STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC UTILITY CONTROL

DOCKET NO. 07-07-01

APPLICATION OF
THE CONNECTICUT LIGHT AND POWER COMPANY
TO AMEND ITS RATE SCHEDULES

TESTIMONY OF

DANIEL G. HANSEN

ON BEHALF OF

ENVIRONMENT NORTHEAST

SEPTEMBER 21, 2007

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Q. Please state your name, occupation and business address.

A. My name is Daniel G. Hansen. I am a Vice President at Laurits R. Christensen Associates, Inc. My business address is Suite 700, 4610 University Avenue, Madison, Wisconsin, 53705.

Q. Please review your professional background and experience.

A. I received a Ph.D. in Economics from Michigan State University in 1997, at which time I joined Laurits R. Christensen Associates, Inc. I have worked primarily with the energy industry during my ten years of consulting. The issues that I have worked on include the evaluation of decoupling mechanisms, product portfolio development, assessment of product risks, the development of methods to price new products, evaluation of existing pricing programs, forecasting energy usage using econometric models, simulating customer response to new pricing products, and conducting cost of service studies. In 2005, I conducted an independent evaluation of Northwest Natural Gas's decoupling mechanism in Oregon. In 2007, I provided testimony on behalf of the Utah Division of Public Utilities regarding Questar Gas Company's decoupling mechanism, which included the preparation of a report titled "A Review of Natural Gas Decoupling Mechanisms and Alternative Methods for Addressing Utility Disincentives to Promote Conservation." My resume is attached as ENE Exhibit DGH-1.

Q. What is the purpose of your testimony?

A. Environment Northeast (ENE) has retained Christensen Associates Energy Consulting, LLC, a subsidiary of Laurits R. Christensen Associates, Inc. to provide testimony regarding the decoupling mechanism proposed in Mr. Goodwin's July 30, 2007 testimony for Connecticut Light and Power Company ("CL&P" or "the Company"). The aspects of the decoupling proposal that this testimony will address are:

- the importance of decoupling in addressing utility incentive issues with respect to conservation, energy efficiency, and load growth;
- the effect of increases in customer charges on customer-level incentives to conserve;
- CL&P's proposal to weather normalize decoupling deferrals;
- the use of revenue per customer decoupling in an environment in which the change in the number of customers may not serve as a good proxy for the change in distribution costs; and
- how the issue of the effect of decoupling on CL&P's allowed rate of return should be approached.

Q. How would you define a "decoupling mechanism"?

A. Section 108 of Public Act 07-242 ("PA 07-242") defines decoupling in three ways:

(1) A mechanism that adjusts actual distribution revenues to allowed distribution revenues,

(2) rate design changes that increase the amount of revenue recovered through fixed distribution charges, or

(3) a sales adjustment clause, rate design changes that increase the amount of revenue recovered through fixed distribution charges, or both.

The first definition most closely corresponds to how I would define a decoupling mechanism. The second definition, in which fixed costs are entirely recovered through fixed charges, is commonly referred to as "Straight Fixed Variable" (or "SFV") Pricing in the natural gas industry. In order to more clearly differentiate between the two methods, I will refer to the first definition in PA 07-242 as "decoupling" and the second definition as "SFV Pricing" in my testimony.

Q. What is the intended purpose of a decoupling mechanism?

A. Decoupling mechanisms are primarily intended to solve incentive issues with respect to conservation and energy efficiency. Under traditional rates, in which a significant portion of fixed costs are recovered through volumetric rates, the utility has an incentive to encourage sales and a disincentive to encourage conservation and energy efficiency on the part of its customers, as declining usage levels would lead to a reduction in the utility's realized rate of return (all else equal).

By removing the link between sales and revenues, a decoupling mechanism makes the utility indifferent to the level of sales of its customers, thus removing the utility's disincentive to promote demand side activities that reduce consumption.

Note that, under a revenue per customer decoupling ("RPCD") mechanism such as the one proposed by CL&P, the utility is not indifferent to the *number* of customers or the level of sales for *new* customers. This is discussed in greater depth below.

