Final report for the International Connectivity Coalition

Submarine cables are fundamental to maintaining US tech leadership

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Contents

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Importance of submarine cables for the US economy: Executive summary

Since the modern internet was fully commercialized in the mid-1990s, the United States has built a strong position of leadership in the global technology sector, this wide lead in the technology sector has been a key contributor to US economic growth:

US companies account for ~75% of market capitalization in the global technology sector[1]

Value added by the 'digital economy' accounted for **~10% of US GDP in 2022[2]**

Digitally deliverable services accounted for **~60% of US services exports** and **~90% of the US trade surplus in services in 2024[3]**

Persistent delays in submarine cable permitting could contribute to an erosion of US tech leadership, and a potential reduction in cumulative GDP of **USD151–301 billion (at 2025 prices) in total between 2031 and 2035.**

US leadership in the global technology sector has been built on highly scalable business models that serve consumers and businesses worldwide, cutting-edge research and development (R&D), as well as a robust global infrastructure that supports the delivery of services worldwide.

Submarine cables are vital to the ability of US tech companies to compete globally, as they connect US data centers to the rest of world, to serve a global customer base. This remains crucial as the United States accounts for over 40% of global data-center capacity,[4] and the world faces an increasing explosion in demand for cloud and AI workloads served from those data centers.

Yet, these US firms are facing increased delays in obtaining permission to land new cables in the United States, as well as further uncertainty about whether planned cable landings would be approved at all.[5]

US companies have had to abandon parts or all of at least three projects (HKA, PLCN and BtoBE) at advanced stages of deployment due to long timelines before being refused relevant permits. The stranded cost of these projects is likely to **amount to between USD500 million and USD1 billion in total**

The leadership that US tech companies have built in digital services cannot be taken for granted, as AI and other emerging technologies provide opportunities for challengers across the world to capitalize on bureaucratic delays in submarine cable permitting.

[1] PitchBook (2025), *Private & Public Company Data - PitchBook;* Based on data from PitchBook as of October 16, 2025 on 578 companies with at least USD40 billion market capitalization, A quarter of the companies in the dataset are in technology-related sub-sectors and, of these, US companies account for approximately 75% of market capitalization. *Data has not been reviewed by PitchBook analysts.

[2] The last time these numbers were released; see US Bureau of Economic Analysis (2023), *SCB, U.S. Digital Economy: New and revised estimates, 2017–2022, December 2023.*

[3] US Bureau of Economic Analysis (2025), *BEA interactive data application.*

[4] International Energy Agency (2025), *Energy and AI*

[5] While submarine cable permitting delays have not prevented US companies from competing effectively for customers in international markets to date, persistent delays and uncertainty could compound rising challenges to US technology leadership.

If no improvements are made to the process for landing submarine cables in the US, tech companies active globally will need to mitigate or compensate for the impact of delays and uncertainty:

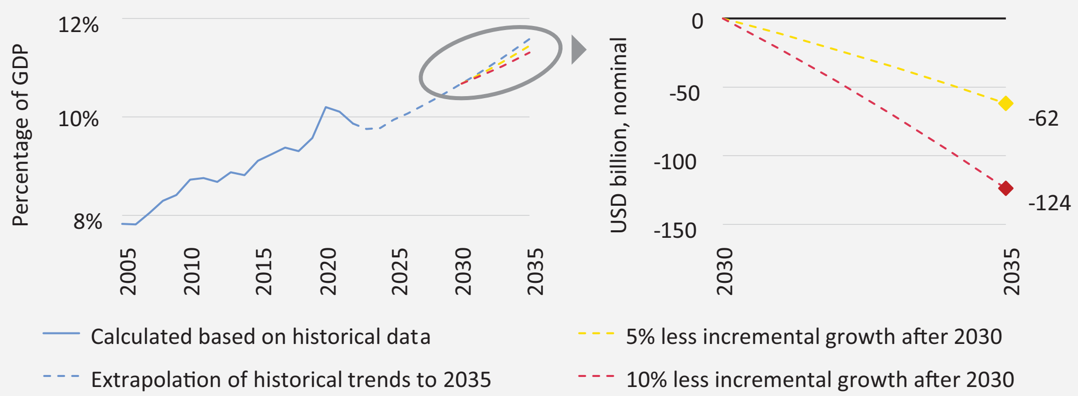
- Spending more on resilience to maintain service quality and reliability in international markets diverts potential resources away from competitiveness-boosting uses (e.g. cutting-edge R&D)
- US companies may need to spend more than competitors that are closer to customers in international markets; this disadvantage could put pressure on market shares in the long term
- The cost advantage of performing certain data-center workloads in the United States may decline, shifting the balance of efficient investment overseas, and resulting in a loss of economic benefits

