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"Helping Investors Anticipate Change"SM
Scott C. Cleland
November 8, 1999

Telecom Mergers Testimony before the Senate Commerce Committee

Written testimony of Scott C. Cleland, delivered November 8, 1999, before the United States Senate Committee on Commerce, Science, and Transportation regarding "telecom mergers."

1) Telecommunications Consolidation Is a Natural Market Development

The current wave of telecom consolidation is a natural and expected market development in a highly capital-intensive business, which demands economic scale.

This natural tendency toward consolidation has been accelerated by:

- pro-competitive regulatory and trade policies that have created a much larger global marketplace; and,
- Internet and digital technology that enable competition between previously separate analog industries.

Economic scale through consolidation makes deployment of broadband infrastructure less expensive, faster and less risky. This can be pro-competitive, pro-deployment and pro-consumer.

2) Big Is Not Necessarily Bad

Communications consolidation is not necessarily a bad development for competition and consumers, as long as:

- vigilant antitrust enforcement continues to ensure individual service markets remain competitive; and,
- communications networks continue to be "public" — i.e., open to competition with:
  - –facilities-based competition between different broadband "pipes;" and,
  - –resale competition of each and every local broadband access point to the customer.

If these pro-competitive preconditions are met, telecom consolidation is not a problem for competition or consumers, because broadband "bundle" competition can flourish. However, any breakdown of competition in the critical component of local broadband access to the customer can have serious anticompetitive implications, because the integrated nature of broadband — i.e., bundling — is like a chain and, like a chain, it is only as strong as its weakest link.

3) Big Is Not a Problem If Networks Remain "Public," i.e., Open to Competition

Despite confusing rhetoric to the contrary, Congress already has decided overwhelmingly that telecom networks should be "public" — i.e., open to competition. In the 1996 Telecom Act, **Congress overwhelmingly voted that market forces alone are not enough to develop or sustain competition in telecommunications,** given the history of monopolization and the presence of economies of scale.

Congress voted overwhelmingly:

> (a) to "force access" (a.k.a. mandate interconnection and resale) on all local exchange carriers (which includes cable when offering telecommunications), so competition could develop; and,
> (b) to require "interconnectivity...to promote nondiscriminatory accessibility by the broadest number of users...to **public** telecommunications networks." (emphasis added)

In 1998, the FCC legally required that local broadband access (advanced services) is a form of telecommunications subject to the market-opening provisions of the 1996 Telecom Act.

Meanwhile, the cable industry has been aggressively converting its broadcast **one-way cable network** in which it chooses the content and sends it to all cable customers, into what now appears to be a **two-way telecom network** in which the user chooses the content and sends it to the person(s) of the user's choice.

In other words, to benefit from the Internet and data growth, cable is reengineering its one-way cable network into a two-way telecom network — at least for voice and data. Despite the transformed physical network, cable maintains that it should not be subject to any of the open-access obligations that every other similarly situated local telecom broadband access provider must comply with.

WorldCom-Sprint, Bell Atlantic-GTE, Quest-USWest, the already-approved SBC-Ameritech, all incumbent local exchange carriers, all competitive local exchange carriers (wireline and wireless), and all long-distance carriers (including AT&T) are "public" networks legally required to be open to both facilities-based and resale competition. All are common carrier public network providers that, by law, have obligations to interconnect and wholesale their service, e.g., "forced access," in order **to maintain interconnectivity and universal service, and to promote competition and innovation.**

AT&T and the cable industry are seeking special government protection from standard resale competition that all of their competitors have accepted. The cable industry's position is

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bold: cable will agree to deploy broadband and compete on a facilities basis in the local phone market only if the government protects cable's core cable, ISP and long-distance businesses from "regulation," i.e., resale competition.

4) Don't Need a Closed Network to Deploy Broadband

Other than cable, open-access is a fact of life and investors implicitly factor "public" open-access obligations into their business models. It is clear that the market does not demand a closed network in order to justify broadband investment.

- The competitive local exchange carriers (CLECs), both wireline and wireless, have raised tens of billions of dollars in capital with "public" open-access obligations.
- WorldCom and Sprint independently have invested heavily in deployment of broadband wireless despite their "public" open-access obligations.
- SBC recently committed $6 billion to deploy broadband capability to 80% of its customers in three years despite its "public" open-access obligations.
- RCN is not having difficulty raising capital to overbuild both the telcos and the cable plant despite its "public" open-access obligations.

5) Market Forces Don't Necessarily Open Networks

It is naïve to believe that market forces alone will eventually open the cable network to competition. It does not square with past experience or market reality.

- The relative market advantage of being closed when all of your competitors are open is just too powerful to give up "voluntarily." Why is it not in cable's continuing self-interest to be able to sell to its competitors' customers while preventing its competitors from selling to cable's customers?
- When AT&T was a regulated monopoly not subject to market forces, AT&T fought hard to continue as a closed network, but the government broke up the company and opened AT&T's network to competition by mandating "public" open-access obligations, with resulting consumer benefits. Now that AT&T is no longer a regulated monopoly in voice telephony, AT&T still seeks a closed network and is opposing open-access just as strenuously as it did when it was not subject to market forces.
- If market forces alone open networks, why did Congress require that 15% of cable channels be available for "commercial use" (leased access) in 1984?
- If market forces alone open networks, why did AT&T–TCI deny Internet Ventures, Inc. (IVI) the ability to lease a channel under leased access to offer competitive Internet video programming? And why is IVI having to petition the FCC to gain access? (When will the FCC clarify this fundamental market-opening access issue?)
- If market forces alone open networks, why did Congress in the 1996 Telecom Act mandate interconnection and resale, and make state commissions the arbitrator of interconnection and resale negotiation disputes?

CONCLUSION: BROADBAND ACCESS IS THE BUNDLE PLATFORM OF THE FUTURE — IT NEEDS TO BE OPEN IN ORDER FOR COMPETITION TO FLOURISH

The future of communications is broadband. The success of robust broadband competition depends on required open-access to broadband access platforms (last-mile access facilities) — at least for an initial transition period, so that broadband competition can develop. A fully competitive broadband market depends on the combination of both facilities-based competition between broadband pipes and resale competition on all local broadband access pipes.

Other than requiring open competitive local broadband access to the customer, Internet and data networks should continue to develop free of intrusive regulatory intervention, assuming vigilant antitrust oversight and enforcement.

While many appear to hope that the handful of facilities-based broadband competitors is sufficient to create a competitive broadband market, they ignore the reality that there is very little switching or "competitive churn" in broadband access. One analyst recently quipped that the broadband churn rate is less than moving or death rates.

Unlike long-distance competition that only requires a phone call to switch carriers, switching broadband providers is much more difficult. One has to buy new, expensive equipment and have it professionally installed to reconfigure the system, which can take more than one visit to the home. The competitive reality is that once a provider signs up local broadband customers, they are very "sticky" customers, hence the current rush for "first-mover" advantage. In other words, customers are practically "locked in" to a local broadband access provider, because of the high cost and "hassle" associated with switching.

Once a customer effectively is locked into a local broadband access provider, if there is no resale of that underlying last-mile access platform, then there is no competitor that can keep that provider's broadband bundle truly competitive. Once cable locks in a local broadband access customer, then the prices can drift higher on the vertically "tied" services in their broadband bundle. Furthermore, no competitor can offer the customer a better deal with its alternative bundle, which resells the underlying cable local broadband access platform.

Without required open-access of local broadband access platforms in the increasingly complex market for broadband bundles, competitive forces won't develop sufficiently or rapidly enough to ensure that consumers are offered maximum choice and protection from anticompetitive pricing of broadband vertical services.

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January 6, 1999

AT&T-TCI: Long-Term -- Too Many Leaps of Faith?

Summary: Given the **FCC's expected approval of the AT&T-TCI merger in the coming months without deal-breaking conditions** and the high expectations TPG expects the merger's consummation to generate, **a lot will be riding on making the AT&T-TCI merger and AT&T's cable strategy work in practice.** This merger is the regulators' only real hope of broad-scale facilities-based *residential* phone competition. AT&T's purchase of TCI, talks with other cable companies, and vocal endorsement of cable technology have also been key in **driving the cable industry's long-term growth story as the perceived Internet infrastructure of choice.** TPG cautions that there remains **a big disconnect between the hype/expectations of this cable-telecom convergence story and the business execution reality.** Bottom line: After the positive developments of final regulatory approval and actual consummation of this merger in the coming months, TPG believes investors should turn **skeptical that the AT&T-TCI merged entity will work as advertised and that the cable infrastructure will live up to current high expectations.**

I. Low Credibility Quotient? **(A) 0-6 Convergence Record:** Past failed attempts at merging telecom and cable operations litter the sector's landscape: Bell Atlantic-TCI, USWest-Time Warner, USWest-Continental, SBC-Cox, Sprint-TCI/Cox/Comcast, and Bell Canada-Jones. Is this third time a charm for TCI? Or is it strike three? **(B) Hype?** Is this time different? AT&T projected 30% local share by 2001. AT&T projected a "historic" fixed wireless breakthrough with "Project Angel." AT&T projected great cross-selling synergies with DirecTV. TCI projected a 500-channel universe, and projected that digital set-top boxes, cable telephony, and cable modems would breakout each of the past four years. **(C) "Un-synergies?"** Most mergers offer predictable, quantifiable, near-term cost savings. This merger offers unpredictable, near-term cost increases for long-term savings.

II. Oil & Vinegar? AT&T and TCI are sufficiently incompatible operationally to require many executional leaps of faith. **(A) Conflicting Organizational Structures?** AT&T is a homogeneous, top-heavy, centralized bureaucracy. TCI operates as a lean and loose confederation of hundreds of diverse company systems and networks. **(B) Counter Cultures?** AT&T and TCI arguably represent opposite extremes of very different industries. Operationally, AT&T is a slow, traditional bureaucracy. TCI has a much leaner, faster, "cowboy" culture. **(C) Alien Work Forces?** Almost half of AT&T is unionized. TCI runs a lean non-union shop, which is much lower paid and has much thinner management. Will TCI become unionized? Can they work together seamlessly? **(D) Financial Goals Incongruous?** AT&T operates to grow earnings and pay dividends. TCI operates with heavy leverage to grow cash flow to avoid earnings and hence avoid taxes. **(E) "Anti-brands?"** AT&T is among the world's best brands; TCI is among the worst brands in an unpopular industry. Does upgrading TCI's image degrade AT&T's brand equity? **(F) Quality Disconnect?** AT&T has an excellent reputation for consistent quality. TCI does not. **(G) Different Core Competencies?** The engineering and operation of a cable broadcast network requires a very different core competency and skill set than a long-distance telecom network.

III. Testing "Murphy's Law?" (The proverbial Murphy warns that whatever can go wrong often goes wrong.) **(A) Technology's Not Ready for Prime Time:** AT&T still has to figure out how to deliver cable telephony *on a large scale* and still has to *economically* solve the interference, back-up power and network scalability problems to deliver a highly-reliable, high-quality, large-scale local phone service. *There remain many weak links in the chain of this core assumption.* **B) Regulatory Pandora's Box?** AT&T pleaded with the FCC for national rules for local phone competition because it was too complex to have to deal with rules from 50 different states. Cable's local franchise regulations require AT&T to deal with a thousand different local regulators! Moreover, AT&T-TCI's opposition to an open cable network architecture will come under protracted assault from multiple fronts in the months and years ahead: ISP unbundling, Internet leased access, digital must carry, navigation device unbundling, etc. TPG strongly believes cable's proprietary data model is an unsustainable regulatory position long-term. **(C) Business Model Complexity to the Fifth Power?** AT&T still has five different parallel business models for entering the local residential phone and data businesses. That there are still five, indicates no one model works broadly. Each of the five models is quite complex and difficult to execute by itself: TCI purchase; other cable company alliances; total resale of the telco plant; unbundled element platform resale (UNE-P); and "Project Angel" fixed wireless. The execution complexity of this aggregate local strategy is arguably off the scale. * * * * *

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November 30, 1998

What's Behind AT&T-TCI's Opposition to Open Cable Internet Access?

Summary: Regulatory review of the AT&T-TCI merger has spotlighted the "sumo-match" over whether or not cable should be allowed a data monopoly over its cable Internet gateway and connecting backbone. TPG believes **there may be a lot more going on strategically with this merger than initially meets the eye**, given AT&T-TCI's strangely vehement opposition to open network conditions to the merger, conditions which AT&T and the cable industry have long championed for the local telco plant. AT&T and TCI have emphatically stated that **unbundling conditions "would severely jeopardize the merger."** Given that @Home has only about 22,000 TCI cable modem customers to AT&T's roughly 70 million residential customers and @Home has about 0.0002% of the parents' combined revenues, **why is this nascent regulatory issue such a big deal? TPG offers four theories why.**

@Home Key to the Video Programming Vault? Many cable companies generally view themselves as video programmers first, with cable distribution as a means to that end. On one hand, the Internet could be a data growth opportunity; on the other, the Internet could threaten more programming competition and could undermine cable's control of the customer relationship. Unbundled Internet access by competitors creates the opportunity for many alternate video distribution paths via streaming video over websites that ultimately could cannibalize cable's core video programming revenues. (@Home limits data streaming video to no more than 10 minutes in duration.) **A big strategic question: Is Internet distribution to cable programming what cable distribution was to broadcast programming in the past?** In other words, is @Home's exclusive data gateway and backbone supply arrangement to the cable pipe a sophisticated data "lock" on cable's video programming vault?

Cross-Subsidy Necessary to Deal "Economics?" AT&T-TCI insist that **unbundling would undermine the "economics" of the merger and prevent a "competitive" return on its investment**. Interestingly, this is an indirect indictment of the viability of residential phone competition and the 1996 Telecom Act. In essence, if AT&T-TCI must be allowed a monopoly data business in order for it to be "economic" to compete in the local phone business, maybe the local residential phone market is a natural monopoly after all? MCI*WorldCom* in its merger comments to the FCC argues that under the FCC's existing cable cost allocation rules, cable basic tier regulated rate payers should not have to cross-subsidize cable's entry into data services. **Something eventually is going to have to give** – either the government's long-standing policy against cross-subsidies, or AT&T-TCI's exclusively bundled data business model.

