

# COMMENTS ON AUSTIN ENERGY'S RATE REVIEW

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Austin Energy (AE) is undergoing a rate review with the goal of better aligning the cost of generating and distributing electricity with the revenues it receives by each of its customer classes: residential, commercial, industrial, as well as schools and places of worship. The review is motivated by a shortfall of revenue: based on 2009 figures, it costs AE \$1.136 billion to generate and distribute electricity, but it only has revenues of \$1.004 billion. The purpose of the rate review is to determine how to apportion the deficit to the various customer classes. Having done academic research in the energy, and in particular the electricity, markets I was intrigued by the opportunity to take a close look at the way a regulated utility operates when it comes to determining the rates to charge its customers. Together with a postdoctoral fellow, we followed the various meetings organized by AE over the spring and summer of 2011, and the presentation to the Energy Utility Commission of the City of Austin during the fall of 2011. During this process I found out a lot of information about how AE operates, and how it tries to match its costs with its revenues. The process itself is confusing, in large part because AE needs to optimize multiple objectives which often conflict with each other. I came to the conclusion that the rules AE operates under are forcing it to operate inefficiently. I also concluded that to operate efficiently AE would need to operate under a different regulatory environment — it would need to compete in a deregulated retail electricity market, similar to what exists in most of the State of Texas. This short note lays out what I learned and why I came to support deregulating the retail electricity market in Austin.

## Rate Review Primer

There are two sides to a rate review: determining the cost to generate and distribute electricity, and determining the way to apportion the cost to each customer class. The cost of generating and distributing electricity has several components: a) the production cost, which includes the cost of running the existing electricity generators,<sup>1</sup> and the cost of servicing the debt on these generators at a city-prescribed debt-coverage ratio but excluding the fuel cost;<sup>2</sup> b) the fuel cost for generating electricity;<sup>3</sup> c) the cost of transmitting the electricity, which includes maintenance cost and losses of energy in the transmission lines through heating;<sup>4</sup> d) the cost of metering and customer service.<sup>5</sup> Each of these costs includes a contribution to the City of Austin general fund, at approximately 9% of gross utility revenue, averaged over 3 years.

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<sup>1</sup>AE owns coal, natural gas, nuclear, and renewable generators.

<sup>2</sup>For AE this cost is approximately \$515 million.

<sup>3</sup>For AE this cost is approximately \$433 million.

<sup>4</sup>For AE this cost is approximately \$66 million.

<sup>5</sup>This cost includes the cost of customers that do not pay their electricity bills and is approximately \$113 million.

Class	Usage	Rev - 09	Rev - 12	Prod.	Trans.	Distr.	Fuel	Cust. Serv.
Residential	33.4%	37%	42%	41.0%	37.8%	42.5%	33.0%	83.9%
Commercial	47.7%	48%	43%	45.1%	48.8%	48.4%	46.8%	15.1%
Industrial	18.5%	15%	14%	13.2%	13.4%	8.3%	19.7%	0.9%

The total comes to \$1.136 billion, based on the year the review focused on, 2009. Since AE's revenues for 2009 were \$1.004 billion, the clear suggestion is that electric rates should increase to cover the shortfall. According to AE's proposal, most of the deficit is due to the residential class being charged much below the cost to serve it — the new rates mostly seek to significantly increase revenue from the residential class.

During 2009, electricity usage was split among the various customer classes in the following way: residential customers used approximately 33% of all the energy; commercial customers used approximately 48%; industrial customers used approximately 19%.<sup>6</sup> The revenue collected from each customer class was 37% from residential; 48% from commercial; 15% from industrial. There are several reasons for the larger revenue share paid by the residential class, and the smaller share paid by the industrial class: a) it is relatively more expensive to serve the residential class; b) the usage of the residential class is relatively higher during peak electricity demand hours, when energy production costs are higher due to the use of less efficient generators; c) the residential class is charged a higher percentage of the cost of maintaining the generators and servicing their debt based on the rationale that due to the usage pattern of residential customers, AE has to acquire generation assets that are only used infrequently to serve the peak residential demand. In the proposed rates, the revenue increase will apply disproportionately on the residential class. Under AE's proposal, the revenue collected from the residential class will rise from 37% to 42%, while the revenue collected from the commercial class will drop from 48% to 43%, and the revenue collected from the industrial class from 15% to 14%. Keeping in mind that the overall increase in revenue is approximately \$130 million, or 13%, the amount paid by the commercial and industrial classes will stay approximately the same, leaving the residential class to cover most of the deficit.

