Like the rest of us, telecommunications policymakers are eager to see high-speed Internet service – broadband, in the vernacular – spread through the country. But to get from here to there, some believe we must choose between competition and speed.

Specifically, they argue that the only way to roll out broadband at a rapid pace is to abandon the pro-competitive provisions of the Telecommunications Act of 1996 (TA96) and hope the regional Bell operating companies – the Baby Bells – will accelerate broadband investment in light of the enhanced prospects for profit.

Supporters of TA96 view such a concession as accepting all the problems the law was meant to fix. They claim this policy would unfairly reward the Baby Bells, which still
dominate local voice and data transmission services, for deliberately thwarting vigorous competition. They also point out that the problem with broadband adoption is not a matter of supply, but demand. Specifically, broadband prices are too high to attract many potential users because competition is weak.

But fortunately, there is a way to stimulate the expansion of broadband without undermining local phone competition – one that would put the Baby Bells and emerging rivals on an equal playing field while minimizing the need for the Baby Bells to provide services to their rivals. The fix involves using next-generation technology to achieve for broadband and local phone service what was done years ago for long distance service, namely to establish electronic switching between providers.

This new technology is not a just gleam in some eccentric engineer’s eye. Called ELP (for electronic loop provisioning), it is available now at relatively low cost. “Loop” refers to the local loop – the local telephone lines, telephone poles, underground conduits and switches that connect individual users to the outside world.

The technology would give competitors the same access to customers as the Baby Bells now enjoy. And it would facilitate the process by making it possible to switch customers from one telecom to another – or between voice and data services of one company – with the same speed, cost and reliability as in long distance service.
Fixing the telecom market has ramifications that range far beyond the sector. Economic growth is increasingly driven by innovations in information technology. Indeed, according to Dale Jorgensen of Harvard, roughly two-thirds of U.S. economic growth in the last decade is attributable to gains in IT. Thus, a vibrant telecom sector is not only vital to the long-term success of the economy, but could also play a major role in ending the current recession.

In assessing the importance of telecommunications to the economy, it is important to note that, since the 1996 law was passed, more than a third of telecom investment has been made by the competing local exchange carriers (CLECs, for short), even though they are only one-fifteenth as large as the Baby Bells in terms of revenues. TA96 requires the Baby Bells to give competitors access to the local loop, but until very recently they have only been able to penetrate the market at very high cost. By no coincidence, the CLECs have concentrated most of their investment in high-use areas.

The Baby Bells seek to eviscerate the 1996 reform, either through legislation or by regulating decree. This would obviously undermine prospects for investment by local competitors. In contrast, implementing ELP would lead to a resurgence of telecom investment and innovation, and get the government out of the business of picking winners – something a free market can do just fine.

**FREEING TELECOMMUNICATIONS**

Baby Bell control of the local loop has meant that, despite the 1996 reform, Americans pay excessive fees for local phone and Internet service. An analogy may help. Suppose Mario’s, your local pizza delivery service, were given control of all food delivery on your street. Mario would keep other pizza companies from using the street, or at very least charge premium prices for access. Second, Mario would raise the price it charges for pizza. And third, the pizza maker would keep suppliers of competing goods (think Peking duck and moo shu pork) off your block and start selling these goods to you at higher prices.

In the case of telecom, the local loop is the street, while local phone service and Internet access are the pizza and Chinese food, respectively. The fact that Mario’s currently uses the street to deliver its pizza doesn’t mean it should be allowed to restrict access by rivals or to charge a monopoly toll. By the same token, the Baby Bells should not be allowed to restrict access to the local loop or to use the loop on better terms than competitors.

The key to sensible policy toward telecom access, then, turns on two ideas. First, providing and maintaining the local loop is a business that is distinct from transmitting voice and data through it. Second, the telecom “pipeline” is what economists call a “public good.” Public goods can be enjoyed by multiple parties without cramping any user’s style. National defense is the classic example: those ICBMs buried in North Dakota protect all of us. Note that the local loop pipeline differs from national defense in that it is an input to production, rather than an output. Specifically, multiple telecom voice and data transmitters can use the loop without limiting each other’s ability to transmit.

One glance at the telephone poles on most streets suggests why almost every neighborhood has a single telecom pipeline provider. Erecting new poles, stringing new wires,
burying miles of cable and reproducing all the other elements of the local loop, when the current pipeline has plenty of unused capacity, would be incredibly costly and economically wasteful. So, too, would having each state build its own missiles.