Q. Does decoupling provide the utility with an incentive to promote conservation and other demand-side activities that reduce consumption?

A. No, by itself decoupling removes the utility's *disincentive* to promote these activities, but does not provide it with an *incentive* to do so. Therefore, it is appropriate to combine the introduction of a decoupling mechanism with mechanisms that provide the utility with appropriate incentives to promote activities that reduce consumption.

Q. How does decoupling affect the customer-level incentive to conserve energy?

A. Decoupling preserves essentially the entire customer-level incentive to conserve. For example, consider a typical residential customer who consumes 750 kWh per month from Mr. Goodwin's decoupling example on page 8 of his testimony. If this customer were to reduce usage by 20 percent, to 600 kWh per month, the distribution portion of its bill (and CL&P's distribution revenues) would be reduced by $36 per year (12 months x $0.02 per kWh x 150 kWh/month). Under decoupling, this reduction in CL&P's distribution revenues relative to its allowed levels is recovered in the following year through a deferral mechanism.

Assuming that there are 1,000,000 customers in the rate class (per Mr. Goodwin's example), the increase that this deferral produces in the distribution rate in the following year will be approximately $0.000000004 per kWh (which equals $36 / (1,000,000 customers x 750 kWh/month x 12 months)). This example shows that any one customer's decision to conserve is essentially unaffected by the presence of decoupling.

Q. How does SFV Pricing affect the customer-level incentive to conserve energy?

A. Relative to traditional rates, SFV Pricing increases fixed charges (i.e., customer and demand charges) and reduces energy prices. If SFV Pricing is fully implemented for a distribution utility, the energy price for distribution services will approach zero. Under SFV Pricing, the customer in the example above would therefore not have received *any* reduction in the distribution portion of its bill following the 20 percent reduction in usage (though it would experience a reduction in its *overall* bill). By reducing the savings that ratepayers receive from reducing usage, SFV Pricing reduces the customer-level incentive to conserve.

This difference in customer-level incentives is the key distinction between decoupling and SFV Pricing, and the reason that I feel it is important to distinguish between the two methods of "decoupling" allowed by PA 07-242.

Q. Are there any other disadvantages of SFV Pricing relative to decoupling?

A. Yes, the increase in the fixed monthly charge is likely to have negative distributional effects. That is, SFV Pricing will tend to increase bills for low-use customers, who may be more likely to also be low-income customers. Decoupling does not alter the fixed charges paid by customers, and therefore does not contain the associated effects on low-use customers.

Q. Does decoupling address the utility's incentive to increase customer usage levels?

A. Yes. Under traditional rates, a utility can increase its realized rate of return if it succeeds in encouraging its customers to increase usage levels. Note that these efforts could occur at the same time that a Lost Revenue Adjustment ("LRA") mechanism is in place to compensate the utility for lost distribution revenues due to usage reductions brought about by successful DSM programs.

Under decoupling, increases in customer usage levels cause deferrals in the customers' favor. This eliminates the short-run financial gain that the utility would have realized from increasing usage levels under traditional rates.

Q. Please describe CL&P's proposed decoupling mechanism.

A. Mr. Goodwin describes the mechanism on pages 24 through 27 of his testimony. He describes the functioning of the mechanism using an example, which can be summarized in equation form as follows:

Equation1: $Deferral_{m,c} = N_{m,c} x(RPC_{m,c}^{B} - RPC_{m,c}^{A,WN})$

This equation is interpreted as follows: the deferral for rate class *c* in month *m* is equal to the number of customers in the rate class in that month multiplied by the difference between baseline ("*B*") and weather-normalized actual ("*A, WN*") revenue per customer for that month. Positive values indicate a deferral in CL&P's favor. That is, when baseline revenue per customer exceeds actual revenue per customer, the deferral mechanism compensates the Company for the difference, scaled by the current number of customers.