The table lists the percentage of the Usage by customer class, the 2009 Revenue collected from each class, the proposed 2012 Revenue distribution, and how the various types of costs (Production, Transmission, Distribution, Fuel, and Customer Service) are allocated among the three customer classes.

A few observations:

- Close to 85% of the metering/customer service costs is charged to the residential customers. This is not surprising given that there are close to 365,000 residential customers but only 45,500 commercial, and 119 industrial customers. The actual cost of metering and billing each residential customer is \$18 per month. For comparison, in parts of Texas with a competitive retail market, customers are charged \$10-\$12 per month if their consumption is below 500 KWhs per month, while for higher consumption the charge is dropped.

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<sup>6</sup>Totals do not equal 100% due to the omission of small classes, such as lighting.

- The fuel cost is in line with the usage of each class.
- The difference in transmission cost reflects the relatively higher losses in transmission lines that serve residential customers.
- The differences in generation costs reflect the way that residential customers are penalized for their uneven load profile and their propensity to demand more electricity during peak hours.

## Potential Problems with the Rate Review

I have several concerns regarding the rate review. I separate them in concerns that relate to determining the total cost and concerns that relate to the apportionment of the revenue required to cover the total cost to each customer class.

### Determination of Cost

To determine cost, AE has made several adjustments to the actual revenue received in 2009.

- AE reduced the actual 2009 revenue because of a warmer than average month of June, assuming that warmer than usual weather, and corresponding higher sales, cannot be relied upon in the future.
- AE reduced the actual 2009 revenue by \$35 million that it received by selling electricity in the Texas market, assuming that such sales cannot be relied upon in the future.
- AE assumed a debt-coverage ratio of 2.24 times interest, higher than the 2 times required by the City of Austin.
- AE adjusted the total cost by close to \$10 million, due to a "decreased amount of interest and dividend income expected to be available as a funding source within the margin calculation." This reduction is due to lower interest rates in 2011 vs. 2009, and the corresponding decrease on the interest AE receives on its cash reserves.

All the adjustments above reflect standard practice for regulated utilities. Yet I came away thinking that it is impossible to know the alternative possible cost-savings. It strikes me that AE has a clear incentive to overestimate its overall cost but only limited incentive to cut its costs — as a city-owned, regulated, utility it can only increase its revenue by increasing its costs.<sup>7</sup>

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<sup>7</sup>Since AE is owned by the City of Austin, the city council is able to exercise some control over increasing costs at AE. In the short run though, an increase in the costs and revenues of AE would result in increased revenue to the city. In the medium to the long run, excesses can be corrected through elections.

## Revenue Requirement from each Customer Class

I am also concerned with the choices made on the revenue requirement side.

- The methodology used to determine the revenue requirement for the residential class vs. the commercial and industrial classes penalizes the residential class for concentrating its usage during peak hours. Beyond the higher cost of producing energy during these hours because less efficient generators are deployed, the methodology assigns a higher share of the costs associated with owning and operating generators to the residential class, arguing that it is residential demand fluctuations that make AE own and use inefficient generators. While this argument has merit, it does not account for business-cycle fluctuations that influence commercial and industrial usage. Following the same argument used to penalize the residential class, it follows that, since commercial and industrial demand fluctuate from year to year, rather than from hour to hour, with overall economic conditions, AE is forced to procure generation assets in anticipation of long term commercial and industrial fluctuations in demand. The balance needs to be struck based on data: rather than simply using 2009 as a single test year and assuming that annual demand fluctuations are small, AE would need to look at data from several years to determine the annual fluctuation of commercial and industrial demand.<sup>8</sup>
- While AE proposes a straightforward rate schedule for the commercial and industrial classes based on the power they require and their overall electricity usage, the rates for the residential class are rather complicated. First, a fixed monthly fee is proposed to account for metering, billing, and customer service costs and transmission losses.<sup>9</sup> Usage is charged on an inclining 5-tier rate structure designed to incentivize conservation. The fixed fee is difficult to justify: its size reflects the unreasonably high, in my view, metering, billing, and customer service costs. I also do not understand why transmission losses are included in the fixed fee, effectively allocating them equally among all residential customers.<sup>10</sup>
- While the inclining rate structure does provide an incentive to conserve, conservation is not done in an efficient way. Rather than reducing total monthly electricity usage, it would be more efficient to reduce peak-hour usage, between 4 and 7 pm during the summer months. As an example of a potential consequence, using an inclining rate structure creates a disincentive for acquiring an electric car, although an electric car is most likely to be charged overnight. The solution would be to use a rate that varies with the time of day, which AE is introducing in an experimental basis. It should instead be broadly implemented.