There are two ways to ensure that local-loop providers don’t restrict access to our main telecom pipeline. One is to separate the two businesses by forming companies that are responsible for upgrading and maintaining the pipeline, but are prohibited from engaging in transmissions. Such structural separation was the hallmark of the decree that broke up the AT&T monopoly and introduced competition in long distance.

Pipeline owners that are barred from selling communications services would have no incentive to favor some service providers over others. Of course, the pipeline company would have a monopoly on the pipe, so the tariffs for its use would still need to be regulated in order to prevent above-cost pricing.

ELP offers an alternative way to ensure access to the loop on equal terms, and thus a way to stimulate competition and telecom investment. With ELP technology, switching a customer from one local voice and data transmission company to another would be done simply by typing commands on a computer keyboard. Similar access architecture was the key to promoting vigorous competition in the long distance telephone market, which delivered spectacular reductions in Americans’ long-distance telephone charges and equally spectacular technological innovation in the long distance networks. Indeed, the speed, accuracy and low cost of long distance electronic switching, plus the ability to lease cross-country wire lines and other facilities from long distance companies, explain why the Baby Bells are entering that market. In doing so, the Baby Bells are conveniently forgetting that what’s good for the goose is good for the gander.

Unlike structural separation, ELP would require no divestiture of assets by the Baby Bells. Nor would its implementation require a change in the law; on the contrary, ELP provides a means of making the 1996 reforms work as originally intended. Before describing ELP, though, it’s worth a digression to outline the provisions of TA96, the font of most of the current problems in telecom policy.
the telecommunications act of 1996

When AT&T was broken up in 1984, control of the local loop was assigned to the Baby Bells. This assignment was exclusive; divestiture made no provision for competition in local voice and data services. A dozen years later, TA96 loosened regulation of the local telecom market by eliminating the Baby Bells’ status as monopoly franchises and by requiring them to rent access to the local loop to would-be competitors. The law further required the Baby Bells to rent access to the local loop on a component-by-component – or “unbundled” – basis according to the needs of their competitors. Finally, rents were to be set to include a fair profit for the Baby Bells.

The Baby Bells were told that if they fulfilled their obligations to competitors, they could enter the long-distance market. This led them to begin lobbying to open long distance service. But in the meantime, the Baby Bells used a variety of mechanisms to restrict access to the local loop. Tactics included charging exorbitant prices for unbundling components; delaying the transfer (or “handoff”) of loops from their switches to those of competitors; using slow, error-prone manual handoffs rather than electronic handoffs; charging high prices to competitors for renting physical space in local phone company offices to collect these loops; and even opting to pay fines rather than obeying the law.

While close to 500 telecommunications companies entered the local market after TA96 was passed and collectively invested more than $50 billion, most had closed their doors by the end of 2000. This is the bad news. The good news is that the local competitors’ dark tunnel is finally omitting a ray of light. In the last year and a half, the surviving CLECs have begun to get some traction because state public utility commissions have permitted them to rent local phone company facilities on a comprehensive “UNE-P” basis rather than piecemeal.

UNE-P stands for “unbundled network element platform.” Under UNE-P, the Baby Bells are required to use their facilities to place the calls of local competitors’ customers. The CLECs compensate the Baby Bells at wholesale rates for this service along with providing support and billing services for CLEC customers. UNE-P was established because (a) there is currently no way for the Baby Bells to transfer local competitors’ customer calls electronically; and (b), as indicated, the Baby Bells have made the manual transfer of CLEC customer calls to CLEC networks an economic nightmare.

the real problem with broadband penetration

Much of the impetus for reversing TA96 follows from the concern that high-speed Internet access is being deployed and adopted too slowly. The dominant providers of broadband are the regional Bells, with their digital subscriber line (DSL) connections, and the cable television companies, with cable modem hookups.

Two-thirds of American households have access to cable, and a growing share of their cable companies are offering Internet connections along with television. Thus, today roughly 70 percent of households can purchase DSL-based or cable modem broadband service. In addition, somewhat slower satellite hookups are available to most households. Hence, the fact that fewer than 10 percent of households are purchasing broadband suggests that the problem is not the availability of service, but its value and price. Broadband is priced high, both because the regional Bells have blocked competitive access to the local
loop and because of the spaghetti-wire complexity and antiquated manual processes used in maintaining the loops.

CURRENT POLICY
In Washington, the FCC seems poised to rule that the flow of data (Internet transmissions) over fiber-optic lines is an information service and, therefore, subject to neither FCC regulation nor the 1996 law. Two bills introduced in the last Congress and likely to be reintroduced in similar form – the Tauzin-Dingle bill in the House and the Breaux-Nickles bill in the Senate – would legislate this same “solution.” Moreover, as this article was being written, the FCC was poised to issue a ruling that eliminates all or most UNE-P rental by the Baby Bells’ competitors.

