The Real Costs of Communications Outages due to Infrastructure Theft or Vandalism[1]

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Executive Summary:

When copper theft and vandalism cause telecommunications service outages, the societal costs to critical networks far exceed the market or replacement value of stolen or damaged property. These incidents do not just cut cables, they cut people off from commerce, education, healthcare, and public safety. Between June and December of 2024, these kinds of outages cost society of up to **$188 million** of foregone economic gain.

The costs and burdens of these incidents are not evenly distributed. For example, California and Texas together accounted for half of all reported incidents, with California sustaining an estimated $29 million in societal costs and Texas over $18 million. In Kentucky, the relative impact was even higher compared to its smaller economy, showing that both large and small states can bear disproportionate costs. Communications infrastructure attacks are not abstract or far away problems. They hit households, businesses and communities across the country in ways that undermine local economies and public well-being, as the figures in this paper show.

This paper applies textbook economic theory—specifically willingness-to-pay (WTP) analysis—to quantify these hidden costs. Unlike traditional accounting methods, the paper estimates the full economic value lost to society when households and businesses are disconnected from critical facilities. The findings show that every outage magnifies harm far beyond directly affected customers through behavioral realities like **loss aversion** and systemic **network effects**.

While perpetrators may score a small amount per incident, the total problem of copper theft and vandalism magnifies into tens and hundreds of millions of real costs to society. The analysis developed in this paper offers decision makers and stakeholders a framework for understanding why policy, industry, and community action are urgently needed to better safeguard critical communications infrastructure.

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Main Highlights:

- Between June and December 2024, nearly 6,000 theft and vandalism incidents disrupted communications infrastructure, affecting 1.5 million customers and generating severe economic costs on American society.

- These recent service outages have imposed economic costs on society between $38 million and $188 million—many times the replacement cost or accounting value of stolen copper or damaged equipment.

- The costs of service outages multiply throughout society due to behavioral and network effects. People value keeping services they already have more than gaining those same services (loss aversion), and outages harm not only disconnected users but also everyone they lose communication with (network effects).

- During the second half of 2024, California and Texas together accounted for roughly half of all reported incidents nationwide, with estimated costs of $29.3 million and $18.1 million respectively. Kentucky, experiencing a large number of incidents relative to its smaller economy, has also borne an outsized burden relative to its GDP. These state-level comparisons highlight the uneven and disproportionate impacts of communications infrastructure attacks across the U.S.

- The sheer magnitude of these losses warrants greater attention from policymakers, industry leaders, law enforcement, and communities. This paper provides stakeholders with a systematic economic framework to capture the real societal costs that are invisible in conventional cost accounting.

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1. Introduction

When copper theft and vandalism cause damage to critical communication networks, this can create service disruptions that harm American households, businesses, and critical facilities (e.g. hospitals, airports, military and public safety facilities, etc.). In the second half of 2024 alone, the nation's critical communications infrastructure endured nearly 6,000 incidents of theft and vandalism, creating extremely costly service disruptions. This paper estimates that between June and December of 2024, these disruptions imposed aggregate, cumulative societal costs of up to $**188 million**.

These calculations are grounded in established economic theory and reflect the *human and economic costs* of service outages caused by theft and vandalism. These disruptions destroy value in ways that far exceed the market value of the stolen goods. In economic terms, this foregone value is known as the ***deadweight loss*** of service disruptions.

It is important for businesses, community leaders, policy makers, law enforcement and concerned citizens to appreciate the full economic magnitude of this problem. The good news is that economic theory provides tools to calculate these magnitudes. Yet, published research has not specifically measured the total, societal costs of service outages due to theft and vandalism. This paper therefore has two purposes: first, to develop a method for calculating the real cost of these kinds of service outages, and second, to provide initial estimates based on currently available data.

The economics of crime has long recognized that the real costs of theft *always* exceed the value of the stolen property (Tullock 1967). So the real costs are not captured by looking at market or replacement costs of damaged infrastructure. The true costs include misuse or destruction of valuable resources as a result of the crime: perpetrators investing in better theft methods, property owners spending more on protection, governments devoting more resources to policing, and, in this case, households, businesses, and critical facilities suffering telecommunications outages in their area. This paper focuses specifically on this latter dimension of quantifying the costs of those service outages.