@Home Financial "Linchpin" of Deal? **@Home may be much more of a financial fulcrum point in this deal than many appreciate.** While TCI has a minority stake in @Home, it enjoys management control. So far, TCI has significantly under-invested in upgrading its plant relative to its cable partners – in part waiting for AT&T to fund it. Part of the overall financial rationale for creating @Home in its current structure was to keep the capital investment in Internet backbone plant off TCI's books while also attracting capital to externally fund it. A regulatory merger condition to unbundle @Home, **arguably could precipitously lower the value of @Home** because its creators predicated @Home's business model on being the *exclusive* Internet Service Provider (ISP) and data backbone provider of their cable pipe. Moreover, according to a June 24, 1998 TCI press release, **Liberty will get $2.5 billion in *cash tax-free* by selling its stake in @Home** and two other properties prior to the deal closing.

Ultimately Another Divestiture? The "tracking stocks" set up by this merger could be a **precursor for yet another voluntary divestiture of AT&T -- like the spinoff of Lucent and NCR.** A divested, business-market-focused AT&T without the negative growth drag of the consumer division (which also faces the greater risk from eventual Bell entry into long-distance) arguably might look more like a MCI*WorldCom*. The Liberty Media tracking stock ostensibly is to "facilitate operational independence" from TCI and AT&T. While TPG views it as a *long shot*, competitors worry that the spinoff of Liberty Media from the cable/telco consumer operation conceivably could **mitigate its program access obligations** (i.e., selling its programming at non-discriminatory prices to EchoStar and Direct TV). This could partially explain AT&T-TCI's strong opposition to merger conditions but its willingness to entertain the prospect of a broader regulatory cable unbundling proceeding later. Thus **the balancing act for the merger** could be to navigate approval of the merger without conditions, while maintaining the attractiveness of the to-be-jettisoned consumer company until the divestiture could be completed. * * * * *

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September 22, 1998

Will the Cable Industry Have to Unbundle and Open Its Network?

Summary: **TPG expects the cable industry to eventually have to open its network and unbundle its high-speed transmission service from its Internet access service -- either voluntarily or by regulation.** TPG believes the current pillar investment assumption and **conventional wisdom that cable will not have to unbundle its network is probably "safe" in the short-term, but clearly is not "safe" in the long-term.** Investors need to understand this issue because it is: central to many business models; fundamental to how the residential high-speed service market will develop; and a key factor in who will win and lose in the marketplace.

Timing Could Not Be Less Clear: TPG spotlights this precursor issue **very early** because of its cross-cutting investment importance and to **help investors better understand the debate that will surely escalate in the months ahead**. While the debate has begun, no consensus has yet to form. AOL is asking regulators for access to the cable network. The FCC has entered the debate with a "Working Paper" entitled *Internet Over Cable: Defining the Future in Terms of the Past*, by Barbara Esbin, the FCC's Associate Cable Bureau Chief. Investors should be aware that there are several upcoming forums where this question could surface in a serious policy discussion or *possibly* a decision: the pending advanced services rule making (Section 706), the Internet Notice of Inquiry, the AT&T-TCI merger approval process, the remand of the Computer III decision, or in a separate rule making or petition.

Why So Important for Investors? This is **a "vortex" investment issue** because its ultimate resolution could have such a fundamental impact on the way that different industries' business models develop in the emerging "bandwidth" space. **For cable investors**, part of cable's growth story and valuation rests on expectations for data growth. The cable industry's data business model, in part, rests on the expectation of "double" data revenues from the high-speed pipe and from its Internet service provider offerings. As the FCC quoted @Home's CEO, "nobody wants to become a dumb pipe in this equation." **For both local telco and cable investors**, this issue determines if cable has a regulatory advantage over local telcos in providing data service to the residential market and whether there is an un-level competitive playing field for data services. **For investors interested in the AT&T-TCI merger**, this could be a linchpin issue for AT&T because TCI's strategic value in part rests on whether the cable pipe is proprietary or more *like* "common carrier" facilities. In other words, their main competitor would have to wholesale data facilities and AT&T-TCI would not. The threat of unbundling is apparently AT&T's primary concern in securing regulatory approval for their merger. **For investors in AOL, online providers, ISPs, Sprint, and others**, this is a key because it determines if they will have wholesale access to the high-end consumers who subscribe to cable's high-speed data service. **For equipment investors**, this issue may affect the equipment race between cable modems and DSL service.

The Regulatory Dilemma: To date, the law and regulators have classified different types of services differently: telecom services, cable services and enhanced services (Internet). Regulators now are understandably befuddled over how to approach an integrated combination of them over a cable "pipe." The **1996 Telecom Act is ambiguous** on the question. Another part of the dilemma is that **promoting deployment of bandwidth may conflict with other regulatory goals like providing nondiscriminatory access to networks.**

Primary Regulatory Questions: The "rub" for regulators is to decide if 1) consumers have full choice in choosing an Internet Service Provider or long-distance carrier; 2) cable facilities are "essential facilities" to which other market players need open and nondiscriminatory access; 3) there is "undue market power," which requires regulatory safeguards to mitigate; 4) competitors need interconnection-like protections; and 5) consumers should enjoy "e-mail address portability" like phone customers will have "number portability."

Best Arguments for Keeping Cable Network Proprietary: **(1)** The cable plant was **built with private risk capital**, and not rate-payers, so it shouldn't be regulated as a common carrier. **(2)** There is **no clear legal basis to require cable to unbundle** its network. At worst, amendments to the 1996 Telecom Act are ambiguous and probably lean in the direction of the cable industry's interpretation. Forcing unbundling could require new legislation. **(3)** Requiring unbundling would **make uneconomic the current investment necessary to upgrade the cable plant.** This in turn would **slow the roll-out of broadband service to consumers**, a stated goal of the Telecom Act (Section 706 and the preamble) and a high policy priority

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of the FCC. The cable industry is the only industry actually delivering high-speed service to over 300,000 American households. (4) A clear goal of the Telecom Act is to **keep the Internet free of federal and state regulation.** (5) The FCC recently has taken the view that high-speed data services is a **new market with no dominant players** possibly warranting de-regulation of the local telco. (6) The cable plant is the **only viable residential competitor to the local telco**, cable should be encouraged, not discouraged, to compete against the entrenched telecom monopoly. (7) **Few if any consumers have complained; regulators should let the marketplace work.**

Best Arguments for Opening the Cable Network: While the subject of whether the cable industry must unbundle is **legally ambiguous, it is not an ambiguous question from a policy perspective;** it's actually quite clear. If investors review how regulators and Congress have resolved similar and related regulatory dilemmas over the last 30 years, a powerful case emerges that the cable industry will eventually be compelled by regulators to open their network and unbundle their services if they do not do it voluntarily. (1) For over 30 years, there has been a **consensus around the fundamental regulatory principles of opening networks, ensuring non-discriminatory access, and safeguarding from anti-competitive behavior.** The 1992 Cable Act and the 1996 Telecom Act reenforced these key regulatory principles.

(2) In the past when confronted with legal ambiguity and how to classify a new hybrid service (is cable Internet service a cable, telecom, or Internet service?), the FCC has made decisions based on its underlying policy objectives. There is **substantial policy precedent** suggesting the FCC will eventually rule that the cable network should be opened. In the FCC's August 1998 Notice of Inquiry on high-speed services, the FCC asks, "Are there reasons to depart from our long-standing prohibition of bundling transmission services on one hand, with on the other, customer premises equipment and/or enhanced services?" (p. 82) Moreover, the FCC proposed in August to deregulate the Bells and GTE for data services, if the data service was provided through a separate affiliate and **competitors had full and nondiscriminatory access to the unbundled local loop.** Over the last couple of decades, the FCC's Computer I, II, and III decisions have all required the Unbundling of data service from telecom service. In the FCC's 1995 Frame Relay Order, the FCC directed AT&T and common carriers to unbundle frame relay (a packet-switching technology) "basic" telecom services from "enhanced" data services. **A long-standing and consistent FCC policy thrust has been opening network architectures.**

(3) Without an open cable network, a customer who wants high-speed cable service would have to buy cable's ISP service whether they wanted it or not. To get their preferred ISP or AOL, **consumers would have to pay twice.** (4) From a competitive standpoint, **none of the nation's other 4,000 ISPs or AOL (with 13 million customers) would have direct nondiscriminatory access** to compete for arguably the most profitable online customer segment. (5) In the 1992 Cable Act, Congress ignored the fact that the cable industry was built with private risk capital and mandated the following two onerous regulatory requirements calling for cable to share its assets with competitors. "Must carry" required cable to carry various local and public broadcast channels. "Program access" forced the cable industry to sell its programming to competitors at non-discriminatory prices and terms. The courts upheld both requirements.

(6) The 1996 Telecom Act is also full of analogous policy signals. (a) The **primary competitive thrust of the act is interconnection, unbundling, and non-discriminatory access** to the local phone network, rules which the FCC has also applied to data services. (b) In Section 304 of the 1996 Act, *"Competitive Availability of Navigation Devices,"* Congress **required the cable industry to unbundle its equipment** (including cable modems) from its cable service to **allow consumers the choice of equipment supplier.** (c) In the act's Open Video System provision, covering local telco entry into the cable business, **Congress required the incumbent, which has zero market share, to make available two-thirds of its video network capacity to competitors.** (d) Congress also continued rate regulation of the largest cable companies' basic tier until effective competition emerges, even though it will deregulate upper-tier programming rates in March 1999. (DBS competes with cable in video, but not for Internet service.)

(7) Two recent Justice Antitrust Division decisions provide insights into how the government currently approaches both the Internet and the cable "monopoly." DOJ required the MCI-WorldCom merger to divest itself of all of MCI's Internet assets to ensure that no carrier would have undue market power in this important emerging market. DOJ also blocked key cable operators' attempt to buy DBS competitor PrimeStar, ruling the combination would have undue market power.

(8) Ironically, the Justice Department broke up AT&T in 1984, because AT&T was not sufficiently opening up its network to competitors and was allegedly anti-competitively bundling local and long-distance service and equipment. Given that AT&T still has 70% of the American residential market share for long-distance, its plans to bundle their service with TCI's cable service will attract considerable regulatory attention.

(9) Lastly, **Canada already has required its cable operators to open their network and unbundle their services** and they are still deploying high-speed services.

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Scott C. Cleland / Patrick S. Brogan

June 23, 2000

Pyrrhic AT&T/Cable Victory: Court Rules Cable Broadband Common Carrier

I. Summary: TPG believes many investors do not realize that **AT&T and the cable industry won a pyrrhic victory** in the 9th Circuit Court of Appeals ruling prohibiting Portland from mandating open access for competing ISPs. **While AT&T won a clear-cut technical victory that localities do not have *regulatory jurisdiction,* it clearly lost on the much more investment relevant *definitional* question. The court defined cable broadband as a common carrier telecommunications service,** i.e., having the legal duty to provide nondiscriminatory access and to interconnect and be interoperable with competitive telecom carriers. Investors should be skeptical of the current "spin" surrounding this decision. The cable industry has been telling any regulator, politician or investor that would listen for the last 18 months, that its **biggest fear was being subject to any kind of common carrier regulation because it would kill its incentive to invest in upgrading the cable infrastructure.**

II. What Did the Court Do? In order to make its jurisdictional decision on whether localities have authority to regulate ISP access to cable broadband systems, the court felt compelled to define what @Home does. It ruled that @Home has two elements: an ISP service and a cable broadband transmission component that is a common carrier telecommunications service. Key court conclusions: **(A)** *"We hold that (the law) prohibits a franchising authority from regulating cable broadband Internet access, because the transmission of Internet service to subscribers over cable broadband facilities is a telecommunications service under the Communications Act. Therefore, Portland may not condition the transfer of the cable franchise . . ."* **(B)** *"Under the Communications Act, this principle of telecommunications common carriage governs cable broadband as it does other means of Internet transmission such as telephone services and DSL, 'regardless of facilities used.'"* **(C)** *"We note the FCC has broad authority to forbear from enforcing the telecommunications provisions if it determines that such action is unnecessary to prevent discrimination and protect consumers, and is consistent with the public interest."*

III. Investment Implications: **(A) Winners and Losers?** TPG views this decision as a **significant long-term negative for AT&T and the cable industry and a significant long term positive for CLECs, ISPs and video streamers. To test this assessment, investors should ask AT&T if it embraces this court's ruling that cable broadband is a common carrier telecom service or whether it disagrees with this court that cable broadband is an unregulated cable service. (B) New Cloud of Investment Uncertainty?** This decision creates new investment uncertainty over what regulatory regime actually prevails for cable broadband or what a common carrier telecom definition means practically when applied to cable broadband. **(C) "Voluntary" Openness Accelerated?** Practically, this decision could accelerate the timetable for cable's "voluntary" opening of its networks in hopes of heading off any future adverse regulatory intervention. **(D) Cable Acquisitions Overpriced?** TPG continues to suspect that AT&T overpaid for TCI and UMG and that cable is generally overvalued at $5000 per subscriber. Those valuations were reached under the assumption of a closed, and not an open, business model, and the assumption that cable was unregulated and not subject to common carrier regulation.

IV. Regulatory Outlook? A Whole New Can of Worms? The FCC is now on the "hot seat." This court decision increases the liklihood that the FCC will have to act on the fundamental question of whether cable broadband is a Title II telecom service or a Title VI cable service. **(A) A Bipolar National Broadband Policy?** In the process of eliminating the potential for fragmented local broadband policies, the court still has undermined the FCC's view that one consistent national broadband policy is the best way to foster broadband deployment. This court has effectively bifurcated the FCC's national policy by ruling that in the one-sixth of the country under the Ninth Circuit's jurisdiction, cable broadband is a telecom common carrier, while in the rest of the country it is unresolved (cable maintains it's a cable service). **(B) FCC Willing to Cede Jurisdiction?** If the FCC continues to duck its federal communications policymaking responsibility by merely "monitoring" this fundamental unresolved issue, the practical effect could be to cede its authority to other jurisdictions: to the courts under section 406 or to the states under section 251a. **(C) Hands-On to be Hands-Off?** In an ironic twist, for the FCC to maintain its "hands off the Internet" policy, it now will have to undertake a "hands on" regulatory proceeding if it wants to forbear from regulating cable broadband as a common carrier.

