficiency
4. Provide sufficient, timely and stable program funding to deliver energy efficiency where cost-effective
5. Modify policies to align utility incentives with the delivery of cost-effective energy efficiency and modify ratemaking practices to promote energy efficiency investments.

In the development of the Action Plan, the Leadership Group focused on the barriers and action options to encourage increased levels of energy savings through the (1) policy structure, (2) utility resource planning processes, and (3) energy efficiency program implementation, highlighting alternative approaches from successful examples across the United States. Figure 1 shows the relationship between these areas and key actions within each that can encourage greater energy efficiency. This paper focuses on the business case for an energy efficiency investment under policies to align financial incentives of all parties.

Figure 1: Actions to Encourage Greater Energy Efficiency



Source: National Action Plan for Energy Efficiency, 2006

Energy Efficiency Benefits Calculator and Business Case Assessment

The Action Plan Leadership Group developed the Energy Efficiency Benefits Calculator to evaluate the business case for energy efficiency from the utility, customer and societal perspectives. The analysis tool can be customized for a specific utility, state, or region. The Calculator was developed to aid users in promoting the adoption of energy efficiency programs, and the results are therefore geared to education and outreach purposes. It was not designed for applications requiring detailed data for specific applications such as rate setting, comparing different types of energy efficiency policies, cost effectiveness testing, energy efficiency resource planning, distribution of costs and benefits across customer classes, and consumer behavior analysis.

Stakeholder Perspectives

The approach is to evaluate the 'business case' from each stakeholder that must play an active role in the delivery of energy efficiency. The business case is an assessment of the financial risks and rewards of increased investment or promotion of energy efficiency. In the Action Plan, the analysis focuses on three main stakeholder perspectives; the user of electricity (or 'Participant'), the electric or natural gas utility (or 'Utility'), and the city, utility, state, region, or nation as a whole (or 'Society').[3] The business case is evaluated from each perspective, and then the changes due to policy adjustments can be evaluated.

As part of the regulatory approval process, the cost-effectiveness of energy efficiency programs may be determined by computing a 'Utility Cost Test' (sometimes called the 'Program Administrator Cost Test'). This cost-effectiveness test evaluates the change in utility revenue requirement, and is not an assessment of whether the utility will be able to collect the revenue requirement given the regulatory structure and mechanics in place. In addition, the assessment of utility financial health requires a more detailed annual assessment of utility net revenue, earnings, and returns, and cannot rely on the net present value methodology commonly used in the Standard Practice Manual cost-effectiveness test approaches. The detailed assessment and effect of policy changes is important to account for such elements as rate case timing, regulatory features such as decoupling, lost revenue adjustment, performance-based ratemaking (PBR) mechanisms, growth rates, major capital investments and other factors.

Therefore, to evaluate the business case for energy efficiency, the Calculator applies an annual revenue requirement and utility financial assessment that computes the financial metrics of the utility (return, earnings, and debt coverage ratio) given assumptions about the utility such as the utility type, costs, growth, and others and assumptions about the policy structure (ratemaking approach, decoupling or lost-revenue adjustment, and shareholder incentives). At the same time, the impact on customers (change in customer bills and rates) and impact on society (overall net benefits, air emissions) are computed. Figure 2, below, is a diagram summarizing the categories of model input, and the results of the Energy Efficiency Benefits Calculator.

