

Transmission and Ratebase: A Match Not Made in Heaven

By Ashley C. Brown and Terrence L. Barnich

The question of ratebasing transmission is a critical policy issue that must be publicly scrutinized as the industry moves toward a more competitive bulk power market.

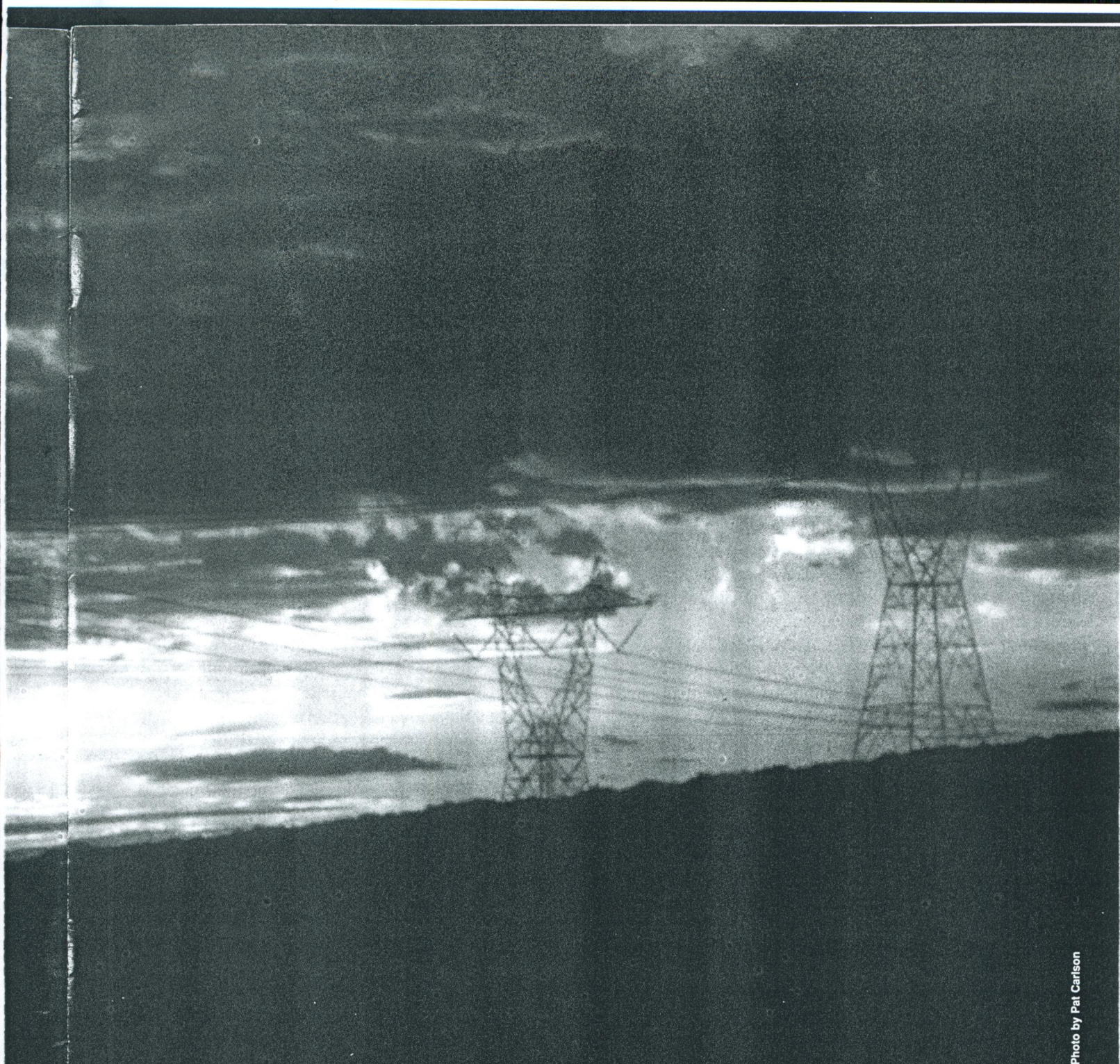


Photo by Pat Carlson

For years, utilities, regulators, and economists have discussed the possibility of opening access to the electric transmission grid. It is now well past the time to cut the Gordian knot in impasse over the debate, and to raise the key strategic question of whether utility-owned transmission facilities belong in the ratebase paid for by native-load ratepayers. The question is complex, but requires public discussion and debate as we move inexorably to more competitive bulk power markets.