V. Outlook For FCC Regulatory Forbearance? **TPG believes it is unlikely the FCC will be able to forbear completely from common carrier regulation for cable broadband.** (A) It would be tough *legally* because under section 10, the FCC must determine that regulation is unnecessary (1) to prevent discrimination, (2) to protect consumers, and (3) because it is in the public interest. The Department of Justice recently determined in its proposed consent decree on the AT&T-MediaOne merger that cable broadband has market power and that AT&T could anticompetitively "exploit its gatekeeper position in the broadband content market." That finding would appear to make it difficult for the FCC to rule there is no risk here of discrimination or any need to protect consumers. (B) It also would be tough *politically* to forbear because all other broadband providers, including incumbent telcos, would want equal deregulation as part of a national broadband policy. Furthermore, the FCC would have to argue that disabled Americans who have a right to special telecom access should not have the same access to cable broadband. * * * * *

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Scott C. Cleland
June 19, 2000

AT&T-MediaOne/DOJ Consent Decree: Quietly Unwinding Cable Broadband Cartel?

Summary: A **highly underappreciated investment event is the Department of Justice's (DOJ) analysis of the competitiveness of the broadband content market** in the recent proposed consent decree for the AT&T-MediaOne merger. DOJ's analysis and its proposed final judgment are **loaded with a surprising number of significant investment implications for broadband investors.** A close read shows a much tougher and more far-reaching decision than the press release or the company "spin" indicated. (A consent decree is effectively a contract between companies and the government that, when ratified by a federal court, has the force of law.)

DOJ's Fundamental Conclusions: (1) The Anticompetitive Problem: (A) *"The predictions and assumptions required to conclude that the proposed merger would present serious anticompetitive problems in the future are very reasonable ones. Moreover, the risks to the development of the broadband industry posed by this merger are sufficiently grave that appropriate relief is warranted."* (B) AT&T-MediaOne has market power to *"lessen competition substantially in the aggregation, promotion, and distribution of broadband content."* (C) *"By exploiting its "gatekeeper" position in the broadband content market, AT&T could make it less profitable for unaffiliated or disfavored content providers to invest in the creation of attractive broadband content, and thereby reduce the quantity and quality of content available."* **(2) Market Assessment:** (A) Broadband is a separate market from the narrowband dial-up Internet access market. Narrowband links *"are not a good substitute"* for broadband users. (B) *"DSL still lags substantially behind cable modem service in market penetration and acceptance."* And fixed wireless and satellite are not likely to be a major factor in the immediate future. (C) *"Excite/@Home and Roadrunner together serve a significant majority of the nation's residential broadband Internet users."* **(3) Proposed Remedy:** (A) AT&T must divest MediaOne's interest in Roadrunner by 12-31-01, or sooner if practical. (B) The DOJ also wants *"to prevent any coordination or collusion between Roadrunner and Excite @Home during the limited period of time that AT&T"* owns both. (C) DOJ requires prior approval of any broadband agreement between AT&T and Time Warner for two years after the Roadrunner divestiture. (D) The DOJ and the Court would retain enforcement oversight powers for **10 years** to ensure AT&T does not anticompetitively exercise market power in the broadband content distribution market.

Investment Implications: **(1) Effective Decartelization of Cable Broadband Industry?** While the decree is specific to AT&T, the message for the rest of the cable industry is pretty clear. The **DOJ believes the broadband content distribution market is not fully competitive** and **fears the cable industry may be operating as a cartel** to snuff out potential broadband-content-distribution rivals, i.e., video streamers/Webcasters, before they can become video programming competitors. **(2) The Unwinding of the @Home and Roadrunner Alliances?** TPG expects the partners of @Home and Roadrunner to unwind their respective deals sooner than the contract terms. Now that the DOJ has determined cable broadband has market power, the structures themselves encourage anticompetitive collusion almost by design. (This partially explains AT&T's recent restructuring of the @Home partnership and the spate of "voluntary" offers by cable companies to provide "forced" access to competing ISPs when regulators are not requiring it.) **(3) Effective Limitation on the Cable Broadband Business Model?** Apparently, the DOJ opposes cable efforts to migrate the vertically leveraged business model that cable employed to dominate video-programming distribution into the next-generation market for broadband content distribution. This decree also puts other cable companies on notice to compete rather than collaborate in broadband content distribution. Thus, TPG sees this decree as a **negative for @Home, Roadrunner AT&T, Time Warner, and the rest of the cable industry** because it means more future video programming competition from Webcasters than conventional wisdom appreciates. **(4) Effectively a Video-Streaming/Webcasting Protection Decree?** DOJ has maintained enforcement oversight to ensure potential broadband content distribution competitors have the ability to compete against AT&T. Thus, the decree is a **positive for Yahoo-Broadcast.com, Disney-Go.com, Real Networks, Akamai-Intervu, Apple-Quicktime, Reel.com-HollywoodVideo, Microsoft Media Player, SnapNBC, Internet Ventures and AOL.** **(5) Asset divestitures?** To comply with the FCC's ownership limits, AT&T has to divest either Time Warner Entertainment (TWE) or Liberty/Rainbow. TPG believes the DOJ's Roadrunner divestiture, combined with the FCC's tacit preference for selling TWE, makes a **TWE spin-off most likely**. Moreover, the likely IRS tax hit from selling Liberty and the complexity of divesting all of AT&T's miscellaneous content holdings argue for divesting TWE as well. If so, **AT&T regulatorily overreached with the MediaOne purchase and ends up a cable system seller.** **(6) AT&T Telephony Deal with Time Warner?** While AT&T still may be able to work out some type of telephony deal with Time Warner, the DOJ consent decree appears to prohibit AT&T from pressuring Time Warner for a telephony deal by withholding broadband access from AOL. **(7) Effect on AOL-Time Warner Merger Review?** TPG believes the AT&T-MediaOne consent decree represents a **minimum set of requirements for AOL-Time Warner.** Given AOL's majority share of on-line subscribers, the Federal Trade Commission will likely insist on a long-term oversight decree with strong anticompetitive behavior safeguards. * * * * *

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Scott C. Cleland

May 25, 2000

Summary of Testimony Before U.S. House Commerce Committee on Broadband Deployment

Summary of written testimony of Scott C. Cleland, delivered May 25, 2000, before the U.S. House Commerce Subcommittee on Telecommunications, Trade, and Consumer Protection regarding the Deployment of Broadband Technologies.

[Note: This testimony significantly expands on TPG's Broadband Assessment, "The Developing Residential Broadband Gap," published February 8, 2000.]

For a copy of the full testimony, please contact TPG at (202) 778-1972.

I. Business Broadband Market Not a Problem, Residential Broadband Market Is

Capital-efficiency drives infrastructure deployment. Residences and small businesses are geographically dispersed and generate relatively low revenues, making deployment capital-inefficient.

II. Why a Residential Broadband Gap Matters

- Residential broadband infrastructure (i.e., consumer bandwidth) could very well emerge as the "Achilles' heel" of a video-enabled Internet, consumer e-commerce growth, and the New Economy.
- **With all the attention on clearing taxes and regulation from in front of the Internet "train," and keeping the "train fare" cheap, many are missing the obvious — that the Internet "train" hurtling forward on "Internet time" may abruptly run out of Internet "track" (i.e., consumer bandwidth).**
- If consumers don't have sufficient bandwidth, it doesn't matter how much video content supply there is, or how much consumer video content demand there is — it is not going to get delivered as consumers expect.

III. The Ten Developing Residential Broadband Gaps

1. **Supply & Demand:** While deployment is making real strides, relatively it lags substantially behind demand of video-oriented "dot-coms" and video streamers. Narrowband signups outpace broadband 8-1.
2. **Infrastructure Incentives:** The unintended consequence of the FCC's UNE-P resale strategy has been to **effectively devalue all infrastructure investment** by incumbents and competitors alike, whether it is fiber, cable, or fixed wireless. Why overbuild if one can lease it more cheaply than one can build it?
3. **Revenue Efficiency:** Broadband physically consumes 20–100 times the scarce spectrum or bandwidth that narrowband voice or data currently consumes. Are consumers going to pay 20–100 times more? No.
4. **Depreciation:** Infrastructure replacement cycles for many fiber and wireless deployments are ominously outpacing their depreciation cycles, meaning investors may not recoup their initial investments.
5. **Competition: In the next three-to-four years, we project that up to 20% of the country may have a choice of three-to-four different broadband facilities, roughly 30% of the country may have the choice of two facilities, and one-half of the country may have only one or no broadband facility choice. We believe this projection is optimistic, given experience to date.**
6. **Competitive Churn:** There is negligible aftermarket competition or "churn" between broadband facilities because of the high cost and time hassle of switching. One analyst quipped that broadband churn is less than moving or death rates!
7. **Consumer Choice:** There is a stark gap between the consumer choice of ISP available on the open telco/fixed wireless broadband platform versus the closed cable broadband platform.
8. **Technology:** There is a wide gap in the business model viability of broadband technologies: cable, DSL, overbuilds, fixed wireless, and satellite. Cable and DSL are the only viable mass-market models.
9. **Personal Computer:** The current installed base of U.S. home computers is nowhere near broadband "plug and play," as the current narrowband dial-up market is. Practically, it's still a few years away.
10. **Inside Wiring:** Once one gets into the home, home networking is a veritable hornet's nest of issues. There are no home broadband standards, and there are major interoperability problems between technologies.

IV. Conclusion: All Is Not Well in the Residential Broadband Market

There are substantial economic, competitive, and technological impediments that appear to be creating an increasing gap between residential broadband deployment expectations and reality. * * * * *

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Scott C. Cleland

April 25, 2000

Cable Open Access: Two Big "Open" Questions

Summary: **Investors need to reassess carefully the cable industry's forward-looking business model now that the industry has apparently reversed course from a closed-access, "first-screen" leverage business model to at least the pledge of eventual open access and open broadband network.** For well over a year, the cable industry has been convincing investors and regulators of the investment perils of an open model. Cable argued that cable open access was not financially viable, was not technically possible or feasible, undermined any incentive for cable to invest in broadband, would allow competitors to "free-load" off cable's investment, and would create a "dumb pipe" that cable companies would not want. Now, most of the cable industry — AT&T, Time Warner, Cox, Comcast, Charter, Adelphia — apparently support some kind of an "open" broadband cable network *sometime* in the future. **What is the impetus for reversing direction now?** Was cable incorrect in its previous assessment of an open cable network or is there new information or developments that fundamentally change the industry's previous assessment? Or, are the open access pledges a public relations ploy to mollify regulators? TPG identifies two big "open" questions for cable and related broadband investors: (1) what is the new "open" business model that justifies a $4,000 to $5,000 per cable subscriber valuation? and more specifically, (2) what is the "market-negotiated" wholesale access fee for use of a 6 MHz cable channel, a key assumption in an open business model?

What's Cable's New "Open" Business Model? TPG has long argued that cable's closed network model was unsustainable *and* that it was one of the most important investment issues for cable's emerging broadband business model. Cable's original closed broadband model was so appealing because cable appeared to have many of the characteristics of a high-growth monopoly, like Intel or Microsoft – i.e., a dominant share of a fast-growing necessary convergence building block – broadband access. The contrast between a closed and an open business model is substantial. **(A) The favorable aspects of a closed cable model are:** (1) allows a high-margin retail price; (2) generates "premium fees" from e-commerce "partners" given exclusive positioning on cable's "first screen"; (3) saves network design, construction and operating costs because a proprietary network is simpler and easier; (4) lowers customer acquisition and retention costs by excluding competitive ISP resale; and, (5) protects core video programming revenue base from eventual competition from video streaming. **(B) The unfavorable aspects of an open business model are:** (1) creates a lower-margin wholesale price; (2) generates no first-screen financial leverage; (3) increases network design, construction and operating costs substantially to support competitive resellers – ISPs; (4) increases customer acquisition and retention costs substantially by creating a competitive resale ISP market; and (5) creates the potential for increased video programming competition to cable's base from video streamers. **In a nutshell, the difference between the closed and open network business models is competition and price; in other words, to the extent the network is "open," it yields lower margins and higher costs than a closed network.** An open wholesale model, however, is likely to generate more revenues than a retail model, albeit less profitably.