Market Barriers and Options to Increase Customer Financial Incentives

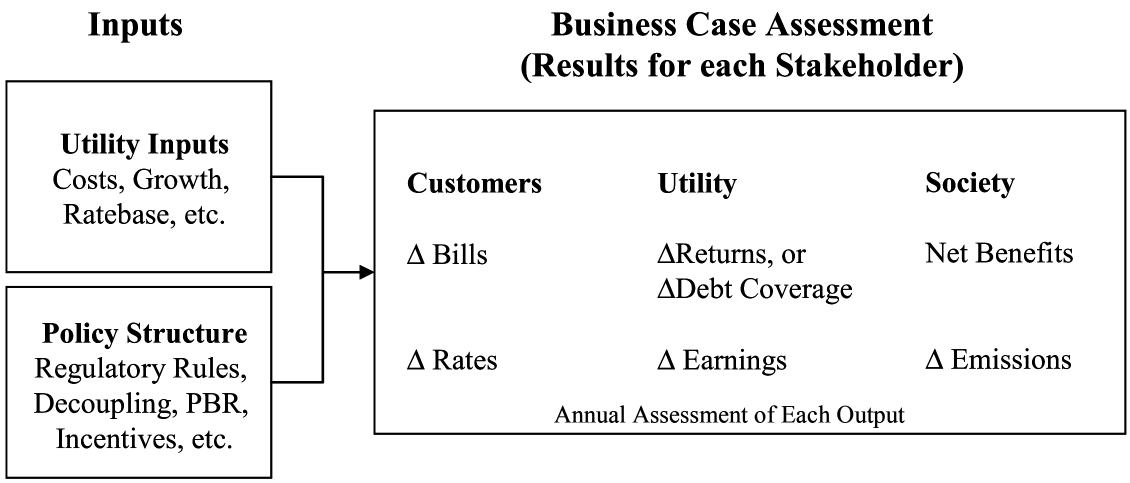
The business case for energy efficiency from the customer perspective is evaluated with the Energy Efficiency Benefits Calculator. However, there are also are well-known market barriers to the adoption of energy efficiency that are not a function of the financial proposition. These include high first costs, high information or search costs, consumer education, performance uncertainties, transaction costs, access to financing, split incentives, product vs. service, unavailability, and externalities such as CO2 emissions (DOE EPAct Section 139 Report, 2007). Some of these barriers can be addressed through retail pricing and other policies, but many need to be addressed through program design. Therefore, an analysis of the business case for the customer with a tool like the Energy Efficiency Benefits Calculator is one element, but there are additional market barriers that should be addressed to create the proper incentives.

In addition to what can be quantified in the Calculator, policies can be aimed at improving the customer financial incentive include changes to retail pricing, as well as financing

[3] For those familiar with the California Standard Practice Manual, these perspectives correspond to several cost tests: Participant Cost Test, Utility Cost Test, Ratepayer Impact Measure and Total Resource Cost Test.

and other options. Pricing options such as increasing tier rates that charge increasingly higher prices for more consumption are broadly deployed mass-market rate designs that can be used and increase the bill savings for customer adoption of energy efficiency. Two-part rates that establish one price for consumption at historical levels and a higher price for changes to the baseline is another example of rate design that can increase the incentive to implement energy efficiency for large customers, Other approaches that directly address market barriers include on-bill financing to mitigate the upfront cost of the energy efficiency investment and bill reduction programs such as California's 20/20 program, which offered residential electric customers a 20% reduction in their bill if they reduced consumption by 20%.

Figure 2: Summary of Energy Efficiency Benefits Calculator Inputs and Outputs



Regulatory Options to Offset Utility Disincentives

There are also well-known incentive problems for utilities in promoting energy efficiency, often referred to as the 'throughput incentive problem.' Simply put, once retail rates for a utility are set through a rate case or other ratemaking process, reducing sales with energy efficiency decreases utility revenues more than it reduces the utility costs. This results in reduced earnings, lower return on the invested capital, and inferior debt coverage ratios. Therefore, for energy efficiency to be attractive to a utility financially, policies must be put in place to remove the disincentive. The impact of the throughput disincentive can be large, results from the Energy Efficiency Benefits Calculator show investor-owned utility return on equity (ROE) impacts differences can be as large as a 1.3% reduction relative to the target rate of return across the cases evaluated.

There are several approaches to address the throughput disincentives. These include frequently resetting rates for changes in sales so that rates can be increased if sales are lower, implementing a decoupling mechanism that resets rates annually (or monthly) to collect a revenue requirement as a function of number of customers or other metric, or revenue adjustment clauses that estimate lost margin from energy efficiency and make a rate adjustment to collect the shortfall. These mechanisms are designed to keep the utility neutral with respect to the energy efficiency. There are also approaches to provide a utility financial motivation to encourage energy efficiency through shareholder incentives based on the results of the energy efficiency program.