The issue is best approached from three different perspectives:

- Who should bear the risk of residual revenue responsibility for transmission assets?
- Are actual costs and uses reflected in the allocation of

responsibility for transmission revenues?

- How can transmission pricing be used to reduce the likelihood of anti-competitive behavior by those entities owning both generation and transmission?

Before analyzing the three posed questions, it is useful to review the historical context of our current regime and to describe that scheme in a fashion that is useful for purposes of analysis. Most transmission facilities were planned, designed, and built for the purpose of serving native-load customers, some wholesale, but preponderantly retail. For the most part, they were built and operated by vertically integrated monopolies, or combinations thereof, serving native-load customers. Over time, considerations of reliability and efficiency led to broader coordi-

nation and planning of transmission. For the most part, the players in that broader effort remained the same vertically integrated utilities. Transmission generally constituted less than 10 percent of these companies' overall investment in plant, while generation constituted roughly three quarters of their capital assets. Also of considerable significance is the fact that the transition from an insular, simple system to the planning and development of a highly integrated regional transmission system, was not accompanied by any ultimate shift in revenue responsibility — despite the fact that the grid was being put to new uses by new users. While some incremental dollars were earned by utilities to offset native-load revenue responsibility, the latter group of customers continued to bear both the primary and residual revenue responsibility for transmission.

The cost burden borne by native-load customers is reinforced by the transmission pricing regimes employed by state and federal regulators. At the state level, transmission rarely — if ever — appears as a discrete set of costs, much less as a separate pricing issue. Transmission costs are treated simply as an indistinguishable component of bundled retail rates. At the federal level, wholesale native-load customers generally have their transmission rates set in the same fashion as retail native-load customers have their rates set (to the extent that those wholesale revenues offset retail native-load costs, state regulators reflect those dollars by reducing retail revenue responsibility). Both of those regimes generally reflect rolled-in average embedded cost rates.

For marginal, non-native-load wholesale customers of transmission services, the Federal Energy Regulatory Commission (FERC) has generally employed an embedded cost pricing regime that is largely built on the assumption that native-load customers will bear the ultimate revenue responsibility. The fact that the FERC has been able to rely on that assumption has also helped to keep it from having to develop an appropriate transmission pricing regime.

The principle under which we need to be guided is this unbundling of services and functions in order to remove inefficient, counterproductive price distortions. Once that is done, the customer and the owner of transmission facilities will be free to figure out for themselves the optimal use of the grid. Within the context of this guiding principle, let's review in some detail the three questions posed earlier.

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Who Should Bear the Residual Revenue Responsibility for Transmission Assets?

While it is clear that native-load customers bear the residual revenue responsibilities for transmission, it is not at all clear as a matter of sound economic or public policy that they should. The question deserves considerable public scrutiny and debate. The two key issues that emerge are efficiency and priority of access.

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It is counterintuitive to assign ultimate revenue responsibility for the efficient use of an asset to those who have little or no control over its use. While native-load customers, certainly, have some control over the efficiency of their use of electricity, the relationship between end-use and efficient use of the grid are not necessarily correlated.

While demand-side conservation measures can enhance the flexibility of transmission, and potentially open opportunities for real grid efficiency gains, the capturing of such opportunities is entirely in the hands of the operators. Those operators, however, see no revenue gains if they do improve utilization of the grid, and they suffer no financial consequences if they fail to register gains. All the consequences of efficient or inefficient transmission management, under the current regime of native-load residual revenue responsibility, are borne by those with little or no control. In short, the signals that markets regularly deliver to managers simply do not exist under the current structure of transmission pricing.

Historically, one could justify the burden placed on native-load ratepayers because transmission owners had an obligation to serve those customers, which provided them assured priority of access. Thus, in economic terms, the bearing of the residual revenue responsibility amounted to a reservation charge for assured priority of access.