Finally, while CL&P has proposed that the deferral calculation be made separately for each applicable customer class, the Company proposes to apply the same rate adjustment to all classes.

Q. Are there any problems with this proposal?

A. Yes, there are two potentially problematic aspects of the mechanism:

1. The weather normalization of actual revenue per customer removes an opportunity for risk to be reduced for both the Company and its ratepayers and may produce a skew in decoupling deferrals toward either ratepayers or the Company;

   and

2. The revenue per customer structure may produce distribution revenues that do not closely track distribution costs.

Each of these issues is described in depth below.

Q. Please describe the Company's proposal to weather normalize revenue per customer.

A. Mr. Goodwin's testimony does not provide precise details on how the weather adjustment would be made. He does specify that only energy sales (kWh) would be adjusted, and not demand levels (kW). One can infer from his testimony that the weather normalization of energy sales will be performed using the equation below (for simplicity, the equation assumes that a summer month is analyzed, and so removes variables related to non-summer weather conditions):

Equation 2: $kWh_{m,c}^{WN} = kWh_{m,c}^{A} + \beta_c x(CDD_m^N - CDD_m^A)$

In words, Equation 2 means that weather-normalized kWh for rate class *c* in month *m* is calculated as actual (metered) kWh plus a weather adjustment. The weather adjustment is equal to a parameter (β_c) that represents the change in kWh per change in cooling degree day (CDD) for the rate class, multiplied by the difference between normal and actual CDDs.

Though Mr. Goodwin does not state it explicitly, it appears that this adjustment is performed on aggregate, class-level data.

Q. Please describe how the weather normalization of revenue per customer eliminates an opportunity to reduce risk for both the Company and its ratepayers.

A. This is best illustrated using a single summer month as an example. If the weather in that month is unusually hot, customer usage levels will exceed expected levels (because of an increase in air conditioning usage), which in turn increases customer bills. Because fixed distribution costs are recovered through a volumetric rate, the increase in usage also increases the utility's distribution revenues above expected levels.

In the absence of a weather adjustment such as the one proposed by CL&P, a decoupling mechanism will refund the over-recovery generated in this month to the ratepayers through the deferral mechanism. This refund eliminates both the utility over-recovery and the ratepayer over-payment for distribution services in that month.

Had the weather in that month instead been cooler than expected, ratepayer usage levels and bills would have been lower than expected; and the utility's distribution revenues would have been less than expected. Again, a decoupling mechanism that does not adjust for the weather conditions will produce a deferral that increases the utility's distribution revenues to the allowed levels by increasing ratepayer payments for distribution services. These examples illustrate how, over time, decoupling deferrals will eliminate the variability in both utility distribution revenues and customers' payments for distribution services due to weather.

CL&P's proposal to weather adjust revenue per customer misses this opportunity to eliminate the weather risk for both parties. By basing the decoupling deferral calculation on a "normalized' rather than actual sales level, the proposal retains significant weather-induced variability of distribution revenues.

Q. Please describe how the weather normalization of revenue per customer may skew decoupling deferrals in favor of the Company or ratepayers.

A. It is likely, though unstated by Mr. Goodwin, that the normal weather definition used by CL&P in its decoupling deferral calculations will be based on "the 30-year average of actual monthly heating and cooling degree days (1977 – 2006) from the National Oceanic and Atmospheric Administration ("NOAA") as measured at Bradley Field" (Goodwin July 30, 2007 testimony, p. 5) that was used to forecast CL&P's sales.

A basic problem with the use of weather normalization in revenue adjustment calculations is the difficulty of accurately defining "normal weather" and the relationship between deviations from normal weather and sales volumes in future periods. (These are the CDD_m^N and β_c parameters in Equation 2 above.) The setting of these parameter values is imprecise and often controversial. For example, CL&P's apparent proposal to average outcomes over the previous 30 years implicitly assumes that factors such as global warming will not contribute to changes in "normal" weather conditions over time. If global warming were to cause the typical (or "normal") number of cooling degree days ("CDDs") in a summer month to increase over time, then using a 30-year average normal measure in the weather adjustment shown in Equation 2 would tend to produce a weather-adjusted kWh value that is too low. This would translate into weather-normalized revenue per customer values that are also too low, producing deferrals in the Company's favor.