Strengths and Limitations of the Analysis Tool

The Energy Efficiency Benefits Calculator is designed to evaluate the impact of these customer and utility policy changes on the financial incentives for energy efficiency. The first version of the tool was released on July 31, 2006. Many of the policy options discussed can be modeled, but not every possible policy option to increase energy efficiency incentives can currently be evaluated by the Calculator.

The strengths of the current version of the analysis tool include the following;

- Evaluates all utility types including;
    - Electric and natural gas utilities,
    - Vertically integrated utilities and distribution only utilities
    - Investor-owned, municipally, and cooperatively owned utilities
- Provides flexibility to model a variety of cost-recovery mechanisms including traditional cost-of-service with rate cases at different intervals, decoupling, and shareholder incentives.
- Allows the analyst to save cases, and includes detailed graphical output of the results.

The limitations of the current version of the analysis tool include the following;

- Not designed for regulatory proceedings, which require utility-specific evaluation tools
- Models average retail rates, and not by class or different retail rate designs.
- Rates and revenue requirements are not allocated by class.
- Uses a simple 2-period allocation of costs;
    - Electric uses annual peak and off-peak, Natural gas uses summer and winter
- Uses a single cost and impact measure for energy efficiency rather than an energy efficiency supply curve approach.

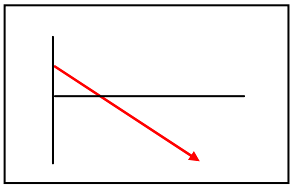
Business Case Analysis Results

To explore the business cases for energy efficiency and the importance of modifying existing policies, 10 'typical' utility case studies have been developed (8 electric utility and 2 natural gas utility cases). In addition, a 'national' case was evaluated to look at the general impacts of a nationwide increase in energy efficiency of both electricity and natural gas efficiency. These business cases were developed to show the impact on policy changes for different types of utilities in different situations. They show the impact of energy efficiency investments on the utility's financial health and earnings, customer energy bills and rates, and social resources such as overall net savings in energy costs and reduction in pollutant emissions. Each case was evaluated with and without a decoupling mechanism to highlight the impact on utility financial health of these options.

Many results were the same across the utility cases and are summarized for each stakeholder. Specific results for each case study are provided in a full-page Table 1 at the end this paper.

Customer perspective. As energy efficiency lowers energy consumption, the decreased energy use *decreases bills* overall despite *slightly higher rates*. In the 11 cases examined, average customer bills were reduced by 2% to 9% over a ten year period, compared to the no-efficiency scenario.

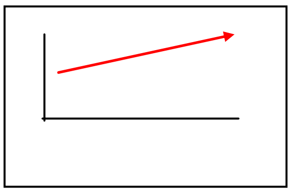
Customer Bills



Customer Bills – Decrease

Total customer bills decline over time as a result of investment in cost-effective energy efficiency programs as customers save due to lower energy consumption. This decline follows an initial rise in customer bills as the energy efficiency programs deliver energy savings measures that will then reduce costs over many years.

Customer Rates

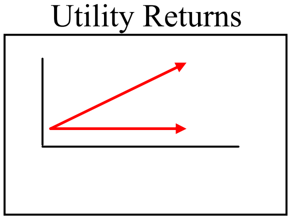


Customer Rates – Mild Increase

All other things equal, rates will increase slightly as the revenue requirement is allocated to lower sales through either a rate case or through decoupling. With a decoupling mechanism in place, or frequent resetting of rates, customers experience smaller, more frequent adjustments to retail rates. A larger rate increase occurs when new infrastructure is brought into the rate base – investments that can possibly be deferred by investing in energy efficiency.

Utility perspective. For both electric and gas utilities, energy efficiency investments consistently lower costs over time. When enhanced by rate-making policies to address utility financial barriers to energy efficiency, such as decoupling the utility's revenues from sales volumes, utility financial health can be maintained while comprehensive, cost-effective energy efficiency programs are implemented.