What's the Price for Wholesale Cable Broadband Access? **TPG believes anticipating the likely wholesale price for all or part of a 6 MHz cable channel will be key to valuing cable's "open" business model.** With the caveat that such an estimate requires many large assumptions, TPG *attempts* to offer some very rough proxy estimates to help investors *start* to get a handle on the potential wholesale access price. (1) **Cable now receives roughly a $19 access fee per broadband subscriber for the use of a 6 MHz channel.** (Using the $40 @Home monthly bill as a proxy, 35%, roughly $14, goes to @Home for the ISP, the backbone and the content: 65%, roughly $26, goes back to the cable company, of which $19 is for the 6MHz channel and about $7 is for the cable modem.) (2) In an "open" competitive environment, cable spectrum is spectrum, whether it is used for basic TV, premium pay TV, or data. (While data are different from TV in being two-way, competitive ISPs may only need one-way downstream broadband spectrum just like a TV channel if they supply their own return path signal through the telco or wireless.) (3) The FCC calculates that the average implicit fee cable gets for a channel is $0.30-$0.50 per basic TV channel subscriber and $0.80-$1.20 per premium pay TV channel subscriber. **Thus $0.30-$1.20 is the *average* wholesale price "the market" puts on 6MHz of cable spectrum per subscriber.** (4) A core pricing assumption is whether or not a cable company allows the use of its data channels to be optimized through segmenting or partitioning – i.e., sending different signals down the same channel to different parts of the system. Cable could extract a higher wholesale price, if it engineers its system to prevent spectrum partitioning, because then one would have to multiply the $19 per subscriber fee by the percent of data penetration to reach a comparable average per subscriber fee. (5) Another core assumption is whether a competitive ISP shares *only part of a channel*; then the access fee would be some *fraction* of the average channel fee. (6) **So, depending on one's assumptions, it appears that cable's current "exclusive" $19 data wholesale access fee is roughly a few hundred to as much as a few thousand percent higher per subscriber MHz than cable gets for selling its spectrum in the "competitive" video programming marketplace.** If cable continues to be the dominant residential broadband access technology, and if cable can restrict the supply of spectrum available for residential broadband data use, **it appears cable could continue to enjoy a substantially above-market price for its broadband data spectrum.** * * * * *

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Scott C. Cleland

April 25, 2000

Cable Open Access: Two Big "Open" Questions

Summary: **Investors need to reassess carefully the cable industry's forward-looking business model now that the industry has apparently reversed course from a closed-access, "first-screen" leverage business model to at least the pledge of eventual open access and open broadband network.** For well over a year, the cable industry has been convincing investors and regulators of the investment perils of an open model. Cable argued that cable open access was not financially viable, was not technically possible or feasible, undermined any incentive for cable to invest in broadband, would allow competitors to "free-load" off cable's investment, and would create a "dumb pipe" that cable companies would not want. Now, most of the cable industry — AT&T, Time Warner, Cox, Comcast, Charter, Adelphia — apparently support some kind of an "open" broadband cable network *sometime* in the future. **What is the impetus for reversing direction now?** Was cable incorrect in its previous assessment of an open cable network or is there new information or developments that fundamentally change the industry's previous assessment? Or, are the open access pledges a public relations ploy to mollify regulators? TPG identifies two big "open" questions for cable and related broadband investors: (1) what is the new "open" business model that justifies a $4,000 to $5,000 per cable subscriber valuation? and more specifically, (2) what is the "market-negotiated" wholesale access fee for use of a 6 MHz cable channel, a key assumption in an open business model?

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Scott C. Cleland

February 22, 2000

Webcasting: Can the Internet Grow Up to Video?

Summary: While most expect that the Internet will naturally evolve to provide mass market video, TPG believes that evolution will prove more problematic than expected because there are more serious impediments than most appreciate. There are significant legal, regulatory, and business model impediments to this evolution, in addition to *"The Developing Residential Broadband Gap"* impediment that TPG flagged in our 2-8-00 research piece.

The Internet Clearly Wants to Grow Up to Video: Ponder the slew of Internet or streaming video-related activity: AOL-Time Warner, Yahoo-Broadcast.com, Real Networks, Akamai-Intervu, Apple-Quicktime, Disney-Go.com, Reel.com-HollywoodVideo, Microsoft/MediaPlayer, Snap-NBC, etc. They are clearly anticipating the dawn of the video-enabled Internet. And consumers clearly want more choice and control over what and when they watch. Consumers have proven they like "time-shifting" and being their own personal programmers: e.g., VCRs, video rentals, pay-per-view, and DBS multiplexing.

Big Impediments Blocking Internet's Evolution to Video: The beginning of this evolution has already prompted notable clashes in *all three* branches of the U.S. government. *A federal court* has placed a temporary injunction on iCraveTV, blocking it from distributing U.S. video programming over the Internet. *Congress* is wrestling with whether Internet providers are due a compulsory license for video programming like cable and DBS currently enjoy. The issue surfaced last fall in a nasty 11th-hour skirmish during final passage of the Satellite Home Viewer Act and resurfaced recently in congressional hearing. And, as expected, the *FCC* recently denied a petition by Internet Ventures to offer video programming competition over the Internet using the 1984 leased access provisions.

Legal Impediments: The near hysteria that content owners like Time Warner and the NFL have had over iCraveTV's pointing a crude Internetcam at a TV set underscores how frightened big copyright owners are that Internet distribution undercuts the value of their content by facilitating illegal copying and piracy. The vehemence of copyright owners' reaction is telling. This skirmish may be just the *tip of an iceberg*; the big copyright owners are terrified that they may be the *"Titanic"* that could sink if the Internet blows a hole in their control over how their product is distributed and paid for. TPG expects the resolution of this copyright equity issue to be difficult and protracted. It is the proverbial clash of the *irresistible force* of consumers' freedom of choice over how and what they watch — meeting the *immovable object* of the very powerful copyright and sports lobbies in Washington. **Eventually, this has to get resolved either through negotiations or legislation.**

Regulatory Impediment: Current FCC cable broadband policy effectively protects cable from any Internet video competition (i.e., mandated interconnection, resale or leased access) in order to encourage cable broadband investment and encourage cable telephony competition to the local telcos. Under the claim of "not regulating the Internet," the FCC effectively has a de facto cable industrial policy choosing cable as the winner over other telecom broadband technologies like DSL and fixed wireless. The FCC has not "exempted" DSL or fixed wireless from common carrier obligations of interconnection, resale and interoperability, as they de facto have with cable to date. Ironically, cable, which has 84% share of the residential broadband market, has little intention of letting the Internet grow up to video and compete against cable's $30 billion revenue base. Cable orchestrated the ban on more than 10 minutes of streaming video and created @Home and Roadrunner as sophisticated "moats" to guard cable's $30 billion video distribution "castle" against competition. **As long as the FCC's primary goal is status quo, to promote cable deployment and not competition to cable, the Internet's evolution to video won't meet expectations. (Important caveat:** The FCC's recent denial of Internet Ventures' (IVI) petition to use leased access was very narrowly drawn. The FCC only decided that an ISP that did more than offer video programming, like email, was not technically considered video programming under leased access law. **However, the FCC decision also suggested that a pure video programmer using Internet technology (read pure video streamers) "would not automatically run afoul of the threshold issue necessitating denial of the IVI's petition." The FCC left open the door for pure video streamers to request leased access to a 6 MHz channel to offer an alternative competing package of Internet compressed cable channels. Investors should expect to see another petition from a pure video streamer relatively soon.)**

Incumbent Impediments: Another powerful impediment to the Internet's evolution to video is the threat to old media's existing business models. New entrants, who are enabled by Internet technology and more efficient Internet-distribution-based business models, threaten to destabilize existing markets and snatch market share. However, these old media players are among the most politically powerful and legally astute industries. They are not going to give up video share to new Internet upstarts before exhausting every legal, legislative, political, regulatory, and acquisition protective maneuver imaginable. **Interestingly, AOL-Time Warner could be the best positioned in this Internet-video-stalemate because they likely benefit most from the legal and regulatory status quo.** Arguably they now need regulatory or legal change less than any other player, because AOL-Time Warner would own over half of the Internet audience and one of the biggest chunks of the best available copyrighted content — potentially giving them massive "first mover advantage". * * * *

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January 24, 2000

Preview of Portland Open Access Appeal Decision – A Landmark Case?

Summary: **Cable and broadband investors need to remain alert** to the pending Ninth Circuit Court of Appeals decision of the Portland vs. AT&T decision, which ruled that localities have the regulatory authority to require cable operators to open their cable plant to competing Internet service providers (ISP). A decision could happen **any week now**, given that the court granted an expedited appeal and it has been nearly three months since the oral argument. TPG **previews the likelihood and implications of the various possible decision scenarios** to help investors prepare for probably the most important pending court decision to the future of cable broadband communications. Since the FCC has not made any *legally binding* decisions on cable access, we believe it seems the FCC effectively has abdicated leadership to this court to **set the regulatory trajectory for any cable broadband regulation going forward**. Consequently, this Ninth Circuit **court decision could be more of a surprise and more of an inflection point than many appreciate.**

Analyzing the Decision Tree of Possible Outcomes: The "decision tree" of the court is likely to be as follows: the court must first address the regulatory definition of the underlying cable broadband service. Is it (1) a "cable service" as the lower court, Portland and AT&T all argue or (2) a "telecom service" as the FCC suggested in its friend-of-the-court brief, and as two of the three judges apparently suggested in their repeated questions at the November 1 oral argument? If it is a "cable service," the court then has to decide if (A) localities have the authority to require open access or (B) they do not. If the court decides the underlying service is a "telecom service," the court may then decide which jurisdictions have regulatory authority. TPG analyzes the various scenarios below.

45%: Ruled "cable service" + court upholds local authority. Prior to the oral argument, TPG considered this the most likely outcome, because neither the lower court, Portland nor AT&T contested the regulatory definition. If Portland is upheld, that would trigger roughly a dozen more cities to automatically mandate open access, roughly doubling the current number. If Portland's authority is upheld, that would be **a positive development for ISPs seeking access to cable customers; a negative for @Home, AT&T, Time Warner, and the rest of the cable industry; and a neutral for AOL,** which precariously straddles this issue with its pending merger with Time Warner.

25%: Ruled "cable service" + court overturns local authority. In this scenario, **AT&T, @Home, and the rest of the cable industry would be very big winners,** because they would shut down the grass roots political forum in which open access has the most momentum. This scenario would be a **major setback for ISPs,** especially smaller ISPs, because they will not have enough "market force" to gain cable access by themselves. Once again, it would be a **neutral for AOL's straddle position**. Caveat: AT&T could also win if the court "threads the needle" by ruling that cable broadband is an unregulated "telecom *facility*" used to provide an unregulated "information service" (as opposed to a regulated "telecom *service*"), used in the provision of @Home's unregulated Internet service.

30%: Ruled "telecom service" or sent back to FCC to decide? Since the surprise focus at the oral argument was about whether the underlying service is actually a "telecom service," this is the **major variable scenario** with potentially more **profound investment implications** than most appreciate, in our opinion. The court could either rule cable broadband is a "telecom service" itself or it could order either the FCC or the lower court to decide conclusively if it is a "telecom service" or not. Given that this court agreed to an expedited appeal this could suggest that this court will decide it itself. If the court rules cable broadband, a "telecom service," **AT&T would win the battle against local regulatory authorities while likely losing the war of open access.** This scenario would be a **very big positive for ISPs** seeking access to cable customers because common carrier law and regulatory/legal precedents strongly support mandatory open access, interconnection, and interoperability. **It would be a very big negative for @Home, AT&T, Time Warner, and the rest of the cable industry.** Cable's worst regulatory nightmare has been the possibility of common carrier regulation because it would eviscerate their broadband business model, which rests upon being able to exclusively leverage products and content vertically in an end-to-end closed network system. This scenario could be **negative for AOL** if the market valued cable (and Time Warner) differently as a potential broadband *common carrier.*

Broad Ramifications if Court Rules it a "telecom service": **(1) Action-forcing event?** The FCC would have a new legal mandate to enforce and/or new process deadlines to meet. **(2) Flip the legal burden of proof?** Currently the ISPs have the legal burden to prove they warrant open access. If ruled a "telecom service," cable would have the legal burden to prove why they should be exempt from standard "common carrier" obligations of access, interconnection, resale, and interoperability. **(3) State regulators back in game?** Competitive telecom carriers that would want to serve ISPs could file for mandatory interconnection to cable and, under the law, state regulators would arbitrate differences over the terms. Even though the FCC has ruled advanced services to be solely under federal authority, it has kept the states involved in implementation. **(4) Common Carrier Bureau oversight?** Broadband regulatory oversight could shift from the currently cable-hospitable Cable Bureau to the Common Carrier Bureau, which has proven to be zealously pro-competition and pro-open networks. **(5) More open interoperability standards process?** Common carriers have much greater legal obligations and a more rigorous standards process than cable to make their equipment and protocols interoperable with potential out-of-industry competitors. * * * *

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Preview of Portland Open Access Appeal Decision – A Landmark Case?

Summary: **Cable and broadband investors need to remain alert** to the pending Ninth Circuit Court of Appeals decision of the Portland vs. AT&T decision, which ruled that localities have the regulatory authority to require cable operators to open their cable plant to competing Internet service providers (ISP). A decision could happen **any week now**, given that the court granted an expedited appeal and it has been nearly three months since the oral argument. TPG **previews the likelihood and implications of the various possible decision scenarios** to help investors prepare for probably the most important pending court decision to the future of cable broadband communications. Since the FCC has not made any *legally binding* decisions on cable access, we believe it seems the FCC effectively has abdicated leadership to this court to **set the regulatory trajectory for any cable broadband regulation going forward**. Consequently, this Ninth Circuit **court decision could be more of a surprise and more of an inflection point than many appreciate.**

Analyzing the Decision Tree of Possible Outcomes: The "decision tree" of the court is likely to be as follows: the court must first address the regulatory definition of the underlying cable broadband service. Is it (1) a "cable service" as the lower court, Portland and AT&T all argue or (2) a "telecom service" as the FCC suggested in its friend-of-the-court brief, and as two of the three judges apparently suggested in their repeated questions at the November 1 oral argument? If it is a "cable service," the court then has to decide if (A) localities have the authority to require open access or (B) they do not. If the court decides the underlying service is a "telecom service," the court may then decide which jurisdictions have regulatory authority. TPG analyzes the various scenarios below.

45%: Ruled "cable service" + court upholds local authority. Prior to the oral argument, TPG considered this the most likely outcome, because neither the lower court, Portland nor AT&T contested the regulatory definition. If Portland is upheld, that would trigger roughly a dozen more cities to automatically mandate open access, roughly doubling the current number. If Portland's authority is upheld, that would be **a positive development for ISPs seeking access to cable customers; a negative for @Home, AT&T, Time Warner, and the rest of the cable industry; and a neutral for AOL,** which precariously straddles this issue with its pending merger with Time Warner.

25%: Ruled "cable service" + court overturns local authority. In this scenario, **AT&T, @Home, and the rest of the cable industry would be very big winners,** because they would shut down the grass roots political forum in which open access has the most momentum. This scenario would be a **major setback for ISPs,** especially smaller ISPs, because they will not have enough "market force" to gain cable access by themselves. Once again, it would be a **neutral for AOL's straddle position.** Caveat: AT&T could also win if the court "threads the needle" by ruling that cable broadband is an unregulated "telecom *facility*" used to provide an unregulated "information service" (as opposed to a regulated "telecom *service*"), used in the provision of @Home's unregulated Internet service.