The analysis in this paper proceeds in two main steps. First, we draw on established economic research to estimate how much economic value households derive from their telecommunications connections each day—what economists call their ***willingness-to-pay***. We then calculate how much of this value is destroyed when service outages occur due to theft and vandalism. Second, we incorporate two amplifying effects that magnify these costs: loss aversion whereby losing a service already in possession is more painful than not gaining it in the first place, and the network effects whereby outages harm not just disconnected users but everyone who tries to communicate with them. Applying this framework to documented outages from the second half of 2024, we estimate that aggregate, cumulative service disruption costs on American society range from **$38 million to $188 million**.

2. Analysis

The estimates in this paper rely on a bedrock concept in economics: ***willingness-to-pay*** (WTP), or *reservation price*. WTP has been a fixture in economic theory for more than 130 years, ever since Alfred Marshall enshrined it in his 1890 economics textbook.[3] Today's economists take WTP as unquestionable, and it is used as an important metric in understanding the aggregate economic gains created by telecommunications goods (Liu et al. 2018, Brynholfsson et al. 2023, Brynholfsson et al. 2019).

In economic theory, WTP is defined as the maximum *real* price that a consumer will pay for one unit of an economic good. A real price in this sense is defined as a *relative* price that has been adjusted for inflation. Economists therefore interpret WTP as a measure of the consumer's real economic value of a good, relative to other goods and adjusted for inflation.

WTP can be put to work in the context of telecommunications connections. For example, suppose a household is willing to pay up to $100 per month for a broadband internet connection. We can say that this household is willing to forego up to $100 of other goods and services to acquire one month of broadband connection. And we can say that this household puts $100 of real economic value on having this connection compared to not having it. In short, WTP can be used as a measure of how much economic value telecommunications goods create for society.

A complementary metric, *consumer surplus*, is also a standard textbook approach to quantifying economic gains. It captures the difference between WTP and the actual price paid. This paper uses WTP rather than consumer surplus, because doing so keeps the analysis simple without losing analytic or interpretive power. In the language of economics, WTP is the entire area beneath the demand curve, representing the total social gains created by trading a good. Thus, compared to consumer surplus, relying on WTP provides a more complete picture of the economic gains created by telecommunication goods. In this respect, the paper is closest in methodology to the recent NBER working paper by

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[3] "To obtain complete knowledge of demand for anything, we should have to ascertain how much of it he [the consumer] would be willing to purchase at each of the prices at which it is likely to be offered; and the circumstance of his [the consumer's] demand for, say, tea can be best expressed by a list of the prices which he is willing to pay; that is, by his several demand prices for different amounts of it." (Alfred Marshall 1920 [1st ed. 1890], p.81).

Brynholfsson et al. (2023), using discrete choice experiments to estimate aggregate social gains as willingness to pay, not as consumer surplus.[4]

The Economic Gains of Telecommunications Connections

WTP for telecommunications is not easy to observe directly. Most economists consider direct survey questions (e.g., "how much are you willing to pay for broadband?") to be limited in their ability to deliver sound results. One reason is that such questions are unconstrained—they don't ask, for example: relative to what? The problem is further complicated because broadband connections are offered in so many different configurations of price, speed, data caps, latency, and more.

Even so, researchers have used more advanced methods to get at these magnitudes. A McKinsey survey found that internet access gives consumers hundreds of billions of dollars per year in economic gains (Bughin 2011). Similarly, a National Academy of Sciences study found that internet access generated hundreds of dollars per year more in economic value compared to what people pay for it (Brynjolfsson et al. 2019).

Industrial economists have developed two overlapping approaches to quantify WTP for broadband. One method is to gather data from the actual marketplace, observing how consumers select plans under a variety of different pricing and plan options. Economists Aviv Nevo, John L. Turner, and Jonathan W. Williams have pioneered this approach in a pair of major studies (Nevo et al. 2016, 2015).

A second approach has been to simulate real-world market conditions in a laboratory setting, and to use *discrete choice experiments* to observe consumers choosing between different pricing and plan options. Economists Yu-Hsin Liu, Jeffery Prince, and Scott Wallsten have pioneered this approach in their important study (Liu et al. 2018). Their work makes it possible to quantify individual households' real-world WTP at various speeds and latency thresholds.