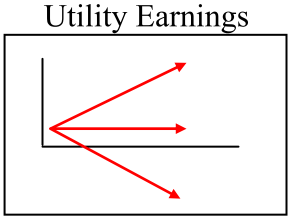
Utility Returns



Utility Returns - No Change or Increase with Decoupling

Utility returns (E.g. return on equity) remain stable or increase if decoupling or sufficient use of shareholder incentives accompanies an energy efficiency program. Without incentives or decoupling, returns may be lower in-between rate cases because effective energy efficiency will reduce the utility's revenue without a corresponding decrease in fixed costs.

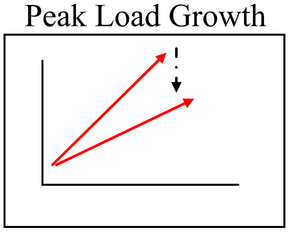
Utility Earnings



Change in Utility Earnings – Results Vary

Utility earnings vary depending on the extent of energy efficiency, and the inclusion of decoupling and/or shareholder incentives. Earnings may be lower due to reduced utility investment through investments avoided with energy efficiency that result in a smaller utility rate base over time.

Peak Load Growth

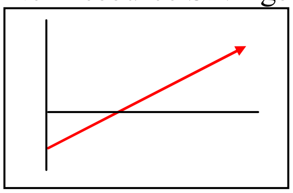


Peak Load Growth and Capital Investment – Decreases

Peak load and capital investments in new resources and energy delivery infrastructure are reduced because peak capacity savings are captured due to energy efficiency measures

Community or society perspective. From a broad community/society perspective, energy efficiency produces real savings over time. While initially energy efficiency can raise energy costs slightly to finance the new energy efficiency investment, the reduced bills (as well as price moderation effects) provide a rapid payback on these investments compared to the on-going costs to cover the investments in new energy production and delivery infrastructure costs. The calculator evaluates the net societal savings, utility savings, emissions reductions, and the avoided growth in energy demand associated with energy efficiency.

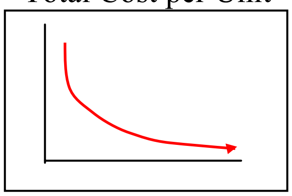
Net Resource Savings



Net Resources Savings – Increases

Over time, as energy efficiency programs ramp up, cumulative energy efficiency savings lead to cost savings that exceed the energy efficiency program cost.

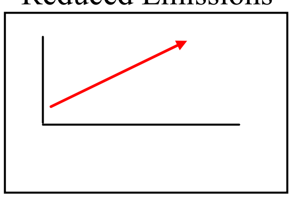
Total Cost per Unit



Total Resource Cost per Unit - Declines

Total cost of providing each unit of energy (MWh, therms) declines over time because of the impacts of energy savings, decreased peak load requirements, and decreased costs during peak periods. Well-designed energy efficiency programs can deliver energy at an average cost less than that of new power sources.[4]

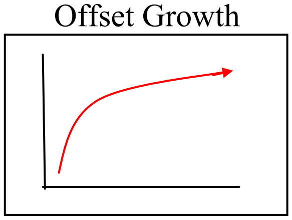
Reduced Emissions



Emissions Savings – Increases

Efficiency prevents or avoids producing many annual tons of emissions and emissions cost (relative to control costs for active energy production).

Offset Growth



Growth Offset by Energy Efficiency– Increases

As energy efficiency programs ramp up, the percent growth offset climbs and then levels as cumulative savings as a percent of demand growth stabilizes.

Summary of Specific Findings for Scenarios

In addition to the general results, the case studies developed provide an analysis of differences between different utility types and situations. In particular, we focused on differences between utilities with high and low load growth, vertically integrated and distribution utilities, and investor-owned and public utilities.