The Baby Bells are putting enormous pressure on the government to “fix” their market because over the past 18 months local competitors have begun to attract customers by offering lower prices. The challenge to the local phone monopoly comes thanks to the reasonable UNE-P rates set by state public utility commissions in conformity with a recent Supreme Court ruling. Indeed, roughly 10 million households and small businesses have already signed up for local phone service with Baby Bell competitors at cost savings of up to one-third.

Given that the Baby Bells are now being allowed to enter the long distance market, the two likely FCC rulings could lead to a Baby Bell monopoly of long distance as well as local telephone service and, in conjunction with local cable companies, a “duopoly” in the provision of broadband service.

How’s that? If existing long distance companies as well as local competitors cannot get economical access to residential and small business customers to sell local phone and broadband service, the Baby Bells will have them over a barrel. All the Baby Bells need do is offer an all-in-one package of local phone service, long distance service and broadband, and, voilà, they will have a product that no one can match. Furthermore, they can throw in the long-distance component at no charge to ensure that no customer would seek to purchase long-distance from other providers. AT&T, Sprint, MCI and all remaining local competitors would be history. And, once they are gone, we can say goodbye to all the money we have been saving on phone bills.

The FCC and many members of Congress seem unconcerned, either because they have not thought it through or because they think the Baby Bells will face broadband competition from cable and phone competition from the wireless companies. At best, this is wishful thinking. Leaving the Baby Bells and the cable
companies with a broadband duopoly is an invitation for collusion.

Don’t think of cell phones as a viable alternative. They do not work very well even when you are lucky enough to get a connection, and there is no indication that cell phone service will improve anytime soon. Besides, if the Baby Bells are allowed to control all land-line phone service, what’s to prevent their taking over cell phone service as well?

One might rationalize the emasculation of TA96 if the Baby Bells were constructing new pipelines from scratch. But what is mostly involved here is more of same – an expansion of capacity where capacity already exists. The Baby Bells as well as their competitors have been deploying high-capacity cable in portions of the local loop for more than a decade. Hence, the addition of fiber is nothing new, and certainly does not suggest a discontinuity that demands new rules.

Competitive markets deliver goods and services at prices that equal the long-run incremental costs of producing them. Markets dominated by small numbers of companies set prices that are higher than incremental cost. This is particularly the case for must-have commodities, like local telephone service, where the demand is inelastic.

Those promoting a shared monopoly in broadband (and, by implication, a monopoly in local voice transmissions) also claim that doing so would deliver broadband service at a faster pace. But, as discussed above, the real impediment to greater use of broadband is its low adoption rate, not its availability. Adoption rates for high-speed Internet services cannot be dictated in Washington. It’s up to the public to choose to pay for a hookup.

In making the decision to buy broadband, the public considers two things: value and price. And while Tauzin-Dingell, Breaux-Nickles or an FCC ruling would do nothing to make broadband more useful, it would enable Baby Bells to set prices above competitive levels. Thus, well-intentioned proponents of pro-Baby Bell legislation are likely to get exactly the opposite of what they expect – a decline, rather than an increase, in deployment of high-speed Internet services.

**Reregulating Telecom?**

The telecom bills in Congress or the above-mentioned FCC rulings would not only be anticompetitive, they would roll back the clock with respect to deregulation. For once the public understood that it is captive to the Baby Bells plus the cable companies, the pressure for re-regulation would build.

When done right, deregulation has worked extremely well, delivering huge savings to consumers and substantial productivity-enhancing investment in the economy. De-regulation of long distance phone service, as well as airline, rail and trucking services, has
worked for two reasons. First, the services were not natural monopolies. Second, policymakers made sure they had the right institutions in place – namely, a free market – before pulling the regulatory plug.

Local voice and data transmissions are not a natural monopoly, so the first of these preconditions is satisfied. But the second precondition for successful deregulation – a market with easy entry – is far from satisfied. Deregulating local telecom in the current setting would permit the Baby Bells to shut down many of their remaining competitors. By contrast, were ELP implemented in a manner that treated all transmitters identically, we could significantly reduce the need for regulating local phone service.