In two follow-up studies, economists Edward Lopez and Patricia Kravtin adapted the Liu et al. approach into a method for calculating the aggregate economic gains of closing the digital divide (Lopez and Kravtin 2021a, 2021b). The analysis begins with a calculation of an individual household's WTP for broadband at different speeds. It then aggregates these estimates to the total number of locations to which broadband connections are expanded.

Table 1 lists the original Liu et al. (2018) estimates of WTP combined into various downstream/upstream speed thresholds. For example, at the low end, Table 1 shows that households are willing to pay $47.64 per month for a connection at 25/3 Mbps down/up

[4] For greater details on the WTP methodology, see Lopez and Kravtin (2021a) Appendix B.

($37.63 for downstream speeds of 25 Mbps plus $10.01 for upstream speeds of 3 Mbps). Likewise, on the highest end of the Liu et al (2018) estimates, households are willing to pay $107.05 per month for a 1000/100 Mbps connection.

Table 1: Monthly WTP for Broadband at Different Speed Combinations
Based on Liu et al. (2018) using their 2017 $USD

		Upstream Speed WTP		
		3 Mbps = $10.01	25 Mbps = $18.57	100 Mbps = $24.46
Downstream Speed WTP	25 Mbps = $37.63	$47.64	$56.20	$62.09
	100 Mbps = $63.82	$73.83	$82.38	$88.28
	500 Mbps = $75.47	$85.48	**$94.04**	$99.93
	1000 Mbps = $82.59	$92.60	$101.16	$107.05

Note: Table entries are the sum of Down + Up WTP.

Among this range of estimates, the one closest to speeds currently in use is the 500/25 estimate at $94.04. According to the Federal Communications Commission (FCC's) most recent *Internet Access Services* report (FCC 2025), 55.8% of broadband connections have downstream speeds of at least 100 Mbps but less than 940 Mbps, with an additional 26.0% at least 940 Mbps. Meanwhile, 49.0% of plans have upstream speeds of at least 20 Mbps but less than 500 Mbps, and an additional 17.1% have at least 500 Mbps. Bolstering this evidence, AllConnect (2025) reports from Ookla's Speedtest.net that average down/up speed is 285/47 as of July 2025. Again, while there is not an exact correspondence to the estimate thresholds in Table 1, the closest threshold to these current usage statistics is the 500/25 estimate at $94.04.

Next, since this estimate is in 2017 dollars, it needs to be adjusted for inflation and quality. The CPI-U inflation rate between January 2017 and July 2025 is 33.03%.[5] There is no single proxy for the quality adjustment, however certain indicators do suggest a range of possibilities. For example, a typical household's total data usage has approximately doubled since 2017, from 344.0 to 698.2 GB per month (Astound 2025). Likewise, the number of connected devices per household has increased more than 70% since 2017.[6] Latency has improved as well, decreasing from up to 43 ms in 2017 (FCC 2017) to less than 13 ms with a fiber connection in 2025 (AllConnect 2025), a nearly 70% improvement. While there is diminishing marginal utility over further increases in speeds, these other non-speed improvements in quality generate their own paths of increased WTP. Therefore, as an

[5] From the BLS Consumer Price Index, Data Series Id CUUR0000SA0, the CPI went from a level of 242.84 to 323.04 during this interval, https://data.bls.gov/timeseries/CUUR0000SA0?years_option=all_years.

[6] Connected devices per internet household increased from less than 10 in 2017 to more than 17 in 2024. See Parks and Associates (2024) as compared with Statista at https://www.statista.com/statistics/1107206/average-number-of-connected-devices-us-house/.

approximation, given this information, it seems plausible and conservative to suggest a 50% quality adjustment to the Liu et al. (2018) baseline estimates.

Accounting for the 33% inflation and 50% quality adjustments, our estimate of a household's economic gain can be shown in a simple formula:

WTP = ($94.04) x (1.33) x (1.5) = $187.02 per household per month.

The next step is to convert this monthly WTP to a time interval that matches the typical duration of a service outage caused by theft or vandalism. Unfortunately, the duration of outages was not included in the broadband industry's 2025 report. With more granular information about the duration of each service outage, the framework of this paper could estimate foregone WTP more precisely. Even without the benefit of concrete observational data, hypothetical scenarios can still make for useful comparisons. For example, suppose for argument's sake that the average outage is one day per affected user. If so, then the foregone WTP *per outage day per household* would then be the monthly WTP divided by the thirty days in a month, or simply:

WTP_t = ($187.02) / (30) = $6.25 per household per *t* day.