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<sup>8</sup>Using a single test year is a practice accepted by the Public Utilities Commission of Texas. Yet, it does not account for longer term fluctuations in commercial and industrial demand.

<sup>9</sup>The proposals by AE increase this fixed fee from the current \$6 per customer per month up to somewhere between \$16-\$30 per customer per month. The latest proposal places the monthly fee at \$22 per customer per month.

<sup>10</sup>Beyond the fact that a loft downtown has a very different transmission loss profile compared to a single-family suburban home, the proportional nature of transmission losses suggests that they should be allocated based on usage. Perhaps an argument can be made that due to distributed solar generation, the cost of transmission has to be allocated equally among all customers.

- An item that has captured the public interest is the large increase in the monthly electric bill that will be faced by customers that currently use small amounts of electricity. The implicit, and sometimes explicit, assumption made by the public is that these are the customers that are the most limited economically, and who can hardly afford to pay for electricity. This turns out to be false: according to AE, poor households consume more electricity than average, because they may stay at home longer; may have more people living in a smaller space; and may live in spaces with large thermal losses due to poor insulation. Customers with the lowest demand tend to be single, living in small spaces that are efficiently insulated. This discussion is but a small example that shows how setting priorities for a city-owned utility is politically charged, and also how inefficient social policy can be when applied through the lens of electricity consumption.

### **Is a Rate Increase a Tax Increase?**

Beyond the revenue requirements for the different customer classes, increasing the cost requirement for AE by \$130 million results in approximately an additional \$12 million that will go to the general fund of the City of Austin every year. This additional \$12 million will be largely paid by the residential customers of AE, an average of \$30 per household. This increase is similar to an increase in property taxes — larger homes with higher electric bills will pay more.

### **What would the Consequences be if Retail Competition were Allowed?**

One thing that became clear to me over time, and also when I worked my way through the report on the rate review by AE, is the conflicting incentives inherent in running a city-owned, regulated, utility. Both the city and AE have an incentive to inflate costs, and little to no incentive to become more efficient. An alternative model is being tried in most of Texas, where electricity is sold in an open retail market from privately owned utilities. To understand what such a transition would mean for Austin, I need to explain the differences between a regulated and a deregulated retail market.

### **Differences between a Regulated and a Deregulated Retail Market**

The differences between a regulated and a deregulated retail market revolve around how market participants make money and the incentives and goals that arise. While in the case of a city-owned utility that operates in a regulated environment the utility balances many goals that are often conflicting, a privately-owned utility in a deregulated market tries to maximize shareholder value, which translates to maximizing profit.<sup>11</sup>

An example of the differences is the constraints AE's owner, the City of Austin, imposes on AE. The City Council has decided that a certain balance of generation assets has to be based

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<sup>11</sup>There are other, not inconsequential, differences. For example, a city-owned utility has a tax advantage over a private utility — among other benefits, it can finance investment with tax-exempt bonds.

on renewable energy.<sup>12</sup> To achieve this goal AE has procured solar, wind-based, and biomass based energy at a generation cost that is high compared to the cost of non-renewable energy generators. In addition, AE is subsidizing the installation of solar panels on rooftops, both by providing rebates, and by buying back the energy generated at a set price. It is unclear whether this policy will result in an increase in cost in the long run. Due to the rebates, it does result in a cost in the short run. Yet this cost is not internalized by AE: since rates are set to match costs, a green-energy subsidy results in higher revenue for both AE and the City of Austin. In a regulated retail market the utility's revenue is based on its average cost and the utility does not have an incentive to become more efficient.

In contrast, a privately owned utility in a deregulated market has little control over its revenues. For the deregulated utility, its revenues are determined by the system marginal cost.<sup>13</sup> The system marginal cost fluctuates: it is low at off-peak hours — overnight and weekends, when only highly efficient generators such as nuclear plants and coal plants operate — and it is high during on-peak hours — during weekdays, and especially during 4-7 pm, when relatively inefficient generators are deployed. The incentive is to become more efficient than your competitors.

From the customer's point of view, whether the price is lower under a regulated market or under a deregulated market depends on whether the average cost is higher or lower than the average system-wide marginal cost. In an environment with a lot of excess generation capacity, a situation Texas has been in for the last few years, price will be lower in a deregulated retail market; when excess capacity is low, or when there is a shortage of capacity, a situation Texas is projected to be in in a few years, the average marginal cost is likely to be higher than the average cost.