30%: Ruled "telecom service" or sent back to FCC to decide? Since the surprise focus at the oral argument was about whether the underlying service is actually a "telecom service," this is the **major variable scenario** with potentially more **profound investment implications** than most appreciate, in our opinion. The court could either rule cable broadband is a "telecom service" itself or it could order either the FCC or the lower court to decide conclusively if it is a "telecom service" or not. Given that this court agreed to an expedited appeal this could suggest that this court will decide it itself. If the court rules cable broadband, a "telecom service," **AT&T would win the battle against local regulatory authorities while likely losing the war of open access.** This scenario would be a **very big positive for ISPs** seeking access to cable customers because common carrier law and regulatory/legal precedents strongly support mandatory open access, interconnection, and interoperability. **It would be a very big negative for @Home, AT&T, Time Warner, and the rest of the cable industry.** Cable's worst regulatory nightmare has been the possibility of common carrier regulation because it would eviscerate their broadband business model, which rests upon being able to exclusively leverage products and content vertically in an end-to-end closed network system. This scenario could be **negative for AOL** if the market valued cable (and Time Warner) differently as a potential broadband *common carrier*.

Broad Ramifications if Court Rules it a "telecom service": **(1) Action-forcing event?** The FCC would have a new legal mandate to enforce and/or new process deadlines to meet. **(2) Flip the legal burden of proof?** Currently the ISPs have the legal burden to prove they warrant open access. If ruled a "telecom service," cable would have the legal burden to prove why they should be exempt from standard "common carrier" obligations of access, interconnection, resale, and interoperability. **(3) State regulators back in game?** Competitive telecom carriers that would want to serve ISPs could file for mandatory interconnection to cable and, under the law, state regulators would arbitrate differences over the terms. Even though the FCC has ruled advanced services to be solely under federal authority, it has kept the states involved in implementation. **(4) Common Carrier Bureau oversight?** Broadband regulatory oversight could shift from the currently cable-hospitable Cable Bureau to the Common Carrier Bureau, which has proven to be zealously pro-competition and pro-open networks. **(5) More open interoperability standards process?** Common carriers have much greater legal obligations and a more rigorous standards process than cable to make their equipment and protocols interoperable with potential out-of-industry competitors. * * * *

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Scott C. Cleland

January 21, 2000

Investment Ripple Effects of AOL-Time Warner Merger

Summary: A merger like AOL-Time Warner can cause major investment ripple effects. **TPG believes the AOL-Time Warner deal may crimp or delay AT&T's national ambitions to be the cable industry's broadband network provider, and may make it harder for AT&T to retain an ownership interest in Time Warner when closing the MediaOne merger. The AOL-TimeWarner merger also may create a major fork in the road for cable broadband competition and the open access issue.**

Implications for AT&T-MediaOne and Cable Industry? **(1) Limits/delays AT&T's national broadband reach?** Many may not appreciate that this merger has the possibility of crimping AT&T's *national* ambitions to *quickly* become the cable industry's *end-to-end* broadband network provider. AOL brings to Time Warner a proven and long-standing backbone network relationship with MCIWorldCom (AOL is UUNet's largest customer). TPG suggests that the addition of AOL to this "mix" could complicate and further delay Time Warner's completion of a highly strategic, long-term broadband deal with AT&T. While a broadband telephony deal has been "ripe" from AT&T's perspective for almost a year, it looks as if it may not "ripen" for Time Warner anytime soon. AT&T has a much earlier time deadline in closing MediaOne than does Time Warner with AOL. And Time Warner probably does not want to commit AOL to any fundamental long-term strategic broadband arrangements prior to the merger's closing. **(2) Complicates closing of AT&T-MediaOne with all assets intact?** While TPG expects the government to approve the AT&T-MediaOne merger, TPG now suspects **AT&T may not be able to retain MediaOne's 25% ownership stake in Time Warner Entertainment** (TWE). AT&T still hopes to successfully exploit a narrow FCC ownership loophole that would allow it to exceed the FCC's 30% national cable ownership limit and keep a "broadband" ownership interest in #2 Time Warner, if it can completely insulate AT&T's interest in Time Warner's programming. However, TPG believes the **AOL-Time Warner deal may alter the prior assumed "broadband" equation significantly more than most appreciate.** The AT&T-MediaOne merger would give AT&T substantial ownership influence over the only two national cable Internet access providers: @Home and Road Runner. Time Warner's Road Runner gains a golden opportunity to convert *AOL's majority market share* of narrowed Internet access to broadband. TPG suspects the government would prefer that AT&T and Time Warner develop into national broadband competitors, rather than merging de facto through cross-ownership and reciprocal arrangements trading AOL Internet access to AT&T plant for AT&T telephony on Time Warner plant. Moreover, prior to the AOL-Time Warner merger, AT&T-Time Warner broadband negotiations did not potentially involve AOL's half of the Internet access market and AOL's alliance with the other half of the long-distance industry (MCIWorldCom/(Sprint?)). That is a significant new competitive development for the AT&T-MediaOne merger. In short, **the AOL-Time Warner merger may complicate the AT&T-MediaOne closing more than the companies are acknowledging.**

A Fork in the Road: Open or Oligopoly Access? A big question everyone is asking is what this AOL-Time Warner deal means for open access. (1) If AT&T and AOL-Time Warner increasingly evolve into competitors and not broadband collaborators, "market forces" in this scenario should produce relatively more open cable networks over time. As competitors, both AT&T and AOL-Time Warner would have to depend relatively much more on alternative broadband facilities outside their respective regions (DSL and fixed wireless access) than expected, to fulfill their national reach ambitions. (2) However, if AT&T and AOL-Time Warner choose to be cross-owned collaborators reciprocally trading AOL Internet access to AT&T for AT&T telephony access to Time Warner (as many investors think), "market forces" would likely yield less open access and more favorable access terms to cable. In this cable-favorable scenario, the cable industry could contain the potential competitive damage of open access by providing "consumer choice" among jointly owned cable-brands of ISPs — in other words, **safe <u>"oligopoly access"</u> competition among "friends" in the cable "club."** This scenario is how cable plans to "thread the needle," allowing consumers "a choice" of ISPs while preventing regulation and avoiding much access competition. (3) **These divergent scenarios mark a fork in the road that investors need to watch.** We have seen this type of situation at least twice before — yielding different outcomes. In the 1980s, the cable industry successfully collaborated and prevented pay programming services (HBO, Showtime, etc.) from being a competitive threat to core cable programming by ensuring that the major cable operators jointly owned these pay services — access for ownership. That way all of cable benefited. In 1997, however, cable tried to hedge the effects of DBS competition by trying to cross-own one of its DBS competitors — PrimeStar. That time, the Justice Department disallowed the cross-ownership as anticompetitive. **Investors should watch the AOL-Time Warner and AT&T relationship very closely to see which way these powerful "market forces" attempt to drive the marketplace. We believe that will be a <u>key precursor to how competitive the world of convergence will be and how "open" cable open access turns out to be.</u>**

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January 7, 2000

Investment Implications of FCC's Policy Shift on Cable Open Access

Summary: In the holiday rush last month, many investors may have missed a couple of **very significant developments in the federal government's policy toward cable open access.** While the federal government remains very reluctant to regulate cable open access proactively *at this time*, what is new as of **December is a clear official indication from the government that it expects cable eventually to open its currently closed network model.** The take-away for investors is that the **endgame of cable open access has become much clearer,** even if the transition path to get there remains as cloudy as ever. Moreover, while the government and cable agree that a "market forces" solution is better than a regulatory solution, the **government and cable profoundly disagree on what network architecture best serves consumers** —government supports open networks, while cable supports a proprietary closed network. **What this means practically for investors** is that some of the much-talked-about "market forces" will be regulators pressuring cable behind-the-scenes to negotiate open access under the not-so-subtle threat that regulators will compel open access eventually, if cable does not cooperate with "market forces." Investors should not be surprised to see additional "government-encouraged" or "market forces" talks/agreements comparable to the December AT&T-MindSpring open access "agreement in principle." The government-cable disagreement over network architecture remains very *investment-relevant* because **cable's current broadband business model numbers probably don't work in the expected timeframe without closed network assumptions.** The investment unknown is if and when cable adjusts investor expectations to reflect the government's desired open network endgame.

Two Very Significant Developments in Government Policy: (1) In December, the **Clinton/Gore Administration ended its long silence and endorsed the principle of cable open access** in its annual e-commerce report: The administration *"supports the principle that consumers should have choice in both their content and their Internet Access Provider."* (2) FCC Chairman Kennard, in a December 16 speech before the cable industry, very pointedly warned cable that it faced a "Boston Tea Party"-type consumer revolt if it did not proactively agree to provide more open access to their facilities. **After months of the FCC's saying it did not even know what "cable open access" was, FCC Chairman Kennard has now defined it quite specifically for the first time:** *"...everyone better understand what openness means for the consumer. And how the marketplace must deliver it. ...By open protocols, I mean that the interface standards that applications developers and equipment designers use are arrived at in an open transparent process, and then made accessible to everyone just like the IP protocol. By open boundaries, I mean that interconnection is encouraged, and bottlenecks and content control are eliminated. The borders are porous, not closed or walled off, and outside programming and services are allowed to enter the network and interact freely with consumers. By open prices, I mean that prices for access to the network are determined by a competitive market, not unilaterally by a rate setter, whether public or private. And the customer can reach the service provider of their choice without having to pay twice."* Investors should note that this is: **(1) a very significant new policy shift from the FCC and (2) very different from the cable industry's closed-network position.**

The Different Investment Dimensions of Open Access: **(1) Top-Down Investment Dimension:** To date, the market has focused almost exclusively on just the macro investment question: does the government regulate open access or not? This question has dominated the debate for several reasons. (A) "Regulation" and the threat of it affect the industry's perceived growth rate and, hence, the "psychology" of cable's stock valuation. (B) The regulatory outlook affects cable's range of financing options, effectively raising cable's cost of capital. This is very significant, given the capital-intensive nature of transforming cable plant into broadband. (C) And the cable industry has framed its opposition to regulation in investment terms — that open access regulation would drastically reduce their financial incentive for rapidly deploying broadband cable modems. **(2) Bottom-Up Investment Dimension.** However, now that the government officially has indicated its desire for an open cable network in the end, the **market needs to tune into the question that matters most to cable's bottom-up business fundamentals:** will the cable network be open or closed? An open network, in our view would mean: (A) a **new pricing trend** from high-margin retail prices to lower-margin wholesale prices; (B) a weakening of cable's bundling leverage and its ability to cross-subsidize **increasing customer acquisition and retention costs;** (C) a **lessening of cable's control of the customer relationship** threatening customer loss in the base that most assume is safe from competition; (D) increased competition in the core video programming business from streaming video; and (E) an **undermining of cable's ability to negotiate a premium fee for exclusive e-commerce relationships.** * * * * *

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AT&T-TCI: Long-Term -- Too Ma

Summary: Given the **FCC's expected approval of the AT&T-TCI merger in the coming months without deal-breaking conditions** and the high expectations TPG expects the merger's consummation to generate, **a lot will be riding on making the AT&T-TCI merger and AT&T's cable strategy work in practice.** This merger is the regulators' only real hope of broad-scale facilities-based *residential* phone competition. AT&T's purchase of TCI, talks with other cable companies, and vocal endorsement of cable technology have also been key in **driving the cable industry's long-term growth story as the perceived Internet infrastructure of choice.** TPG cautions that there remains **a big disconnect between the hype/expectations of this cable-telecom convergence story and the business execution reality.** Bottom line: After the positive developments of final regulatory approval and actual consummation of this merger in the coming months, TPG believes investors should turn **skeptical that the AT&T-TCI merged entity will work as advertised and that the cable infrastructure will live up to current high expectations.**

I. Low Credibility Quotient? **(A) 0-6 Convergence Record:** Past failed attempts at merging telecom and cable operations litter the sector's landscape: Bell Atlantic-TCI, USWest-Time Warner, USWest-Continental, SBC-Cox, Sprint-TCI/Cox/Comcast, and Bell Canada-Jones. Is this third time a charm for TCI? Or is it strike three? **(B) Hype?** Is this time different? AT&T projected 30% local share by 2001. AT&T projected a "historic" fixed wireless breakthrough with "Project Angel." AT&T projected great cross-selling synergies with DirecTV. TCI projected a 500-channel universe, and projected that digital set-top boxes, cable telephony, and cable modems would breakout each of the past four years. **(C) "Un-synergies?"** Most mergers offer predictable, quantifiable, near-term cost savings. This merger offers unpredictable, near-term cost increases for long-term savings.

II. Oil & Vinegar? AT&T and TCI are sufficiently incompatible operationally to require many executional leaps of faith. **(A) Conflicting Organizational Structures?** AT&T is a homogeneous, top-heavy, centralized bureaucracy. TCI operates as a lean and loose confederation of hundreds of diverse company systems and networks. **(B) Counter Cultures?** AT&T and TCI arguably represent opposite extremes of very different industries. Operationally, AT&T is

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Scott C. Cleland
November 30, 1998

What's Behind AT&T-TCI's Opposition to Open Cable Internet Access?

Summary: Regulatory review of the AT&T-TCI merger has spotlighted the "sumo-match" over whether or not cable should be allowed a data monopoly over its cable Internet gateway and connecting backbone. TPG believes **there may be a lot more going on strategically with this merger than initially meets the eye**, given AT&T-TCI's strangely vehement opposition to open network conditions to the merger, conditions which AT&T and the cable industry have long championed for the local telco plant. AT&T and TCI have emphatically stated that **unbundling conditions "would severely jeopardize the merger."** Given that @Home has only about 22,000 TCI cable modem customers to AT&T's roughly 70 million residential customers and @Home has about 0.0002% of the parents' combined revenues, **why is this nascent regulatory issue such a big deal? TPG offers four theories why.**

@Home Key to the Video Programming Vault? Many cable companies generally view themselves as video programmers first, with cable distribution as a means to that end. On one hand, the Internet could be a data growth opportunity; on the other, the Internet could threaten more programming competition and could undermine cable's control of the customer relationship. Unbundled Internet access by competitors creates the opportunity for many alternate video distribution paths via streaming video over websites that ultimately could cannibalize cable's core video programming revenues. (@Home limits data streaming video to no more than 10 minutes in duration.) **A big strategic question: Is Internet distribution to cable programming what cable distribution was to broadcast programming in the past?** In other words, is @Home's exclusive data gateway and backbone supply arrangement to the cable pipe a sophisticated data "lock" on cable's video programming vault?