In recent years, however, that assurance has become less certain. The FERC, in approving the Pacificorp/Utah Power and Light merger, gave firm wholesale sales priority over economy transactions for the benefit of native-load customers. In the proposed Northeast Utilities merger with Public Service of New Hampshire, the FERC staff proposed that native-load priority be eliminated as a condition for approval of the merger. While an administrative law judge rejected such a condition, the commission itself (at this writing) has yet to rule. Apart from regulatory decisions, it is clear that the demands placed on the grid to

accommodate the growing bulk-power market raise questions about long-term access priorities. Those questions have arisen despite the fact that native-load customers continue to bear all of the risks associated with bearing the ultimate revenue responsibility.

While it can be argued that tolerance of something less than optimal efficiency in use of the grid does provide a measure of comfort for assuming native-load priority, there is no way in the existing pricing arrangements to ascertain, in meaningful economic terms, whether the measure of comfort is worth the cost of the tolerated inefficiency. In short, the present pricing scheme of ratebasing transmission does little to signal the owners, operators, and regulators of transmission of the need to be efficient — and to provide the greatest level of reliability to native-load customers. Correct signals may be better sent by relying upon the unbundling of the services and introducing profit motives to rearrange the optimal use of the resources at hand.

Are Actual Costs and Uses Reflected in the Allocation Of Responsibility for Transmission Revenue?

The inevitable result of ratebasing transmission facilities is that there is little incentive for allocating revenue responsibility along the lines of cost causation. In general, the allocation of revenue responsibility has been on the basis of assigning costs to those customers for whom the facilities were initially planned to serve, rather than on those who actually use them. While the revenue responsibilities of the anticipated customers are often offset by revenues derived from contractual relationships with customers whose use was not initially contemplated, such revenue contributions are generally based not upon actual use or cost causation but, instead, upon the nominal assignment of capacity. Actual use, the real flows on the system, are rarely the basis for assigning costs and deriving revenues.

Indeed, generally the only time that actual use is reflected in the assignment of revenue responsibility is when native-load generating capacity has to be backed down to accommodate externally generated flows on the system. Thus loop flows, which often constitute a significant part of the flow over the transmission systems of individual utilities, are generally viewed as transitory trespasses onto a neighboring utility that do not require compensation as long as the tolerance is reciprocal. It is assumed that the reciprocity of loop flows balances out over time and is, therefore, not worth the effort of seeking compensation. It is the electrical equivalent of the cliché, "you scratch my back and I will scratch yours." It is also an economic tolerance that one might expect where neither the owner nor the operator of a facility bears the ultimate revenue responsibility for the system's costs.

There are inevitable consequences to a pricing regime that imposes costs and derives revenue based upon planning focus, rather than actual use, that merit examination.

They are:

- little incentive to market transmission service and thereby enhance efficiency
- limited geographic planning horizons, which inhibit growth in bulk power markets
- disincentives for appropriate capital investment

The first consequence is that a utility with ratebased transmission assets has little or no incentive to market the capacity not used to serve native load. The utility's revenue requirements are fully met without selling service to non-native-load customers, and much of the revenue gain from such sales simply flows back to offset native-load revenue requirements. Without an adequate incentive, there is little financial reason for a utility to undertake efforts to accommodate load flow from off the system. Indeed, given the obligation to serve native-load reliably, and the lack of financial consequences for underutilization, a conservatively managed company may well conclude that it ought not take on any transmission obligations that do not directly relate to serving its native load. Thus, much capacity may be underutilized (nominally at least) while waiting for this native load to grow into it.

The second consequence is that a utility has little incentive, apart from regional reliability considerations, to plan or build to serve bulk power needs. The planning horizon for transmission is premised on the obligation to serve and a pricing structure that is largely limited to native-load requirements. That horizon, institutionally at least, is tempered only by the coordination requirements of regional reliability councils or formal coordination arrangements with other utilities. The result is an institutionally reinforced planning focus that tends to be myopic in scope. While at least one state, Wisconsin, has attempted to broaden that planning focus to include the state as a whole, and a number of states have taken broad regional perspectives on transmission needs, a pricing structure that has as its central assumption that native-load customers will assume the ultimate revenue responsibility for transmission facilities — sends a clear, economic signal that inevitably limits the horizons of transmission planners. That signal is not the one best suited to accommodate and serve the growth of competitive bulk power markets.