Again, we do not have the information about actual duration of outages for the 5,770 cases between June and December of 2024. However, if we were to assume an average outage duration of one day, then the above amount of $6.25 would approximate the cost per outage day to each affected customer.

Calculating the Real Costs of Service Disruptions: Foregone Economic Gains

In April 2025, the broadband industry published its second edition analysis of theft and vandalism incidents nationwide. Reporting data from a survey of large and small ISPs, the study documents **5,770 incidents** nationwide affecting service to an estimated **1.5 million customers**. This is a conservative estimate because it comes from surveys of service providers, not all of whom were able to participate or submit data in uniform ways, and therefore the 5,770 cases "should not be considered a full accounting of activity" (NCTA et al. 2025, p.7).

For these customers who have already purchased internet service, but then their service becomes disrupted due to theft or vandalism, the real costs (deadweight losses) to them can be measured as the aggregate foregone WTP across all locations whose service is disrupted, adjusted for *asymmetric losses* and *network diseconomies*.

The Asymmetric Loss Multiplier:

People are less willing to give up consumption goods or services once they are already using them. This is a well-known concept in behavioral economics known as *endowment effect* and *loss aversion*. The idea is, once a good or service is already in use, people's *willingness-to-accept* (or WTA, the price they would need to be paid to give up the good they already have) is greater than their WTP for the same good.[7] In short, the loss of a good or service is asymmetrically large compared to the gain of that same good or service.

For example, somebody might be willing to pay $100 a month for broadband connection, but the amount they would need to give up broadband, once they already have it, can be a much higher multiple of that price. In one controlled experiment, study participants revealed that they would need $17,530 per year to give up just internet search engines (Brynjolfsson et al. 2019, Table 1, p.7252).

Other surveys tend to bear this out. In its annual poll of attitudes toward broadband, Consumer Reports finds that 85 percent of Americans rely on the internet seven days a week (CRSG 2023). Similarly, a Pew Research survey finds that over 70 percent of users would consider it hard or very hard to give up their internet access or cell phones.[8] And a Boston Consulting Group survey finds that people rank internet higher than alcohol, coffee, or chocolate (Stern 2012).

Even with a good amount of survey evidence, the literature still lacks previous examples of calculating a specific magnitude for the asymmetric loss multiplier. Still, it is reasonable to suggest that it is bigger than zero and to consider a range of plausible possibilities. For example, the calculations below cover a lowest-low-moderate range of 2-5-10 times our expected WTP to offer a balanced perspective.

The Network Diseconomies Multiplier:

When communications connectivity gets disrupted, the costs will ripple throughout the social networks of the directly affected consumers. This is because internet connectivity creates network benefits. So, when certain locations become disconnected due to severed lines, the real costs as defined in this paper spread to others in society whose connections remain unaffected yet lose communication with consumers who are directly affected. These are known as *network diseconomies*.

[7] There is a large literature on the WTA-WTP gap, sometimes called the value disparity debate. Important papers making the case for large value disparities across many real-world markets include Hanemann (1991), Kahnemann et al. (1991), and Knetsch (1989). Other experimental economists such as List (2004) and Plott & Zeiler (2005) think the gap is small under most real-world situations. The survey results discussed above suggest the disparity may be large for telecommunications goods.

[8] For giving up internet access, 53 percent said it would be very hard and 20 percent said hard. For cell phone, it was 49 and 21 percent respectively. See https://www.pewresearch.org/internet/2014/02/27/part-2-americans-views-about-the-role-of-the-internet-in-their-lives/

For example, suppose Household A experiences an internet outage because perpetrators have damaged lines or stolen vital telecommunications equipment in their area, severing connectivity in that location. People in other (unaffected) areas will miss out on Household A's emails, web traffic, video calls, and so forth. As a result, businesses lose productivity, advertisers lose eyeballs, schools must accommodate missed homework assignments, health care providers must reschedule telehealth sessions, and so on. In short, when a location gets disconnected due to theft or vandalism, there is a multiplier effect throughout that location's social network.

As with the asymmetric loss multiplier, the literature does not suggest how large the network multiplier should be. However, as with the asymmetric loss multiplier, we can gain a balanced perspective by considering a lowest-low-moderate range of 2-5-10 times WTP.