Cross-Subsidy Necessary to Deal "Economics?" AT&T-TCI insist that **unbundling would undermine the "economics" of the merger and prevent a "competitive" return on its investment**. Interestingly, this is an indirect indictment of the viability of residential phone competition and the 1996 Telecom Act. In essence, if AT&T-TCI must be allowed a monopoly data business in order for it to be "economic" to compete in the local phone business, maybe the local residential phone market is a natural monopoly after all? MCI*WorldCom* in its merger comments to the FCC argues that under the FCC's existing cable cost allocation rules, cable basic tier regulated rate payers should not have to cross-subsidize cable's entry into data services. **Something eventually is going to have to give** – either the government's long-standing policy against cross-subsidies, or AT&T-TCI's exclusively bundled data business model.

@Home Financial "Linchpin" of Deal? **@Home may be much more of a financial fulcrum point in this deal than many appreciate.** While TCI has a minority stake in @Home, it enjoys management control. So far, TCI has significantly under-invested in upgrading its plant relative to its cable partners – in part waiting for AT&T to fund it. Part of the overall financial rationale for creating @Home in its current structure was to keep the capital investment in Internet backbone plant off TCI's books while also attracting capital to externally fund it. A regulatory merger condition to unbundle @Home, **arguably could precipitously lower the value of @Home** because its creators predicated @Home's business model on being the *exclusive* Internet Service Provider (ISP) and data backbone provider of their cable pipe. Moreover, according to a June 24, 1998 TCI press release, **Liberty will get $2.5 billion in *cash tax-free* by selling its stake in @Home** and two other properties prior to the deal closing.

Ultimately Another Divestiture? The "tracking stocks" set up by this merger could be a **precursor for yet another voluntary divestiture of AT&T – like the spinoff of Lucent and NCR.** A divested, business-market-focused AT&T without the negative growth drag of the consumer division (which also faces the greater risk from eventual Bell entry into long-distance) arguably might look more like a MCI*WorldCom*. The Liberty Media tracking stock ostensibly is to "facilitate operational independence" from TCI and AT&T. While TPG views it as a *long shot*, competitors worry that the spinoff of Liberty Media from the cable/telco consumer operation conceivably could **mitigate its program access obligations** (i.e., selling its programming at non-discriminatory prices to EchoStar and Direct TV). This could partially explain AT&T-TCI's strong opposition to merger conditions but its willingness to entertain the prospect of a broader regulatory cable unbundling proceeding later. Thus **the balancing act for the merger** could be to navigate approval of the merger without conditions, while maintaining the attractiveness of the to-be-jettisoned consumer company until the divestiture could be completed. * * * * *

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Scott C. Cleland
September 22, 1998

Will the Cable Industry Have to Unbundle and Open Its Network?

Summary: **TPG expects the cable industry to eventually have to open its network and unbundle its high-speed transmission service from its Internet access service -- either voluntarily or by regulation.** TPG believes the current pillar investment assumption and **conventional wisdom that cable will not have to unbundle its network is probably "safe" in the short-term, but clearly is not "safe" in the long-term.** Investors need to understand this issue because it is: central to many business models; fundamental to how the residential high-speed service market will develop; and a key factor in who will win and lose in the marketplace.

Timing Could Not Be Less Clear: TPG spotlights this precursor issue **very early** because of its cross-cutting investment importance and to **help investors better understand the debate that will surely escalate in the months ahead**. While the debate has begun, no consensus has yet to form. AOL is asking regulators for access to the cable network. The FCC has entered the debate with a "Working Paper" entitled *Internet Over Cable: Defining the Future in Terms of the Past*, by Barbara Esbin, the FCC's Associate Cable Bureau Chief. Investors should be aware that there are several upcoming forums where this question could surface in a serious policy discussion or *possibly* a decision: the pending advanced services rule making (Section 706), the Internet Notice of Inquiry, the AT&T-TCI merger approval process, the remand of the Computer III decision, or in a separate rule making or petition.

Why So Important for Investors? This is **a "vortex" investment issue** because its ultimate resolution could have such a fundamental impact on the way that different industries' business models develop in the emerging "bandwidth" space. **For cable investors**, part of cable's growth story and valuation rests on expectations for data growth. The cable industry's data business model, in part, rests on the expectation of "double" data revenues from the high-speed pipe and from its Internet service provider offerings. As the FCC quoted @Home's CEO, "nobody wants to become a dumb pipe in this equation." **For both local telco and cable investors**, this issue determines if cable has a regulatory advantage over local telcos in providing data service to the residential market and whether there is an un-level competitive playing field for data services. **For investors interested in the AT&T-TCI merger**, this could be a linchpin issue for AT&T because TCI's strategic value in part rests on whether the cable pipe is proprietary or more *like* "common carrier" facilities. In other words, their main competitor would have to wholesale data facilities and AT&T-TCI would not. The threat of unbundling is apparently AT&T's primary concern in securing regulatory approval for their merger. **For investors in AOL, online providers, ISPs, Sprint, and others**, this is a key because it determines if they will have wholesale access to the high-end consumers who subscribe to cable's high-speed data service. **For equipment investors**, this issue may affect the equipment race between cable modems and DSL service.

The Regulatory Dilemma: To date, the law and regulators have classified different types of services differently: telecom services, cable services and enhanced services (Internet). Regulators now are understandably befuddled over how to approach an integrated combination of them over a cable "pipe." The **1996 Telecom Act is ambiguous** on the question. Another part of the dilemma is that **promoting deployment of bandwidth may conflict with other regulatory goals like providing nondiscriminatory access to networks.**

Primary Regulatory Questions: The "rub" for regulators is to decide if 1) consumers have full choice in choosing an Internet Service Provider or long-distance carrier; 2) cable facilities are "essential facilities" to which other market players need open and nondiscriminatory access; 3) there is "undue market power," which requires regulatory safeguards to mitigate; 4) competitors need interconnection-like protections; and 5) consumers should enjoy "e-mail address portability" like phone customers will have "number portability."

Best Arguments for Keeping Cable Network Proprietary: **(1)** The cable plant was **built with private risk capital**, and not rate-payers, so it shouldn't be regulated as a common carrier. **(2)** There is **no clear legal basis to require cable to unbundle** its network. At worst, amendments to the 1996 Telecom Act are ambiguous and probably lean in the direction of the cable industry's interpretation. Forcing unbundling could require new legislation. **(3)** Requiring unbundling would **make uneconomic the current investment necessary to upgrade the cable plant.** This in turn would **slow the roll-out of broadband service to consumers**, a stated goal of the Telecom Act (Section 706 and the preamble) and a high policy priority

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of the FCC. The cable industry is the only industry actually delivering high-speed service to over 300,000 American households. **(4)** A clear goal of the Telecom Act is to **keep the Internet free of federal and state regulation**. **(5)** The FCC recently has taken the view that high-speed data services is a **new market with no dominant players** possibly warranting de-regulation of the local telco. **(6)** The cable plant is the **only viable residential competitor to the local telco**, cable should be encouraged, not discouraged, to compete against the entrenched telecom monopoly. **(7) Few if any consumers have complained; regulators should let the marketplace work.**

Best Arguments for Opening the Cable Network: While the subject of whether the cable industry must unbundle is **legally ambiguous, it is not an ambiguous question from a policy perspective;** it's actually quite clear. If investors review how regulators and Congress have resolved similar and related regulatory dilemmas over the last 30 years, a powerful case emerges that the cable industry will eventually be compelled by regulators to open their network and unbundle their services if they do not do it voluntarily. **(1)** For over 30 years, there has been a **consensus around the fundamental regulatory principles of opening networks, ensuring non-discriminatory access, and safeguarding from anti-competitive behavior**. The 1992 Cable Act and the 1996 Telecom Act reenforced these key regulatory principles.

(2) In the past when confronted with legal ambiguity and how to classify a new hybrid service (is cable Internet service a cable, telecom, or Internet service?), the FCC has made decisions based on its underlying policy objectives. There is **substantial policy precedent** suggesting the FCC will eventually rule that the cable network should be opened. In the FCC's August 1998 Notice of Inquiry on high-speed services, the FCC asks, "Are there reasons to depart from our long-standing prohibition of bundling transmission services on one hand, with on the other, customer premises equipment and/or enhanced services?" (p. 82) Moreover, the FCC proposed in August to deregulate the Bells and GTE for data services, if the data service was provided through a separate affiliate and **competitors had full and nondiscriminatory access to the unbundled local loop**. Over the last couple of decades, the FCC's Computer I, II, and III decisions have all required the Unbundling of data service from telecom service. In the FCC's 1995 Frame Relay Order, the FCC directed AT&T and common carriers to unbundle frame relay (a packet-switching technology) "basic" telecom services from "enhanced" data services. **A long-standing and consistent FCC policy thrust has been opening network architectures.**

(3) Without an open cable network, a customer who wants high-speed cable service would have to buy cable's ISP service whether they wanted it or not. To get their preferred ISP or AOL, **consumers would have to pay twice.** **(4)** From a competitive standpoint, **none of the nation's other 4,000 ISPs or AOL (with 13 million customers) would have direct nondiscriminatory access** to compete for arguably the most profitable online customer segment. **(5)** In the 1992 Cable Act, Congress ignored the fact that the cable industry was built with private risk capital and mandated the following two onerous regulatory requirements calling for cable to share its assets with competitors. "Must carry" required cable to carry various local and public broadcast channels. "Program access" forced the cable industry to sell its programming to competitors at non-discriminatory prices and terms. The courts upheld both requirements.

(6) The 1996 Telecom Act is also full of analogous policy signals. (a) The **primary competitive thrust of the act is interconnection, unbundling, and non-discriminatory access** to the local phone network, rules which the FCC has also applied to data services. (b) In Section 304 of the 1996 Act, *"Competitive Availability of Navigation Devices,"* Congress **required the cable industry to unbundle its equipment** (including cable modems) from its cable service to **allow consumers the choice of equipment supplier**. (c) In the act's Open Video System provision, covering local telco entry into the cable business, **Congress required the incumbent, which has zero market share, to make available two-thirds of its video network capacity to competitors.** (d) Congress also continued rate regulation of the largest cable companies' basic tier until effective competition emerges, even though it will deregulate upper-tier programming rates in March 1999. (DBS competes with cable in video, but not for Internet service.)

(7) Two recent Justice Antitrust Division decisions provide insights into how the government currently approaches both the Internet and the cable "monopoly." DOJ required the MCI-WorldCom merger to divest itself of all of MCI's Internet assets to ensure that no carrier would have undue market power in this important emerging market. DOJ also blocked key cable operators' attempt to buy DBS competitor PrimeStar, ruling the combination would have undue market power.

(8) Ironically, the Justice Department broke up AT&T in 1984, because AT&T was not sufficiently opening up its network to competitors and was allegedly anti-competitively bundling local and long-distance service and equipment. Given that AT&T still has 70% of the American residential market share for long-distance, its plans to bundle their service with TCI's cable service will attract considerable regulatory attention.

(9) Lastly, **Canada already has required its cable operators to open their network and unbundle their services** and they are still deploying high-speed services.

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Scott C. Cleland / Patrick S. Brogan

June 23, 2000

Pyrrhic AT&T/Cable Victory: Court Rules Cable Broadband Common Carrier

I. Summary: TPG believes many investors do not realize that **AT&T and the cable industry won a pyrrhic victory** in the 9th Circuit Court of Appeals ruling prohibiting Portland from mandating open access for competing ISPs. **While AT&T won a clear-cut technical victory that localities do not have *regulatory jurisdiction,* it clearly lost on the much more investment relevant *definitional* question.** The court defined **cable broadband as a common carrier telecommunications service,** i.e., having the legal duty to provide nondiscriminatory access and to interconnect and be interoperable with competitive telecom carriers. Investors should be skeptical of the current "spin" surrounding this decision. The cable industry has been telling any regulator, politician or investor that would listen for the last 18 months, that its **biggest fear was being subject to any kind of common carrier regulation because it would kill its incentive to invest in upgrading the cable infrastructure.**

II. What Did the Court Do? In order to make its jurisdictional decision on whether localities have authority to regulate ISP access to cable broadband systems, the court felt compelled to define what @Home does. It ruled that @Home has two elements: an ISP service and a cable broadband transmission component that is a common carrier telecommunications service. Key court conclusions: **(A)** *"We hold that (the law) prohibits a franchising authority from regulating cable broadband Internet access, because the transmission of Internet service to subscribers over cable broadband facilities is a telecommunications service under the Communications Act. Therefore, Portland may not condition the transfer of the cable franchise . . ."* **(B)** *"Under the Communications Act, this principle of telecommunications common carriage governs cable broadband as it does other means of Internet transmission such as telephone services and DSL, 'regardless of facilities used.'"* **(C)** *"We note the FCC has broad authority to forbear from enforcing the telecommunications provisions if it determines that such action is unnecessary to prevent discrimination and protect consumers, and is consistent with the public interest."*

III. Investment Implications: **(A) Winners and Losers?** TPG views this decision as a **significant long-term negative for AT&T and the cable industry and a significant long term positive for CLECs, ISPs and video streamers. To test this assessment, investors should ask AT&T if it embraces this court's ruling that cable broadband is a common carrier telecom service or whether it disagrees with this court that cable broadband is an unregulated cable service. (B) New Cloud of Investment Uncertainty?** This decision creates new investment uncertainty over what regulatory regime actually prevails for cable broadband or what a common carrier telecom definition means practically when applied to cable broadband. **(C) "Voluntary" Openness Accelerated?** Practically, this decision could accelerate the timetable for cable's "voluntary" opening of its networks in hopes of heading off any future adverse regulatory intervention. **(D) Cable Acquisitions Overpriced?** TPG continues to suspect that AT&T overpaid for TCI and UMG and that cable is generally overvalued at $5000 per subscriber. Those valuations were reached under the assumption of a closed, and not an open, business model, and the assumption that cable was unregulated and not subject to common carrier regulation.