Rates in a deregulated retail market are likely to be cyclical: excess capacity and low prices discourages investment in generation, leading to capacity shortages and high prices, which encourages investment in generation, leading to excess capacity. Yet the cycle is virtuous. Capacity is added when there is a shortage,<sup>14</sup> and the incentive is to be better than one's competitors. In contrast, in a regulated environment prices fluctuate much less, but there is little incentive to improve.

## **What would Rates Look Like in a Deregulated Retail Market?**

A rough comparison is possible now that much of the state is operating under a deregulated retail market. The Public Utilities Commission of Texas operates a website, [www.powertochoose.org](http://www.powertochoose.org), where one can find and compare electricity rates for residential customers. Using the ZIP code 78727, which includes areas north of Parmer Lane, results in many different plans. To compare with Austin Energy's proposed rates, I considered only annual rates for 3 different households: one that consumes 500 kWhs per month during the low season (October to May), one that

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<sup>12</sup>35% of generation capacity by the year 2020.

<sup>13</sup>The cost of the most expensive generator that is deployed at any moment.

<sup>14</sup>Because of the delay in building new capacity, in a deregulated market that experiences capacity shortage prices are likely to be high for a number of years, followed by low prices for a number of years.

Low/high season	Deregulated	AE — COS	AE — Proposed	91% COS	91% Proposed
500/750 KWhs	\$723.99	\$798.48	\$753.24	\$726.62	\$685.45
1000/1500 KWhs	\$1135.38	\$1332.96	\$1471.64	\$1212.99	\$1339.19
2000/3000 KWhs	\$2196.96	\$2401.92	\$3162.48	\$2185.75	\$2877.86

consumes 1000 KWhs per month, and one that consumes 2000 KWhs. Each household is assumed to consume 50% more during the high season summer months, 750 KWhs, 1500 KWhs, and 3000 KWhs respectively.<sup>15</sup> The annual costs for each case are given in the table.<sup>16,17</sup>

The Deregulated column in the table corresponds to the annual cost if one were allowed to sign up for the plan in the competitive retail market, while the next four columns list the costs under each of the four possible rate structures listed in AE’s proposal. The ”AE — COS” column corresponds to AE’s calculation of the cost of serving a customer, while the ”AE — Proposed” column to the rates proposed by AE. The last two columns provides the comparison without the 9% cost in AE’s rates that is directed to the general fund of the City of Austin.<sup>18</sup> The cross-subsidies across different classes of residential customers are obvious.

In this comparison I do not consider the revenue the City receives from the commercial and industrial customers. Whether this revenue to the city should be included or not depends on whether the commercial and industrial rates have been adjusted below their average cost or not by the amount of the contribution to the general fund of the city. Unfortunately, the commercial and industrial rates are not available to me for the deregulated parts of the state, making the comparison infeasible.<sup>19</sup> An additional factor would be to consider the benefit to the city of divesting its existing generating facilities and amortizing the proceeds.<sup>20</sup>

In conclusion, a transition to a deregulated retail market would provide an incentive for the utility to generate electricity cheaply and would remove the inefficiencies associated with the City of Austin trying to make policy through electric consumption.<sup>21</sup> Instead, the city would need to balance the cost of providing incentives for green energy and conservation against its other spending directly in a transparent manner.

<sup>15</sup>From data provided by AE for the purpose of the rate review, roughly 28% of residential customers are in the first category, roughly 38% are in the second category, and roughly 30% are in the third category.

<sup>16</sup>The deregulated prices I list are based on the ”12 Month Mega eBill Plus Plan” by Energy Mega. Other providers had similar prices.

<sup>17</sup>The table was updated on February 16th, 2012, to reflect the latest AE rate proposal.

<sup>18</sup>Given that the AE rates incorporate a 9% cost that is directed to the general fund of the City of Austin, to maintain its current level of operations the City of Austin would need to raise this amount if it were not able to receive it through AE. Without this 9% cost, the cost of service estimate from AE is remarkably close to what a residential customer would pay in a deregulated retail market.

<sup>19</sup>One calculation is possible though: given the proposed rates, 9% of the revenue from the residential class is approximately \$60 million. Since the total amount that the City of Austin receives is 9% of the entire revenue, the commercial and industrial customers contribute approximately \$40 million to the city.

<sup>20</sup>Allowing deregulation would very likely result in the City of Austin divesting AE.

<sup>21</sup>By imposing any costly policy on AE, the City Council increases AE’s costs, and subsequently AE’s revenue, and the revenue that flows into the general fund of the city.