Estimating the Real Costs of Service Outages:

The analysis now lets us account for the aggregate, cumulative social costs of the 5,770 reported outages affecting 1.5 million customers from June through December of 2024. Assuming that the average outage duration is one day, the aggregate, cumulative, real cost of telecommunications outages is:

$$RC = (WTP_t) \times (H) \times (m_1 + m_2).$$

Here WTP_t is each household's foregone WTP (deadweight loss) per outage day; it is estimated at $6.25 and represents the direct cost to consumers whose connections are disrupted. H is the 1.5 million cumulative number of households or businesses affected by all 5,770 outages. The term m_1 is the asymmetric loss multiplier, and finally m_2 is the network diseconomies multiplier capturing the indirect costs to other consumers whose connections are not disrupted, but who do lose the economic value of communication with directly affected consumers. Table 2 now presents the aggregate, cumulative foregone WTP (deadweight loss), with WTP_t=$6.25 and H=1.5 million, and again assuming an average outage duration of one day.

Table 2: Real Costs Under Alternative Scenarios
Aggregate Foregone WTP Assuming 1.5 million Customers and Average Outage Duration of One Day

	Lowest m_1=2	Low m_1=5	Moderate m_1=10
Lowest m_2=2	$37,500,000	$65,625,000	$112,500,000
Low m_2=5	$65,625,000	$93,750,000	$140,625,000
Moderate m_2=10	$112,500,000	$140,625,000	$187,500,000

Table 2 shows an array of plausible estimates of the foregone WTP (deadweight loss) created by a service outage equivalent to one day for 1.5 million customers. At the lowest end is $37.5 million, but if the asymmetric loss and network diseconomies multipliers are on the higher end of the plausible range, the real cost of service outages climbs to $187.5 million.

State-Level Analysis and Comparison:

The severity of copper thefts and vandalism varies enormously from state to state. State-level incident data in the April 2025 industry study (NCTA et al. 2025, p.9) makes it possible to compare noteworthy states as presented in Table 3. Ranking number 1 and 2 respectively, California and Texas account for a combined 50.1% of the nationally reported incidents between June and December of 2024. Meanwhile, ranked 6th and 8th respectively, Kentucky and North Carolina more closely reflect the national average. Comparing these states illustrates the disproportionate relative impacts of problem.

Table 3 presents the state-specific Real Costs as calculated in Table 2, using the moderate set of assumptions that m_1=m_2=5. Not surprisingly, Real Costs are high in California and Texas, at $29.3 million and $18.1 million respectively. Likewise, Kentucky at $3.7 million and North Carolina at $2.7 million have smaller Real Costs. As with the Table 2, these amounts are the aggregate, cumulative foregone WTP (i.e., deadweight losses) of reported service disruptions.

By comparison, California's 1,805 incidents make up 31.28% of the national total, yet California's economy is just 14% of national GDP, so its share of national incidents is therefore roughly twice its share of the national economy. Similarly, although Texas has far fewer reported incidents (1,113) for a 19.29% share nationally, it accounts for just 9.29% of national GDP. In short, Table 3 shows that both California and Texas have borne a disproportionate share (both roughly 2X) of the copper theft and vandalism problem. Meanwhile, Kentucky and North Carolina both account for relatively small shares of national incidents (3.92% and 2.86%, respectively), yet Kentucky's economy is one-third the size of North Carolina as a share of national GDP (0.99% and 2.87%, respectively). In this sense, Kentucky bears a large share (roughly 4X) of the problem relative to the size of its economy as compared to California or Texas. North Carolina's share of the problem, by comparison, is virtually the same as its share of the national economy (2.86% of incidents and 2.87% of GDP).

Table 3 also presents a complementary metric of relative magnitudes by taking the weighted average of each state's Real Costs as a percentage of its economy. By this metric, California and Texas are roughly of the same magnitude at 7.2 and 6.7, respectively, but Kentucky is about twice the magnitude at 12.7 of these two states, and North Carolina is almost exactly equal to the national situation at 3.19.