IV. Regulatory Outlook? A Whole New Can of Worms? The FCC is now on the "hot seat." This court decision increases the liklihood that the FCC will have to act on the fundamental question of whether cable broadband is a Title II telecom service or a Title VI cable service. **(A) A Bipolar National Broadband Policy?** In the process of eliminating the potential for fragmented local broadband policies, the court still has undermined the FCC's view that one consistent national broadband policy is the best way to foster broadband deployment. This court has effectively bifurcated the FCC's national policy by ruling that in the one-sixth of the country under the Ninth Circuit's jurisdiction, cable broadband is a telecom common carrier, while in the rest of the country it is unresolved (cable maintains it's a cable service). **(B) FCC Willing to Cede Jurisdiction?** If the FCC continues to duck its federal communications policymaking responsibility by merely "monitoring" this fundamental unresolved issue, the practical effect could be to cede its authority to other jurisdictions: to the courts under section 406 or to the states under section 251a. **(C) Hands-On to be Hands-Off?** In an ironic twist, for the FCC to maintain its "hands off the Internet" policy, it now will have to undertake a "hands on" regulatory proceeding if it wants to forbear from regulating cable broadband as a common carrier.

V. Outlook For FCC Regulatory Forbearance? **TPG believes it is unlikely the FCC will be able to forbear completely from common carrier regulation for cable broadband.** (A) It would be tough *legally* because under section 10, the FCC must determine that regulation is unnecessary (1) to prevent discrimination, (2) to protect consumers, and (3) because it is in the public interest. The Department of Justice recently determined in its proposed consent decree on the AT&T-MediaOne merger that cable broadband has market power and that AT&T could anticompetitively "exploit its gatekeeper position in the broadband content market." That finding would appear to make it difficult for the FCC to rule there is no risk here of discrimination or any need to protect consumers. (B) It also would be tough *politically* to forbear because all other broadband providers, including incumbent telcos, would want equal deregulation as part of a national broadband policy. Furthermore, the FCC would have to argue that disabled Americans who have a right to special telecom access should not have the same access to cable broadband. * * * * *

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June 19, 2000

AT&T-MediaOne/DOJ Consent Decree: Quietly Unwinding Cable Broadband Cartel?

Summary: A **highly underappreciated investment event is the Department of Justice's (DOJ) analysis of the competitiveness of the broadband content market** in the recent proposed consent decree for the AT&T-MediaOne merger. DOJ's analysis and its proposed final judgment are **loaded with a surprising number of significant investment implications for broadband investors.** A close read shows a much tougher and more far-reaching decision than the press release or the company "spin" indicated. (A consent decree is effectively a contract between companies and the government that, when ratified by a federal court, has the force of law.)

DOJ's Fundamental Conclusions: (1) The Anticompetitive Problem: (A) *"The predictions and assumptions required to conclude that the proposed merger would present serious anticompetitive problems in the future are very reasonable ones. Moreover, the risks to the development of the broadband industry posed by this merger are sufficiently grave that appropriate relief is warranted."* (B) AT&T-MediaOne has market power to *"lessen competition substantially in the aggregation, promotion, and distribution of broadband content."* (C) *"By exploiting its "gatekeeper" position in the broadband content market, AT&T could make it less profitable for unaffiliated or disfavored content providers to invest in the creation of attractive broadband content, and thereby reduce the quantity and quality of content available."* **(2) Market Assessment:** (A) Broadband is a separate market from the narrowband dial-up Internet access market. Narrowband links *"are not a good substitute"* for broadband users. (B) *"DSL still lags substantially behind cable modem service in market penetration and acceptance."* And fixed wireless and satellite are not likely to be a major factor in the immediate future. (C) *"Excite/@Home and Roadrunner together serve a significant majority of the nation's residential broadband Internet users."* **(3) Proposed Remedy:** (A) AT&T must divest MediaOne's interest in Roadrunner by 12-31-01, or sooner if practical. (B) The DOJ also wants *"to prevent any coordination or collusion between Roadrunner and Excite @Home during the limited period of time that AT&T"* owns both. (C) DOJ requires prior approval of any broadband agreement between AT&T and Time Warner for two years after the Roadrunner divestiture. (D) The DOJ and the Court would retain enforcement oversight powers for **10 years** to ensure AT&T does not anticompetitively exercise market power in the broadband content distribution market.

Investment Implications: **(1) Effective Decartelization of Cable Broadband Industry?** While the decree is specific to AT&T, the message for the rest of the cable industry is pretty clear. The **DOJ believes the broadband content distribution market is not fully competitive** and **fears the cable industry may be operating as a cartel** to snuff out potential broadband-content-distribution rivals, i.e., video streamers/Webcasters, before they can become video programming competitors. **(2) The Unwinding of the @Home and Roadrunner Alliances?** TPG expects the partners of @Home and Roadrunner to unwind their respective deals sooner than the contract terms. Now that the DOJ has determined cable broadband has market power, the structures themselves encourage anticompetitive collusion almost by design. (This partially explains AT&T's recent restructuring of the @Home partnership and the spate of "voluntary" offers by cable companies to provide "forced" access to competing ISPs when regulators are not requiring it.) **(3) Effective Limitation on the Cable Broadband Business Model?** Apparently, the DOJ opposes cable efforts to migrate the vertically leveraged business model that cable employed to dominate video-programming distribution into the next-generation market for broadband content distribution. This decree also puts other cable companies on notice to compete rather than collaborate in broadband content distribution. Thus, TPG sees this decree as a **negative for @Home, Roadrunner AT&T, Time Warner, and the rest of the cable industry** because it means more future video programming competition from Webcasters than conventional wisdom appreciates. **(4) Effectively a Video-Streaming/Webcasting Protection Decree?** DOJ has maintained enforcement oversight to ensure potential broadband content distribution competitors have the ability to compete against AT&T. Thus, the decree is a **positive for Yahoo-Broadcast.com, Disney-Go.com, Real Networks, Akamai-Intervu, Apple-Quicktime, Reel.com-HollywoodVideo, Microsoft Media Player, SnapNBC, Internet Ventures and AOL.** **(5) Asset divestitures?** To comply with the FCC's ownership limits, AT&T has to divest either Time Warner Entertainment (TWE) or Liberty/Rainbow. TPG believes the DOJ's Roadrunner divestiture, combined with the FCC's tacit preference for selling TWE, makes a **TWE spin-off most likely.** Moreover, the likely IRS tax hit from selling Liberty and the complexity of divesting all of AT&T's miscellaneous content holdings argue for divesting TWE as well. If so, **AT&T regulatorily overreached with the MediaOne purchase and ends up a cable system seller.** **(6) AT&T Telephony Deal with Time Warner?** While AT&T still may be able to work out some type of telephony deal with Time Warner, the DOJ consent decree appears to prohibit AT&T from pressuring Time Warner for a telephony deal by withholding broadband access from AOL. **(7) Effect on AOL-Time Warner Merger Review?** TPG believes the AT&T-MediaOne consent decree represents a **minimum set of requirements for AOL-Time Warner.** Given AOL's majority share of on-line subscribers, the Federal Trade Commission will likely insist on a long-term oversight decree with strong anticompetitive behavior safeguards. * * * * *

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Summary: A **highly underappreciated investment event is the Department of Justice's (DOJ) analysis of the competitiveness of the broadband content market** in the recent proposed consent decree for the AT&T-MediaOne merger. DOJ's analysis and its proposed final judgment are **loaded with a surprising number of significant investment implications for broadband investors.** A close read shows a much tougher and more far-reaching decision than the press release or the company "spin" indicated. (A consent decree is effectively a contract between companies and the government that, when ratified by a federal court, has the force of law.)

DOJ's Fundamental Conclusions: (1) The Anticompetitive Problem: (A) *"The predictions and assumptions required to conclude that the proposed merger would present serious anticompetitive problems in the future are very reasonable ones. Moreover, the risks to the development of the broadband industry posed by this merger are sufficiently grave that appropriate relief is warranted."* (B) AT&T-MediaOne has market power to *"lessen competition substantially in the aggregation, promotion, and distribution of broadband content."* (C) *"By exploiting its "gatekeeper" position in the broadband content market, AT&T could make it less profitable for unaffiliated or disfavored content providers to invest in the creation of attractive broadband content, and thereby reduce the quantity and quality of content available."* **(2) Market Assessment:** (A) Broadband is a separate market from the narrowband dial-up Internet access market. Narrowband links *"are not a good substitute"* for broadband users. (B) *"DSL still lags substantially behind cable modem service in market penetration and acceptance."* And fixed wireless and satellite are not likely to be a major factor in the immediate future. (C) *"Excite/@Home and Roadrunner together serve a significant majority of the nation's residential broadband Internet users."* **(3) Proposed Remedy:** (A) AT&T must divest MediaOne's interest in Roadrunner by 12-31-01, or sooner if practical. (B) The DOJ also wants *"to prevent any coordination or collusion between Roadrunner and Excite @Home during the limited period of time that AT&T"* owns both. (C) DOJ requires prior approval of any broadband agreement between AT&T and Time Warner for two years after the Roadrunner divestiture. (D) The DOJ and the Court would retain enforcement oversight powers for **10 years** to ensure AT&T does not anticompetitively exercise market power in the broadband content distribution market.

***Investment Implications:* (1) Effective Decartelization of Cable Broadband Industry?** While the decree is specific to AT&T, the message for the rest of the cable industry is pretty clear. The **DOJ believes the broadband content distribution market is not fully competitive** and **fears the cable industry may be operating as a cartel** to snuff out potential broadband-content-distribution rivals, i.e., video streamers/Webcasters, before they can become video programming competitors. **(2) The Unwinding of the @Home and Roadrunner Alliances?** TPG expects the partners of @Home and Roadrunner to unwind their respective deals sooner than the contract terms. Now that the DOJ has determined cable broadband has market power, the structures themselves encourage anticompetitive collusion almost by design. (This partially explains AT&T's recent restructuring of the @Home partnership and the spate of "voluntary" offers by cable companies to provide "forced" access to competing ISPs when regulators are not requiring it.) **(3) Effective Limitation on the Cable Broadband Business Model?** Apparently, the DOJ opposes cable efforts to migrate the vertically leveraged business model that cable employed to dominate video-programming distribution into the next-generation market for broadband content distribution. This decree also puts other cable companies on notice to compete rather than collaborate in broadband content distribution. Thus, TPG sees this decree as a **negative for @Home, Roadrunner AT&T, Time Warner, and the rest of the cable industry** because it means more future video programming competition from Webcasters than conventional wisdom appreciates. **(4) Effectively a Video-Streaming/Webcasting Protection Decree?** DOJ has maintained enforcement oversight to ensure potential broadband content distribution competitors have the ability to compete against AT&T. Thus, the decree is a **positive for Yahoo-Broadcast.com, Disney-Go.com, Real Networks, Akamai-Intervu, Apple-Quicktime, Reel.com-HollywoodVideo, Microsoft Media Player, SnapNBC, Internet Ventures and AOL. (5) Asset divestitures?** To comply with the FCC's ownership limits, AT&T has to divest either Time Warner Entertainment (TWE) or Liberty/Rainbow. TPG believes the DOJ's Roadrunner divestiture, combined with the FCC's tacit preference for selling TWE, makes a **TWE spin-off most likely**. Moreover, the likely IRS tax hit from selling Liberty and the complexity of divesting all of AT&T's miscellaneous content holdings argue for divesting TWE as well. If so, **AT&T regulatorily overreached with the MediaOne purchase and ends up a cable system seller. (6) AT&T Telephony Deal with Time Warner?** While AT&T still may be able to work out some type of telephony deal with Time Warner, the DOJ consent decree appears to prohibit AT&T from pressuring Time Warner for a telephony deal by withholding broadband access from AOL. **(7) Effect on AOL-Time Warner Merger Review?** TPG believes the AT&T-MediaOne consent decree represents a **minimum set of requirements for AOL-Time Warner.** Given AOL's majority share of on-line subscribers, the Federal Trade Commission will likely insist on a long-term oversight decree with strong anticompetitive behavior safeguards. * * * * *

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Scott C. Cleland

May 25, 2000

Summary of Testimony Before U.S. House Commerce Committee on Broadband Deployment

Summary of written testimony of Scott C. Cleland, delivered May 25, 2000, before the U.S. House Commerce Subcommittee on Telecommunications, Trade, and Consumer Protection regarding the Deployment of Broadband Technologies.

[Note: This testimony significantly expands on TPG's Broadband Assessment, "The Developing Residential Broadband Gap," published February 8, 2000.]

For a copy of the full testimony, please contact TPG at (202) 778-1972.

I. Business Broadband Market Not a Problem, Residential Broadband Market Is

Capital-efficiency drives infrastructure deployment. Residences and small businesses are geographically dispersed and generate relatively low revenues, making deployment capital-inefficient.

II. Why a Residential Broadband Gap Matters

- Residential broadband infrastructure (i.e., consumer bandwidth) could very well emerge as the "Achilles' heel" of a video-enabled Internet, consumer e-commerce growth, and the New Economy.
- **With all the attention on clearing taxes and regulation from in front of the Internet "train," and keeping the "train fare" cheap, many are missing the obvious — that the Internet "train" hurtling forward on "Internet time" may abruptly run out of Internet "track" (i.e., consumer bandwidth).**
- If consumers don't have sufficient bandwidth, it doesn't matter how much video content supply there is, or how much consumer video content demand there is — it is not going to get delivered as consumers expect.