For high growth utilities, the financial impact of energy efficiency was relatively less than low growth utilities. Depending on the situation, high growth utilities, even with aggressive energy efficiency programs that reduced growth by approximately 50% could still exceed their target rate of return assuming costs were contained. Therefore, these utilities have less incentive to promote a policy change for towards revenue decoupling which can decrease rates. For low growth utilities, there is a stronger disincentive to promote energy efficiency; revenue

[4] Energy efficiency costs were assumed to be \$0.035/kWh total (\$0.02/kWh utility and \$0.015/kWh customer) compared to average wholesale energy costs of \$0.067 based on forward market prices. Natural gas energy efficiency costs of \$3/MMBtu for gas (\$1.50/MMBtu utility and \$1.50/MMBtu customer) for natural gas.

decoupling consistently improved the financial outcome for low growth utilities with aggressive energy efficiency programs.

For vertically-integrated utilities, the impact of energy efficiency and reduced throughput was relatively less than for a distribution utility, whose earnings and returns are more sensitive to throughput. Therefore, a decoupling or revenue adjustment mechanism is relatively more important in restructured markets in which a distribution utility is the energy efficiency program administrator. The results for natural gas utilities were similar to electric distribution utilities. The reason distribution utilities are more sensitive is that their rate base is smaller for a given size service territory, level of sales, and size of energy efficiency program. Therefore, fluctuations in returns are relatively larger.

Typically, decoupling mechanisms are discussed in the context of investor-owned utilities, however, public power and cooperative utilities will experience similar financial health problems as investor-owned utilities if they do not adjust rates for energy efficiency. The problem of allocating utility fixed costs across fewer sales is the same, and rates must be reset to account for energy efficiency.

Summary of Findings on Revenue Decoupling

In addition, there are some general results on the financial impact of decoupling mechanisms that were found across the case studies. The decoupling mechanism modeled in the Energy Efficiency Benefits Calculator is a "generic" mechanism with a balancing account that adjusts rates annually to account for reduced sales volumes, thereby maintaining revenue at target projections. Therefore, differences in specific decoupling mechanisms are not evaluated.

From a utility perspective, policies that remove the throughput incentive can provide utilities with financial protection from changes in throughput due to energy efficiency, by smoothing the utility's financial performance while lowering customer bills. Generally, the business case results show that a decoupling mechanism benefits utilities more if the energy savings from efficiency are a greater percent of load growth. Also, because small reductions in throughput have a greater effect on the financial condition of distribution utilities, decoupling generally benefits distribution utilities more than vertically integrated utilities. A utility's actual results will depend on the structure of its efficiency program, as well as the specific decoupling and attrition mechanisms.

From a customer perspective, decoupling generates more frequent, but smaller, rate adjustments over time since variations in throughput require periodic rate "true-ups." Decoupling leads to modestly higher rates earlier for customers, when efficiency gains account for a high percent of load growth. In all cases, energy efficiency reduces average customer bills over time with and without decoupling.

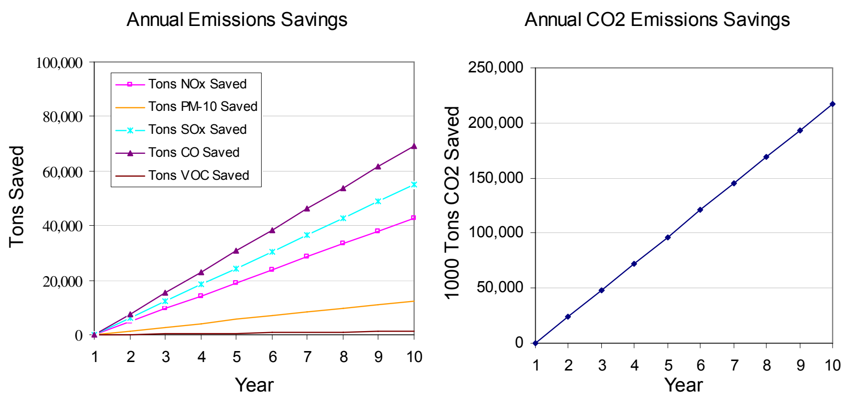
From a society perspective, the benefits of energy efficiency are tied to the amount of energy efficiency implemented. Therefore, to the extent that decoupling encourages investment in energy efficiency, it is a positive from a societal perspective. Decoupling itself does not change the societal benefits of energy efficiency.