Given growing global competition, ongoing delays in landing new submarine cables in the United States could contribute to an erosion of US technology leadership, and result in slower digitally driven growth.[6]

If, after 2030, incremental growth for the digital economy falls by just **5–10% per year,** nominal US GDP would be smaller by USD62–124 billion in 2035[7] (USD51–102 billion at 2025 prices[8]). Over the **period 2031–35, cumulative** reduction in GDP would reach **USD151–301 billion** (2025 prices).

Figure 1: Projections of value added by the digital economy as a percentage of nominal GDP, and annual reduction in nominal GDP in cases where erosion in US technology leadership reduces post-2030 incremental growth
[Source: Analysys Mason based on US Bureau of Economic Analysis,[9] 2025]

In 2035, nominal GDP would be USD62–124 billion less than the extrapolated baseline, and the cumulative gap over 2031–2035 would be USD179–358 billion (USD151–301 billion at 2025 prices)



US policy makers should aim to make the process for approving submarine cable landings more predictable and efficient, reserving detailed focus on certain companies and foreign destinations, as economic security contributes to national security. This would give US technology companies more confidence to invest in new submarine cables and solidify the US position as a digital hub for the world in years to come.

[6] Although these effects may not be pronounced in the short term, even a small change in the trajectory of digitally-driven economic growth could mean billions of dollars in foregone US GDP in future. The US should maintain its wide lead in the global technology sector for the digital economy to continue accounting for a growing share of US GDP in line with historical trends.

[7] Representing 0.15–0.3% of nominal GDP in 2035, or roughly a quarter to half of what the US has historically spent, in percentage-of-GDP terms, on federally-funded R&D in recent years (~0.6% of GDP in 2022).

[8] Assuming an inflation rate of 2%, which is in line with the long-term inflation target set by the US Federal Reserve; see US Federal Reserve, *Economy at a glance – Inflation*

[9] US Bureau of Economic Analysis, *Digital economy* and US Bureau of Economic Analysis, *National income and product accounts*; historical percentage-of-GDP figures are calculated based on digital economy estimates from 'New and revised estimates, 2017–2022' for 2017 onwards and from 'New and revised statistics of the US digital economy, 2005–2021' for 2005–2016.

1 Introduction

Electronic communications have crossed oceans through submarine (or 'subsea') cables since the first transatlantic telegraph cable was laid in the 1850s, leading to uninterrupted communication between the Americas and Europe since 1866. Since the Cable Landing License Act of 1921, the United States has operated a compulsory licensing regime for any party seeking to land submarine communication cables connecting the United States with any foreign country, or with US territories requiring cables to cross international waters.

The Federal Communication Commission (FCC) has been in charge of this licensing process since 1921, and more recently the application process has expanded to involve Executive Branch agencies under the 'Team Telecom' umbrella, to address any national security concerns related to new cables.

This process has introduced further frictions in the licensing and permitting process for new cables. It has increased the time required to clear all necessary reviews, added costs and complexity to the design and operation of submarine cables, and introduced uncertainty on how to ensure that cable projects comply with Team Telecom requirements. The FCC noted, in a recent Further Notice of Proposed Rulemaking (FNPRM),[1] that these frictions are affecting investors and the broader US tech industry.

Despite these challenges, the United States has so far been able to retain a unique position in the global tech industry. Tech companies incorporated in the United States continue to thrive, both domestically and in global markets, benefitting from economies of scale made possible by digital technology used by billions of people and by companies around the world, not just in the United States.