III. The Ten Developing Residential Broadband Gaps

1. **Supply & Demand:** While deployment is making real strides, relatively it lags substantially behind demand of video-oriented "dot-coms" and video streamers. Narrowband signups outpace broadband 8-1.
2. **Infrastructure Incentives:** The unintended consequence of the FCC's UNE-P resale strategy has been to **effectively devalue all infrastructure investment** by incumbents and competitors alike, whether it is fiber, cable, or fixed wireless. Why overbuild if one can lease it more cheaply than one can build it?
3. **Revenue Efficiency:** Broadband physically consumes 20–100 times the scarce spectrum or bandwidth that narrowband voice or data currently consumes. Are consumers going to pay 20–100 times more? No.
4. **Depreciation:** Infrastructure replacement cycles for many fiber and wireless deployments are ominously outpacing their depreciation cycles, meaning investors may not recoup their initial investments.
5. **Competition: In the next three-to-four years, we project that up to 20% of the country may have a choice of three-to-four different broadband facilities, roughly 30% of the country may have the choice of two facilities, and one-half of the country may have only one or no broadband facility choice. We believe this projection is optimistic, given experience to date.**
6. **Competitive Churn:** There is negligible aftermarket competition or "churn" between broadband facilities because of the high cost and time hassle of switching. One analyst quipped that broadband churn is less than moving or death rates!
7. **Consumer Choice:** There is a stark gap between the consumer choice of ISP available on the open telco/fixed wireless broadband platform versus the closed cable broadband platform.
8. **Technology:** There is a wide gap in the business model viability of broadband technologies: cable, DSL, overbuilds, fixed wireless, and satellite. Cable and DSL are the only viable mass-market models.
9. **Personal Computer:** The current installed base of U.S. home computers is nowhere near broadband "plug and play," as the current narrowband dial-up market is. Practically, it's still a few years away.
10. **Inside Wiring:** Once one gets into the home, home networking is a veritable hornet's nest of issues. There are no home broadband standards, and there are major interoperability problems between technologies.

IV. Conclusion: All Is Not Well in the Residential Broadband Market

There are substantial economic, competitive, and technological impediments that appear to be creating an increasing gap between residential broadband deployment expectations and reality. * * * * *

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Scott C. Cleland

April 25, 2000

Cable Open Access: Two Big "Open" Questions

Summary: **Investors need to reassess carefully the cable industry's forward-looking business model now that the industry has apparently reversed course from a closed-access, "first-screen" leverage business model to at least the pledge of eventual open access and open broadband network.** For well over a year, the cable industry has been convincing investors and regulators of the investment perils of an open model. Cable argued that cable open access was not financially viable, was not technically possible or feasible, undermined any incentive for cable to invest in broadband, would allow competitors to "free-load" off cable's investment, and would create a "dumb pipe" that cable companies would not want. Now, most of the cable industry — AT&T, Time Warner, Cox, Comcast, Charter, Adelphia — apparently support some kind of an "open" broadband cable network *sometime* in the future. **What is the impetus for reversing direction now?** Was cable incorrect in its previous assessment of an open cable network or is there new information or developments that fundamentally change the industry's previous assessment? Or, are the open access pledges a public relations ploy to mollify regulators? TPG identifies two big "open" questions for cable and related broadband investors: (1) what is the new "open" business model that justifies a $4,000 to $5,000 per cable subscriber valuation? and more specifically, (2) what is the "market-negotiated" wholesale access fee for use of a 6 MHz cable channel, a key assumption in an open business model?

What's Cable's New "Open" Business Model? TPG has long argued that cable's closed network model was unsustainable *and* that it was one of the most important investment issues for cable's emerging broadband business model. Cable's original closed broadband model was so appealing because cable appeared to have many of the characteristics of a high-growth monopoly, like Intel or Microsoft – i.e., a dominant share of a fast-growing necessary convergence building block – broadband access. The contrast between a closed and an open business model is substantial. **(A) The favorable aspects of a closed cable model are:** (1) allows a high-margin retail price; (2) generates "premium fees" from e-commerce "partners" given exclusive positioning on cable's "first screen"; (3) saves network design, construction and operating costs because a proprietary network is simpler and easier; (4) lowers customer acquisition and retention costs by excluding competitive ISP resale; and, (5) protects core video programming revenue base from eventual competition from video streaming. **(B) The unfavorable aspects of an open business model are:** (1) creates a lower-margin wholesale price; (2) generates no first-screen financial leverage; (3) increases network design, construction and operating costs substantially to support competitive resellers – ISPs; (4) increases customer acquisition and retention costs substantially by creating a competitive resale ISP market; and (5) creates the potential for increased video programming competition to cable's base from video streamers. **In a nutshell, the difference between the closed and open network business models is competition and price; in other words, to the extent the network is "open," it yields lower margins and higher costs than a closed network.** An open wholesale model, however, is likely to generate more revenues than a retail model, albeit less profitably.

What's the Price for Wholesale Cable Broadband Access? **TPG believes anticipating the likely wholesale price for all or part of a 6 MHz cable channel will be key to valuing cable's "open" business model.** With the caveat that such an estimate requires many large assumptions, TPG *attempts* to offer some very rough proxy estimates to help investors *start* to get a handle on the potential wholesale access price. (1) **Cable now receives roughly a $19 access fee per broadband subscriber for the use of a 6 MHz channel.** (Using the $40 @Home monthly bill as a proxy, 35%, roughly $14, goes to @Home for the ISP, the backbone and the content: 65%, roughly $26, goes back to the cable company, of which $19 is for the 6MHz channel and about $7 is for the cable modem.) (2) In an "open" competitive environment, cable spectrum is spectrum, whether it is used for basic TV, premium pay TV, or data. (While data are different from TV in being two-way, competitive ISPs may only need one-way downstream broadband spectrum just like a TV channel if they supply their own return path signal through the telco or wireless.) (3) The FCC calculates that the average implicit fee cable gets for a channel is $0.30-$0.50 per basic TV channel subscriber and $0.80-$1.20 per premium pay TV channel subscriber. **Thus $0.30-$1.20 is the *average* wholesale price "the market" puts on 6MHz of cable spectrum per subscriber.** (4) A core pricing assumption is whether or not a cable company allows the use of its data channels to be optimized through segmenting or partitioning – i.e., sending different signals down the same channel to different parts of the system. Cable could extract a higher wholesale price, if it engineers its system to prevent spectrum partitioning, because then one would have to multiply the $19 per subscriber fee by the percent of data penetration to reach a comparable average per subscriber fee. (5) Another core assumption is whether a competitive ISP shares *only part of a channel*; then the access fee would be some *fraction* of the average channel fee. (6) **So, depending on one's assumptions, it appears that cable's current "exclusive" $19 data wholesale access fee is roughly a few hundred to as much as a few thousand percent higher per subscriber MHz than cable gets for selling its spectrum in the "competitive" video programming marketplace.** If cable continues to be the dominant residential broadband access technology, and if cable can restrict the supply of spectrum available for residential broadband data use, **it appears cable could continue to enjoy a substantially above-market price for its broadband data spectrum.** * * * * *

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Scott C. Cleland

February 22, 2000

Webcasting: Can the Internet Grow Up to Video?

Summary: While most expect that the Internet will naturally evolve to provide mass market video, TPG believes that evolution will prove more problematic than expected because there are more serious impediments than most appreciate. There are significant legal, regulatory, and business model impediments to this evolution, in addition to *"The Developing Residential Broadband Gap"* impediment that TPG flagged in our 2-8-00 research piece.

The Internet Clearly Wants to Grow Up to Video: Ponder the slew of Internet or streaming video-related activity: AOL-Time Warner, Yahoo-Broadcast.com, Real Networks, Akamai-Intervu, Apple-Quicktime, Disney-Go.com, Reel.com-HollywoodVideo, Microsoft/MediaPlayer, Snap-NBC, etc. They are clearly anticipating the dawn of the video-enabled Internet. And consumers clearly want more choice and control over what and when they watch. Consumers have proven they like "time-shifting" and being their own personal programmers: e.g., VCRs, video rentals, pay-per-view, and DBS multiplexing.

Big Impediments Blocking Internet's Evolution to Video: The beginning of this evolution has already prompted notable clashes in *all three* branches of the U.S. government. *A federal court* has placed a temporary injunction on iCraveTV, blocking it from distributing U.S. video programming over the Internet. *Congress* is wrestling with whether Internet providers are due a compulsory license for video programming like cable and DBS currently enjoy. The issue surfaced last fall in a nasty 11th-hour skirmish during final passage of the Satellite Home Viewer Act and resurfaced recently in congressional hearing. And, as expected, the *FCC* recently denied a petition by Internet Ventures to offer video programming competition over the Internet using the 1984 leased access provisions.

Legal Impediments: The near hysteria that content owners like Time Warner and the NFL have had over iCraveTV's pointing a crude Internetcam at a TV set underscores how frightened big copyright owners are that Internet distribution undercuts the value of their content by facilitating illegal copying and piracy. The vehemence of copyright owners' reaction is telling. This skirmish may be just the *tip of an iceberg*; the big copyright owners are terrified that they may be the *"Titanic"* that could sink if the Internet blows a hole in their control over how their product is distributed and paid for. TPG expects the resolution of this copyright equity issue to be difficult and protracted. It is the proverbial clash of the *irresistible force* of consumers' freedom of choice over how and what they watch — meeting the *immovable object* of the very powerful copyright and sports lobbies in Washington. **Eventually, this has to get resolved either through negotiations or legislation.**

Regulatory Impediment: Current FCC cable broadband policy effectively protects cable from any Internet video competition (i.e., mandated interconnection, resale or leased access) in order to encourage cable broadband investment and encourage cable telephony competition to the local telcos. Under the claim of "not regulating the Internet," the FCC effectively has a de facto cable industrial policy choosing cable as the winner over other telecom broadband technologies like DSL and fixed wireless. The FCC has not "exempted" DSL or fixed wireless from common carrier obligations of interconnection, resale and interoperability, as they de facto have with cable to date. Ironically, cable, which has 84% share of the residential broadband market, has little intention of letting the Internet grow up to video and compete against cable's $30 billion revenue base. Cable orchestrated the ban on more than 10 minutes of streaming video and created @Home and Roadrunner as sophisticated "moats" to guard cable's $30 billion video distribution "castle" against competition. **As long as the FCC's primary goal is status quo, to promote cable deployment and not competition to cable, the Internet's evolution to video won't meet expectations. (Important caveat:** The FCC's recent denial of Internet Ventures' (IVI) petition to use leased access was very narrowly drawn. The FCC only decided that an ISP that did more than offer video programming, like email, was not technically considered video programming under leased access law. **However, the FCC decision also suggested that a pure video programmer using Internet technology (read pure video streamers) "would not automatically run afoul of the threshold issue necessitating denial of the IVI's petition." The FCC left open the door for pure video streamers to request leased access to a 6 MHz channel to offer an alternative competing package of Internet compressed cable channels. Investors should expect to see another petition from a pure video streamer relatively soon.)**

Incumbent Impediments: Another powerful impediment to the Internet's evolution to video is the threat to old media's existing business models. New entrants, who are enabled by Internet technology and more efficient Internet-distribution-based business models, threaten to destabilize existing markets and snatch market share. However, these old media players are among the most politically powerful and legally astute industries. They are not going to give up video share to new Internet upstarts before exhausting every legal, legislative, political, regulatory, and acquisition protective maneuver imaginable. **Interestingly, AOL-Time Warner could be the best positioned in this Internet-video-stalemate because they likely benefit most from the legal and regulatory status quo.** Arguably they now need regulatory or legal change less than any other player, because AOL-Time Warner would own over half of the Internet audience and one of the biggest chunks of the best available copyrighted content — potentially giving them massive "first mover advantage". * * * *

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Scott C. Cleland

February 22, 2000

Webcasting: Can the Internet Grow Up to Video?

Summary: While most expect that the Internet will naturally evolve to provide mass market video, TPG believes that evolution will prove more problematic than expected because there are more serious impediments than most appreciate. There are significant legal, regulatory, and business model impediments to this evolution, in addition to *"The Developing Residential Broadband Gap"* impediment that TPG flagged in our 2-8-00 research piece.

The Internet Clearly Wants to Grow Up to Video: Ponder the slew of Internet or streaming video-related activity: AOL-Time Warner, Yahoo-Broadcast.com, Real Networks, Akamai-Intervu, Apple-Quicktime, Disney-Go.com, Reel.com-HollywoodVideo, Microsoft/MediaPlayer, Snap-NBC, etc. They are clearly anticipating the dawn of the video-enabled Internet. And consumers clearly want more choice and control over what and when they watch. Consumers have proven they like "time-shifting" and being their own personal programmers: e.g., VCRs, video rentals, pay-per-view, and DBS multiplexing.

Big Impediments Blocking Internet's Evolution to Video: The beginning of this evolution has already prompted notable clashes in *all three* branches of the U.S. government. *A federal court* has placed a temporary injunction on iCraveTV, blocking it from distributing U.S. video programming over the Internet. *Congress* is wrestling with whether Internet providers are due a compulsory license for video programming like cable and DBS currently enjoy. The issue surfaced last fall in a nasty 11th-hour skirmish during final passage of the Satellite Home Viewer Act and resurfaced recently in congressional hearing. And, as expected, the *FCC* recently denied a petition by Internet Ventures to offer video programming competition over the Internet using the 1984 leased access provisions.

Legal Impediments: The near hysteria that content owners like Time Warner and the NFL have had over iCraveTV's pointing a crude Internetcam at a TV set underscores how frightened big copyright owners are that Internet distribution undercuts the value of their content by facilitating illegal copying and piracy. The vehemence of copyright owners' reaction is telling. This skirmish may be just the *tip of an iceberg*; the big copyright owners are terrified that they may be the *"Titanic"* that could sink if the Internet blows a hole in their control over how their product is distributed and paid for. TPG expects the resolution of this copyright equity issue to be difficult and protracted. It is the proverbial clash of the *irresistible force* of consumers' freedom of choice over how and what they watch — meeting the *immovable object* of the very powerful copyright and sports lobbies in Washington. **Eventually, this has to get resolved either through negotiations or legislation.**

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