Summary of Results on Air Emissions Benefits

In addition to the impact of policy changes on the business case for each stakeholder, the Energy Efficiency Benefits Calculator estimates the change in air emissions attributable to the energy efficiency program. Figure 3, below, shows the national impact on air emissions given an aggressive commitment to energy efficiency and an expenditure on the order of 2% of utility revenues on energy efficiency.

From a national perspective, the CO2 reduction within 10 years can exceed 200 million tons of CO2 per year. In addition, significant reductions in powerplant emissions in particulates, SOx, NOx, and other pollutants will be achieved[5].

Figure 3: Air Emissions Savings in National Case of Aggressive Energy Efficiency



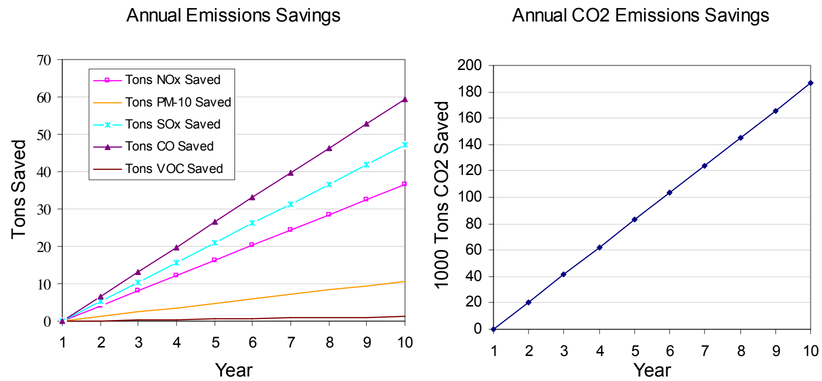
Reductions in air emissions will differ by region because of the fuel used to produce electricity in different parts of the US. In general, CO2 emissions are approximately twice as high per MWh generated with coal as with natural gas. In addition, generation with natural gas nearly eliminates SOx emissions. Figure 4 shows the difference in air emissions savings for the case study based on a 600MW utility that incrementally saves approximately 36GWH each year in a region with coal as the marginal resource in the off-peak and natural gas in the on-peak, as compared to a region with only natural gas on the margin.

Additional Case Studies and Sensitivities

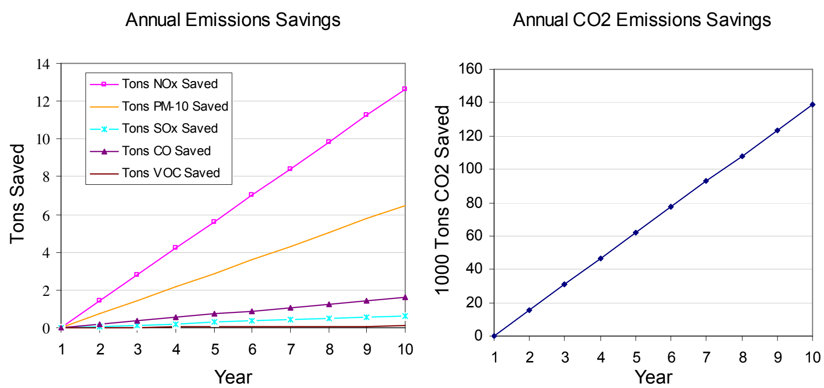
While these cases are a good starting point, every utility will have some unique characteristics, such as differences in fuel and other costs, growth rates, regulatory structure, and required capital expenditures. These and other inputs can be customized in the Energy Efficiency Benefits Calculator so users can consider the possible impacts of energy efficiency on their unique situation The Calculator was developed to aid users in promoting the adoption of energy efficiency programs, and the results are therefore geared to education and outreach purposes.

[5] Note that the rights to emit SOx, and NOx may be traded under the cap and trade emissions policy, and therefore may not lead to reductions overall.