Table 3: Real Costs of Service Disruptions: Select States

	United States	**California**	**Texas**	**Kentucky**	**North Carolina**
Reported Incidents (National Rank)	5,770 (n/a)	1,805 (1)	1,113 (2)	226 (6)	165 (8)
Percent of Nationwide Incidents	100%	31.28%	19.29%	3.92%	2.86%
Real Costs of Service Disruptions	**$93,750,000**	**$29,325,000**	**$18,084,375**	**$3,675,000**	**$2,681,250**
Size of Economy (GDP)	$29.18 trillion	$4.10 trillion	$2.71 trillion	$0.29 trillion	$0.84 trillion
State Share of National GDP	100%	14.04%	9.28%	0.99%	2.87%
GDP per Capita	$85,810	$104,061	$86,581	$63,043	$75,675
Relative Magnitude of the Problem	3.20	7.21	6.67	12.67	3.19

Table 3 Notes: All dollar amounts are in nominal 2024 values. Incidents per state are from NCTA et al. (2025, Figure 2, p.8). State GDP per Capita is from Bureau of Economic Analysis. Real cost of service disruptions is calculated as aggregate, cumulative dollars assuming m_1=m_2=5 as in Table 2. Relative magnitude at the bottom of the table is calculated as (Real Costs/GDP)x(100,000).

Taken together, these comparisons reveal two key insights. First, large states like California and Texas face national-level consequences because their disproportionate share of incidents threatens commerce, connectivity, and security well beyond their borders. Second smaller states like Kentucky may experience fewer incidents, but the relative damage to their economies is far greater, stretching already limited resources. North Carolina, by contrast, illustrates what an "average" state impact looks like.

These findings suggest that national strategies should be tailored to both dimensions of the problem. High-incident states require more robust deterrence, investigation, and enforcement, while smaller states with outsized burdens likely need additional financial and technical support to offset disproportionate impacts.

Future Refinements:

These estimates are conservative in magnitude. They account only for the social costs due to service outages, not the broader adverse impacts on communities discussed above. The estimates are also based only on reported incidents which are presumed to be significantly lower than actual incidents.

From a data and analysis perspective, future refinements could build on this framework by incorporating more detailed data on outage durations, geographic distribution of incidents, and affected customer types (residential versus business), as well as by improving multiplier estimates for asymmetric losses and network effects through targeted surveys and natural experiments. Longer term impacts such as reduced investment or business relocations also merit study.

3. Conclusion

This paper provides an economic framework for policymakers, industry, law enforcement, and communities to understand the full societal costs of attacks on communications infrastructure — costs far greater than traditional cost accounting would suggest.

The paper quantifies a critical but previously unmeasured dimension of the infrastructure theft and vandalism problem. Using willingness-to-pay analysis grounded in established economic theory, it estimates that aggregate service disruptions cost between **$38 million to $188 million** cumulatively, for the 5,770 documented incidents in the second half of 2024. Affecting 1.5 million customers, these disruptions have been a significant drag on economic well-being.

Even these conservative estimates reveal that the true societal costs of critical infrastructure theft extend far beyond the replacement value of stolen materials. When perpetrators attack, steal or damage critical infrastructure – whether cutting copper or fiber lines, vandalizing cell towers, cabinets, underground vaults, or other communications equipment – their actions can trigger tens and hundreds of millions of dollars in economic losses through cascading effects of service disruptions.

Importantly, the burden is not evenly shared. California and Texas account for nearly half of all incidents, creating national-level vulnerabilities. At the same time, smaller states such as Kentucky suffer disproportionate impacts relative to their economies, stretching local resources far beyond capacity. These disparities show why infrastructure protection must be addressed not only a national issue but also as a state-and community-level challenge.

As previously noted, it is also essential to recognize that the estimates presented here are highly conservative. They reflect only reported incidents and short-term service outages, not the broader and longer-term impacts on communities such as lost business investment, reduced productivity, delayed public services, or weakened confidence in infrastructure reliability. The true costs are almost certainly higher.

Even with these limitations, the economic framework developed here provides policymakers, industry, law enforcement, and communities with a systematic way to understand the full societal costs of attacks on communications infrastructure —costs far greater than traditional cost accounting would suggest. Recognizing these hidden costs is the first step; acting on them is essential to safeguard America's communications networks and economic well-being they sustain.

Addressing these challenges will require a multifaceted strategy. It is critical for enhanced federal, state, and local laws to undercut the economic incentives to profit from attacks on critical communications infrastructure. Also critical is increased investigation and stronger enforcement measures. Coordinated federal-state-local partnerships are also essential. High-incident states will need robust deterrence and enforcement measures, while smaller states with outsized burdens will likely require additional financial and technical resources.

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