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**Follow-up testimony concerning the Uniform Railroad Costing System.
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Thank you for giving me the opportunity to respond to earlier testimony concerning the economic nature of the URCS and rail costing in general. As stated in my previous testimony, this is a subject that I have been interested in since the early 1980's.

I wish to again stress that I am providing this testimony on my own volition and not in support of any group or individual. My primary concern is for railroad costing to be done in a manner that fits within the basic theory of economics. To this end, I wish to reiterate my earlier testimony on three topics and briefly speak to a fourth topic.

The first topic I wish to consider is the non-linear nature of railroad costs. As stated in my earlier testimony, virtually every researcher who has evaluated the nature of rail costs since the mid-1970's has found that the cost structure is non-linear. As such, economic theory would indicate that when trying to estimate costs for specific railroad movements, the non-linear nature of the underlying railroad cost structure should be taken into consideration. For this to be accomplished in the URCS, it is not necessary to completely rebuild the basic account structure, it is only required to change the concept of "percent variable" to "partial elasticity" and then to estimate marginal and average variable costs as was indicated in my earlier testimony. Additionally, I would suggest the use of the "translog" functional form as appropriate for the basic model. The translog function provides not only a first order approximation to the unknown underlying functional form but also has useful economic characteristics in that the first derivative may be shown to measure the partial elasticity of cost relative to each of the included causal variables. The partial elasticities may be seen to consist of the ratio of marginal cost to average cost.

The second area that I wish to comment on concerns the use of only two independent causal variables in each of the regression equations. In the 1930's when Ford Edwards was first developing Rail Form A, the time required to estimate a regression equation with only two variables (prior to computers) was such that, perhaps, one equation could be estimated by a person in a given day. Thus, it was necessary to keep the models simple so as to not create undue computational problems. If it was

necessary to compare several regression models so as to choose the best one, this greatly increased the work load. Now, with the advent of computers, many iterations of the regression calculations may be computed in a given day. Thus, the analyst has much more flexibility in the development of costing models. The effort may be directed more toward analysis of results and choosing equations that are believed to accurately reflect the underlying economic structure of rail costs, rather than primarily spending time in the actual computation of regression coefficients. Additionally, we now have the capability to use a pooled data set of both time-series and cross-sectional observations, a situation that carries more importance when there are only a few Class I railroads in the United States. Current knowledge of econometrics and statistics includes tests that will allow for checking whether groups of variables are appropriate within regression models rather than concentrating on only whether a single variable is significantly different from zero.

Third, as stated previously, the use of "percent variable" terms must also be called into question. There is no definitive statement within the economic literature as to whether the appropriate cost to be used in railroad regulatory analysis is an "average variable cost" or a "marginal cost." It is my belief that the "variable cost" that is implied by law is a most accurately a measure of "marginal cost." the justification for this conclusion comes from economic theory where the degree of markup (corresponding to market power) under the optimal markup pricing models indicates a markup over "marginal cost." Likewise, economic decisions are virtually always aimed toward decision making at the margin. A firm that is using "marginal cost pricing" where prices (rates) are set equal to marginal costs would be expected to experience little or no regulatory oversight. Under the economic theory of perfect competition, firms are forced by the market to set prices equal to marginal costs if they wish to maximize their profits.

The final area that I wish to examine concerns the use of replacement cost for assets as opposed to historic costs. In my mind, this comes down to a question of what is being measured by the use of these costs and how does that relate to actual activity. I believe that the most appropriate measure of

the effect of rail activity on the firm's capital structure would be measured by calculated degradation of the capital assets. As an asset is used, its remaining life is reduced or degraded. Initially, depreciation was intended to be an accounting proxy for degradation. To the extent that depreciation does accurately measure degradation, then it is my belief that the value of depreciation of the historic asset cost is the best measure of the actual cost incurred by the firm. There are, however, two problems with this concept.

The first is that depreciation tends to be time related rather than activity related with the assumption that assets are degrading over time rather than as a result of activity. This is certainly accurate for some assets but must be considered very inaccurate for others.

The second problem with depreciation concerns the use of (various methods) accelerated depreciation. Accelerated depreciation allows for the accounting adjustment on the company's books to exceed the rate that the assets are actually degrading. Thus, to the extent that a firm is using accelerated depreciation (and if, at least theoretically, in the data applied within the URCS) the costs based on historic asset purchase prices may, in fact, overstate the actual level of degradation that is actually taking place due to traffic activity. This will continue until the asset is fully depreciated when the depreciation value will then (at a zero value) understate the true degradation of the assets.

Should the URCS be adjusted to use replacement costs rather than historic costs, the question arises as to the depreciation method to be applied and what implications this may have relative to the degradation that is occurring to the capital assets. It seems logical, that if accelerated depreciation may overstate the rate at which assets degrade, then, given the historic tendency for asset prices to rise with inflationary pressures, use of replacement cost will even more greatly overstate the actual degradation value. There is also an additional problem with the use of replacement cost. This results from the fact that a rational firm may choose to not replace assets when they are fully degraded. Use of replacement cost for assets that are not going to be replaced (for whatever economic reason) will have the affect of artificially overstating the true cost levels associated with specific traffic movements. If accuracy of

the system is the desired goal, then substituting replacement cost of assets for depreciation as based in historic costs must be questioned on the above basis. This analysis must, however, be tempered by the question of accelerated depreciation and the biases that it can create within a costing system.

I thank you for your time allowing me to present my testimony and would be more than willing to answer any questions you may have.