Figure 4: Comparison of Air Emissions between Natural Gas and Coal Regions
Air Emissions Savings of 600MW Utility; Off-Peak Coal, Peak Natural Gas on the Margin



Air Emissions Savings of 600MW Utility; Natural Gas on the Margin



Conclusions

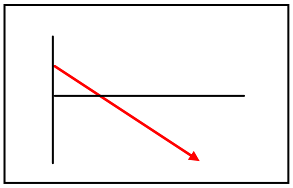
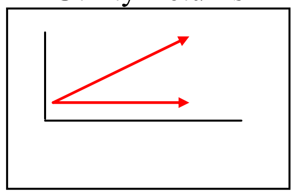
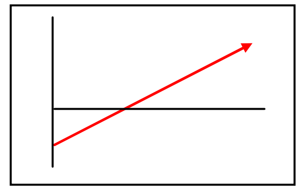
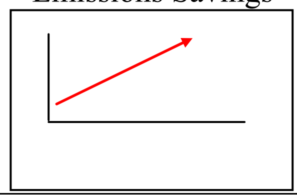
Policy Structure Can Improve Financial Incentives for Energy Efficiency

A well-designed policy approach to energy efficiency can eliminate both customer and utility incentive problems with energy efficiency. Retail rate designs that encourage conservation can improve the value proposition to customers to adopt energy efficiency. In addition, there are numerous approaches to eliminate the utility throughput disincentive problem.

To help quantify the effect of increased investments in energy efficiency, the Energy Efficiency Benefits Calculator calculates the business case for energy efficiency from each stakeholder perspective. Policy changes can then be modeled and the resulting change in business case evaluated. With appropriate changes, it is possible to get a clear win for all stakeholders across utility types and situations by (a) fostering financially healthy utilities as measured by return on equity (ROE), earnings per share, or debt coverage ratios depending on utility type, (b) reducing customer's bills over time, and (c) reducing energy costs for the city, utility, state or nation overall and decreasing air emissions from the electricity sector.

The financial impact of energy efficiency is not always clear to all stakeholders. Therefore, it is important to develop a communication strategy for the overall benefits of energy efficiency. Figure 5, below, summarizes the benefits this study identified. Specific results for a utility, state, or region can be created with the Energy Efficiency Benefits Calculator.

Figure 5: Summarizing the Benefits of Well Designed Energy Efficiency Policy

Customer Bills Decrease	Utility Returns Increase or Stay the Same	Societal Net Benefits and Reduction in Air Emissions
Customer Bills 	Utility Returns 	Net Benefits  Emissions Savings 

Energy Efficiency Is a Significant GHG Reduction Strategy

An aggressive commitment to energy efficiency can reduce national air emissions of CO2 by approximately 200 million tons of CO_2 per year within 10 years. In addition, this savings provides positive net benefits for the US in terms of reduced costs. There are few policies that address green house gas emissions that can also reduce costs overall.

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Table 1: Summary Results for the 10 Utility Case Studies