Finally, the allocation of residual revenue responsibility to native-load customers, without particular regard to ac-

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tual use, provides a strong disincentive to build transmission and actually provides a disincentive to invest in ways that accommodate bulk-power markets. Since electricity in an alternating current transmission system will flow in the direction of the least impedance, any individual utility that enhances the capacity of its transmission facilities is likely to have reduced the impedance on its system, thereby attracting considerable flow for which it is not likely to be compensated, and for which the utility has little incentive to seek compensation since it will have all of its revenue requirements met by native-load customers. It is difficult to imagine a stronger disincentive to build.

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Similarly, when the loop flow does cause a utility problems in serving its native load, then the existing pricing incentive is to build facilities such as phase shifters, which tend to protect individual systems but do little to serve broader, bulk-power market needs. The price signal inherent in ratebasing transmission is such that there is little reason for utilities to look at broader perspectives when planning and constructing transmission facilities. That myopia is reinforced by the lack of any strong institutional mandate that bulk power needs be accommodated.

***How Can Transmission Pricing Be Used to Reduce
The Likelihood of Anti-competitive Behavior?***

Advocates of competitive bulk-power markets have often expressed concern about the consolidation of market power inherent in the fact that some of the competing generators control transmission access while others lack control. The concern, of course, is that since transmission is the critical bottleneck between generation and load centers, those generators who do own transmission will use that control to gain an advantage over their competitors. Under the current pricing regime, where all transmission revenue requirement responsibilities are assumed by native-load customers, there is absolutely no financial disincentive to such anti-competitive behavior.

While one could argue that, given the relative scale of utility investment in generation versus that in transmission, it could be difficult using just transmission pricing to devise a pricing regime that would remove the incentive for a utility to use its strategic control over transmission to provide it with a competitive advantage for selling its capital intensive investment in generation. While that argument has some merit, from a competitive market point

of view, the removal of transmission from a regime where the utility suffers no financial consequence from the denial of transmission access would, nonetheless, provide an incremental improvement. A utility, which earned transmission revenue based on payments for use rather than the imposition of a residual revenue responsibility on native-load customers, would have far more incentive for additional open access than utilities have at present. Indeed, a regulatory regime that made transmission its own discrete profit center could provide a real incentive for marketing transmission services — something which would inevitably enhance the cause of competition.

Alternatives to Ratebasing Transmission

The removal of transmission from ratebase would compel both state and federal regulators to develop alternative pricing arrangements. Without dwelling at any length on the alternative, the key elements are a discretely identified and cost-based price that is based on the actual use of transmission services.

The rate itself would, for both wholesale and retail customers, be unbundled for pricing purposes, although at the retail level not necessarily for providing retail wheeling unless the state commission explicitly desired it. There would be no revenue requirement, as such, for transmission. Under this pricing regime, actual use — the real flow on the system — would be the basis for deriving revenue. Greater usage than expected would create the opportunity for increased earnings. Users would simply pay their cost-based rate, and the revenues would accrue to the utility that may earn more (or less) than it does in the current pricing regime.

The financial performance is, thus, inherently linked to the efficient use of transmission assets and to actually pricing all uses of the grid. Access priority would be determined by the rate paid. State regulators might, as an example, approve a rate for retail customers that covered the costs of use plus an explicit premium paid for the highest priority of access. Finally, it would be optimal for the FERC and the states to work together to develop a coherent and consistent pricing regime.

While the alternative to ratebasing transmission needs considerable flushing out, the question of whether transmission ought to be ratebased is a critical policy issue that must, inevitably, be publicly scrutinized as we move toward a more competitive bulk power market. That would be consistent with the Bush administration's National Energy Strategy, which recognized the need for greater openness in transmission access. It is also a debate that can occur concurrently with close observation of the British experiment with unbundling transmission and generation — an experience from which we will, presumably, be able to learn a great deal. What is clear, however, is that we can no longer simply continue the practices of the past in light of the structural changes sweeping the industry.