Alternatively, if customer load is sensitive to winter weather conditions, as quantified by heating degree days (HDDs), then a factor such as global warming, which would tend to reduce the number of HDDs over time, would lead to deferrals in the ratepayer's favor. (That is, the normal definition of HDDs would be too high, leading to a weather-adjusted kWh value that is too high, translating into weather-normalized revenue per customer values that are too high and deferrals in the ratepayers' favor.)

Q. What do you recommend with respect to the use of weather adjustments in decoupling mechanisms?

A. I recommend that the CL&P decoupling mechanism not contain an adjustment for weather conditions. Such an adjustment unnecessarily complicates the deferral calculation, creates the potential for disputes regarding the definition of normal weather conditions, and removes an opportunity for weather risk to be eliminated over time for both the utility and its ratepayers with respect to distribution charges and revenues.

Q. What are your views regarding the revenue per-customer structure proposed by CL&P?

A. RPCD has the benefit of preserving some of the utility's pre-existing (i.e., under standard rates in the absence of decoupling) incentive to promote economic growth. This incentive is provided by the linking of allowed distribution revenues to the current number of customers, under the assumption that customers will depart if economic conditions suffer.

However, there are two potential flaws associated with the use of RPCD:

1. It creates an incentive for the utility to "game" the count of the number of customers and the revenue per customer values; and

2. It may produce changes in distribution revenues that do not closely track changes in distribution costs.

Q. Please describe what you mean by "gaming" the mechanism.

A. In this context, I define "gaming" as utility actions that result in a financial benefit for the utility due to an intentional manipulation of the mechanism's parameters in a manner that is not consistent with the intent of the mechanism (which is primarily to encourage conservation). For example, an RPCD mechanism could be gamed by either overstating the number of customers or reducing actual revenues per customer. The number of customers could be artificially increased by changing the definition of a "customer" (e.g., from a premise to a meter), or by separately billing locations that were formerly aggregated (e.g., apartment buildings).

Actual revenue per customer can be reduced by seeking to enroll a disproportionate share of "small" (i.e., low-use) customers. That is, when the utility enrolls a customer with below-average revenue levels, an RPCD mechanism will produce a deferral in the utility's favor equal to the difference between the allowed revenue per customer and the revenue generated from the added customer under the standard rate.

Q. But don't we want the utility to have an incentive to ensure that new customers are as energy efficient as possible?

A. Yes. The "gaming" opportunity described above also provides a useful conservation incentive, in that the utility has an incentive to ensure that its newly enrolled customers are as energy efficient as possible. This is the reason for my caveat that "gaming" is defined as an action that is not consistent with the intent of the mechanism.

Q. Can the decoupling mechanism be altered to remove the utility's incentive to game the number of customers and revenue per customer values?

A. Yes, decoupling mechanisms that do not calculate deferrals that are explicitly linked to the number of customers or revenue per customer will not contain the incentives to game the mechanism described above. Alternatively, the regulator can monitor changes in revenues per customer for “existing” and “new” customers over time. Large reductions in revenue per customer for “new” customers would then trigger additional investigation of the reasons for the reductions.

Q. Please describe why CL&P’s proposed decoupling mechanism may produce changes in allowed distribution revenues that do not closely track changes in distribution costs.

A. The RPCD mechanism described by Mr. Goodwin would provide for changes in the allowed distribution revenues that are proportional to changes in the number of customers. In addition, CL&P has proposed specific increases in its allowed revenues for 2008 and 2009. While a change in the number of customers has some impact on distribution costs, it is unlikely to be the only cost driver. If the RPCD mechanism becomes the only mechanism for adjusting allowed revenues for 2010 and beyond, the implicit assumption would be that distribution costs change only with the number of customers served. The Department should consider this impact of the RPCD mechanism if it anticipates that it will become the only mechanism for adjusting allowed revenues in the future.