	Case 1: Low-Growth Electric and Gas Utility	Case 2: High-Growth Electric and Gas Utility	Case 3: Low Growth with 2009 Powerplant	Case 4: High Growth with 2009 Powerplant	Case 5: Vertically Integrated Utility	Case 6: Distribution Utility	Case 7: Electric Public/Coop - Debt Coverage Ratio	Case 8: Electric Public/Coop - No Debt	Case 1: Low-Growth Electric and Gas Utility	Case 2: High Growth Electric and Gas Utility
Utility Size										
Annual Revenue ($mil) - Year 0	$ 284	$ 284	$ 284	$ 284	$ 284	$ 284	$ 284	$ 284	$ 344	$ 344
Peak Load (MW) or Sales (BCF) - Year 0	600 MW	600 MW	600 MW	600 MW	600 MW	600 MW	600 MW	600 MW	33 BCF	33 BCF
Parameter Tested	Load Growth	Load Growth	Load Growth	Load Growth	Vertical Utility	Delivery Utility	Debt Coverage Ratio	Cash Position	Load Growth	Load Growth
Assumptions that Differ Between Cases										
Load Growth Assumption	1%	5%	1%	5%	2%	2%	2%	2%	0%	2%
Average Rate - Year 1	$0.16/kWh	$0.15/kWh	$0.16/kWh	$0.15/kWh	$0.16/kWh	$0.16/kWh	$0.12/kWh	$0.10/kWh	$0.91/Therm	$0.90/Therm
EE Program	EE Program results do not change when decoupling is activated.									
Cumulative Savings (EE vs No EE case)	8,105 GWh	8,105 GWh	8,105 GWh	8,105 GWh	8,105 GWh	8,105 GWh	8,105 GWh	8,105 GWh	31 BCF	31 BCF
Utility Spending as Percent of Revenue (%)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	0.5%	0.5%
Utility Spending (NPV in $mil)	$70	$70	$70	$70	$70	$70	$70	$70	$21	$21
EE Project Life Term (years)	15	15	15	15	15	15	15	15	15	15
Percent of Growth Saved	142%	21%	142%	21%	66%	66%	66%	66%	#NA	18%
Total Cost of EE in Year 0 ($/MWh or $/MMBtu)	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$3.00	$3.00
Utility Cost in Year 0 ($/MWh or $/MMBtu)	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$1.50	$1.50
Customer Cost in Year 0 ($/MWh or $/MMBtu)	$15.00	$15.00	$15.00	$15.00	$15.00	$15.00	$15.00	$15.00	$1.50	$1.50
Business Case Results (NPV in $mil)	Revenue Requirement and Net Societal Savings do not change with decoupling. Business Case Results are the difference between the No EE and EE cases.									
Reduction in Revenue Requirement ($mil)	$396	$318	$476	$338	$359	$348	$347	$323	$139	$142
% of Total Revenue Requirement	*5.5%*	*3.0%*	*6.0%*	*3.0%*	*4.9%*	*4.4%*	*4.8%*	*5.1%*	*2.5%*	*2.2%*
Net Customer Savings - no decoupling ($mil)	$407	$342	$503	$364	$373	$363	$292	$280	$123	$129
% of Total Customer Bills	*7.1%*	*5.8%*	*8.7%*	*6.2%*	*6.4%*	*6.3%*	*6.6%*	*7.3%*	*2.6%*	*2.7%*
Net Customer Savings - decoupling ($mil)	$247	$236	$319	$275	$307	$222	$98	$240	$19	$64
% of Total Customer Bills	*4.3%*	*4.0%*	*5.5%*	*4.7%*	*5.3%*	*3.8%*	*2.2%*	*6.2%*	*0.4%*	*1.3%*
Net Societal Savings ($mil)	$289	$258	$332	$269	$263	$271	$271	$271	$118	$119
% of Total Societal Cost	*8.2%*	*4.5%*	*8.4%*	*4.4%*	*9.2%*	*7.0%*	*7.0%*	*7.0%*	*4.7%*	*3.7%*
Average ROE with Decoupling	11.000%	11.000%	11.000%	11.000%	11.000%	11.000%	N/A	N/A	11.000%	11.000%
Average ROE without Decoupling	10.159%	11.066%	9.735%	10.771%	10.777%	10.337%	N/A	N/A	10.385%	10.853%
Air Emission Savings	Air Emission Savings are the difference between No EE and EE cases and do not change when decoupling is activated.									
1000 Tons CO2	311	311	311	311	311	311	311	311	128	128
Tons NOx	61	61	61	61	61	61	61	61	107	107

Source: National Action Plan for Energy Efficiency, 2006

Notes: Air emission reductions are for Year 15. Cumulative and net present value business case results are calculated using a 5% discount rate over 30 years to include the project life term for energy efficiency investments of 15 years. All values are in nominal dollars with net present value reported in 2007 dollars. Reductions in utility revenue requirement do not change with decoupling in the model, but might in practice if decoupling motivates the utility to deliver additional energy efficiency. In these cases, societal benefits conservatively equal only the savings from reduced wholesale electricity purchases and capital expenditures minus utility and participant costs of energy efficiency.