**ELP TO THE RESCUE**

To appreciate the opportunity here, one needs to grasp the mechanical obstacles involved in deploying broadband over the local loop, given the current network architecture and the reluctance of the Baby Bells to cooperate. Simply giving a local competitor access to a single telephone line running from the client’s home to the Baby Bell central office entails an elaborate multi-step process, including physically identifying, disconnecting and reconnecting the client’s telephone wires. Moreover, to be able to receive a new customer’s line, the competitor needs to set up its own equipment in the local phone company’s central office. This takes time, hardware and lots of money to pay the rent.

Strikingly, the cumbersome process for handing off loops to local competitors is similar to the process that a Baby Bell must go through when it wishes to provide a customer with its own broadband service, or needs to rearrange its customers’ voice services. Thus, an automated process that could set up and cross-connect both voice and data circuits electronically could benefit the Baby Bells as well as local competitors. First, it would make the provision of unbundled loops far cheaper and more economical for the supplying Baby Bell as well as the receiving competitor. Second, it would provide the Baby Bells with operational efficiencies in providing both current services. And third, it would remove foreseeable technical barriers to providing advanced services to customers.

ELP would locate next-generation digital remote terminals in each neighborhood and business district. These terminals would convert voice and data communications to and from digital streams and place them in packets called ATM (asynchronous transfer mode) cells, which are analogous to letter envelopes. These data envelopes are densely packed onto a shared fiber wire that connects to a switch. Much like the sorting facilities of the post office, the switch sorts the cells by service-provider network and sends them on their way. The set of voice and data packets of a particular customer is called a “permanent virtual circuit,” which serves much like a postal address in identifying the sender and recipient of the transmission.

The local baby Bell network as well as each local competitor’s network would be connected to the switch, which need not be located in a central phone company office. This would permit the switch to direct the digital packets associated with any particular address to the customer-selected local voice or data network. Changing a customer’s service to include data, or changing a customer’s service provider, would simply require sending electronic instructions to the switch. Thus the laborious, error-prone process of identifying a client’s telephone wires and physically moving them from one provider’s switch to another’s would become a thing of the past. Moreover, with this new architecture, local
competitors would not need to set up equipment at every central telecom office — but only at the ATM switch, which would serve a collection of neighborhoods.

ELP can deliver broadband speeds 30 to 100 times faster than current rates. It could thus lay the groundwork for video streaming and other killer applications on which Wall Street has been counting.

**IMPLEMENTING ELP**

Much of the infrastructure for ELP is either in place or slated to be installed in the form of fiber lines running from Baby Bell central offices to next-generation remote terminals. Using these resources, which requires Baby Bell participation and cooperation, would greatly reduce the cost of implementing ELP. Indeed, all that is needed beyond this infrastructure to make ELP a reality is software and hardware that bundle voice and data in digital packets at the remote terminal so that they can be routed to the customer’s vendor. In the longer run, a fiber ring connecting remote terminals could, in large part, replace central offices and achieve additional cost savings.

Unlike UNE-P-based competition, ELP would allow service providers to retain full control of their networks. This would give the Baby Bells more incentive to develop and invest in their networks. But eliminating UNE-P should occur only after ELP is in place and functioning smoothly. Otherwise, the Baby Bells would be able to kill off their competitors before they get a chance to use ELP.

**THE PATH FROM HERE**

The Telecommunications Act of 1996 was adopted for a good reason. The Baby Bells had a tight grip on local phone service and were poised to share monopolies with cable companies in delivering high-speed Internet service. But inadequate enforcement, Baby Bell recalcitrance, and the inherent limitations of current technology undermined the 1996 reform’s potential for stimulating competition. Indeed, apart from the very recent UNE-P-based competition, the telecom market is less competitive now than when the Act was passed.

TA96 asked the Baby Bells both to compete with their competitors and to help them. They have done what any red-blooded American company would do — use control of the local loop to block competition. Now that UNE-P prevents them from playing this game, they have embarked on a campaign to eliminate this vestige of competition.

Reforming the 1996 law could take one of three paths. The first is to eviscerate the law through legislation or FCC decree. This would allow the Baby Bells to circumvent the requirements of TA96 under the pretext of breaking the logjam over broadband coverage. The second path is separation of the local loop pipeline business from the pipeline transmissions business. The third path is adoption of Electronic Loop Provisioning technology by encouraging investment in ELP technology and enforcing the law so that this new technology is made available to the entire industry. Path 1 would lead us back to where we started — control by one or two companies in each regional market. Paths 2 and 3 lead to the information superhighway that the country needs.

To me, ELP technology, with its relatively low costs and efficiencies, seems the path of choice. ELP can transform the local loop from a bottleneck that restricts competition into a basin that attracts it. We need that competition if the nation’s telecommunications industry is to regain its role in propelling economic growth.