Q. Should the utility’s allowed rate of return be adjusted because of the introduction of decoupling?

A. Not necessarily. A commonly held view is that, because decoupling reduces a utility’s business risks, the utility’s allowed rate of return should be reduced to compensate for the reduction in risk. This view is consistent with traditional cost-based ratemaking methods in which the allowed rate of return is a function of (among other things) the utility’s risk level.

However, there are a few additional factors to consider when deciding whether and how much to adjust the allowed rate of return:

- *Decoupling may eliminate weather-induced risk for both the utility and its ratepayers over time.* This is true only for decoupling mechanisms that do not attempt to "normalize" revenues for the effect of weather (as CL&P's proposal does). Because the weather-induced risk reduction for the utility is not matched by a risk increase to ratepayers, there is not necessarily a need to reduce rates in response to the change in the level of risk.
- *Decoupling may reduce the variability of revenues, but does not address the variability of costs.* There is a temptation to believe that decoupling removes all risk for the utility, when in fact variations in operating or capital costs can still lead to variations in net revenues. In addition, RPCD retains some revenue variability to the extent that distribution revenues vary with the number of customers served. Any analysis of the change in the utility's rate of return should factor in the remaining variability in net revenues to which the utility is exposed.
- *It may be difficult to forecast the value that investors will place on the reduction in risk brought about by decoupling.* Given the many factors that can affect investor-owned utility share values, it may be difficult to forecast, or estimate using data from other utilities, the effect of decoupling on the utility's risk and/or required rate of return. However, if the market does place considerable value on the effects of decoupling, the effect should translate into an increase in bond ratings and the share price (all else equal), which will reduce the required rate of return over time.

Q. Please summarize your recommendations.

A. I recommend the following:

1. *Establish a decoupling mechanism that adjusts actual distribution revenues to allowed distribution revenues, but do not increase fixed charges.* The use of a

decoupling mechanism that adjusts actual distribution revenues to allowed distribution revenues is an important element in the promotion of demand side policies that reduce customer usage levels and bills, as it removes the utility's disincentive to promote conservation and energy efficiency, but does not significantly alter the ratepayers' incentives to conserve. The alternative approach of increasing fixed monthly charges and reducing volumetric rates succeeds in altering the utility's incentives, but reduces the customer-level incentive to conserve.

2. *Do not include a weather adjustment in the Company's decoupling mechanism.* The inclusion of the weather adjustment complicates the deferral calculation, avoids the opportunity to eliminate weather-induced risk over time for both the Company and its ratepayers, and creates the potential that decoupling deferrals will be biased toward either the Company or its ratepayers.

3. *Evaluate the potential effect of the RPCD mechanism on expected changes in net revenues if the mechanism becomes the only factor in adjusting allowed revenues over time.* Since the decoupling mechanism will eliminate load growth (on a per-customer basis) as a factor in adjusting allowed revenues over time, the only adjustment beyond the specific increases requested for the next two years proposed by CL&P is the effect of changes in the number of customers served. If this becomes the only adjustment, the Department should evaluate whether it appropriately reflects likely cost changes.

4. *Evaluate the extent to which decoupling reduces risk for both the Company and its ratepayers versus shifting risk from the Company to its ratepayers when determining whether and to what extent the allowed rate of return should be adjusted.* Not all reductions in Company risk due to decoupling are matched by increases in ratepayer risk. In particular, decoupling may produce

benefits to ratepayers via a reduction in weather-induced risk and increased opportunities to conserve. Moreover, the effect of decoupling on investors' appraisal of the firm may be difficult to forecast. However, to the extent that decoupling increases the Company's share value or bond ratings, the allowed rate of return may be adjusted in subsequent rate cases according to the effects observed in the market.

Q. Does this conclude your testimony?

A. Yes.