However, we may be approaching an inflection point with the emergence and rapid growth of AI, and efforts by other countries to capitalize on AI. Delays and uncertainty in the permitting of the submarine cables may exacerbate an inflection toward slower growth in the United States and faster growth elsewhere. The FCC's FNPRM acknowledges this risk and has proposed measures to streamline the submarine cable review process, including the Team Telecom process, considering explicitly the impact on US tech leadership and its effect on the economy.

In this paper, we aim to provide a clear perspective on the importance of submarine cables to the United States's present and future global leadership in the technology space. We also highlight the importance of being able to rely on predictable, timely licensing to ensure adequate supply of these cables in the coming years. Ongoing challenges have direct repercussions on the tech sector, and could also affect the broader US economy, at a time when investment in AI and its potential impact could determine long-term economic outcomes. We quantify these impacts illustratively in conclusion in Section 4.

[1] FCC, 2025, *Further Notice of Proposed Rulemaking (FNPRM), in OI Docket No. 24-523, in MD Docket No. 24-524, FCC 25-49, adopted on August 7, 2025, and released on August, 13, 2025*.

2 Submarine cables support US digital leadership, a key driver of economic growth

The US's leadership in digital technology has been a strong pillar of economic growth domestically, anchored in the global success of digital products and services produced in the United States. The ability to offer services worldwide, and to benefit from the resulting economies of scale, is deeply intertwined with the connectivity between the United States and the rest of the world. This is enabled nearly entirely by submarine cables.

2.1 The United States is home to many of the world's largest technology companies, whose capital and R&D expenditures have underpinned US economic growth

The United States is the historical birthplace of the internet: from ARPANET, the first network connecting US research labs and universities, to the foundational research and development of key protocols that continue to shape the modern internet. This legacy, combined with the ready ecosystem of engineers, startups and commercialization pathways, attracted new internet companies (many originating in Silicon Valley), as well as the capital and infrastructure enablers they require.

Since the late 1990s, the United States has established global leadership in digital technology. It is home to the largest hardware and software companies at the heart of the sector. Companies originating in the United States, and active globally, represent 75% of the market capitalization of the largest tech companies around the world (~USD28 trillion for companies originating in the United States out of ~USD38 trillion globally, as of October 2025), illustrating the United States's strong position of leadership in the sector (see Figure 2.1).

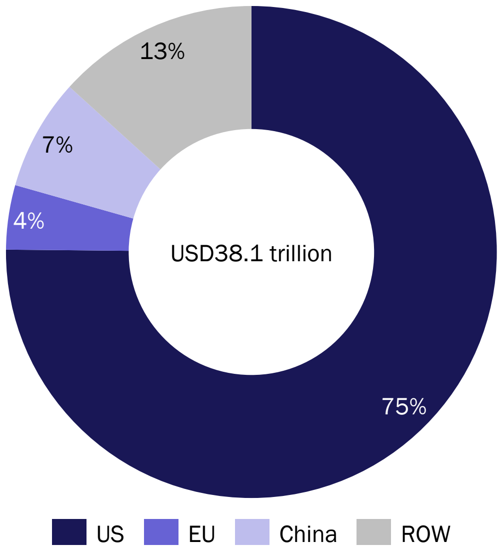


Figure 2.1: Market capitalization by country of origin, based on top 133 telecommunication, computer and information services companies[2] [Source: PitchBook Data, Inc., October, 16, 2025]

2 Telecommunication, computer and information services companies includes the following sectors: 'communication equipment', 'computer hardware', 'consumer electronics', 'electrical equipment and parts', 'electronic components', 'electronic gaming and multimedia', 'information technology services', 'internet

The tech sector has been a major driver of economic growth in the United States in recent years. Global tech companies invest significant amounts in capital expenditure, but also in research and development (R&D), as shows in Figure 2.2. The intensity of R&D expenditure (R&D expenditure as a percentage of revenue or net sales) is important to long-term competitiveness and prosperity, and the United States's significant lead over other regions (see Figure 2.3) is largely driven by the tech sector.

Figure 2.2: Share of total net sales by tech classification by region [Source EU Industrial R&D Investment Scoreboard, 2024]

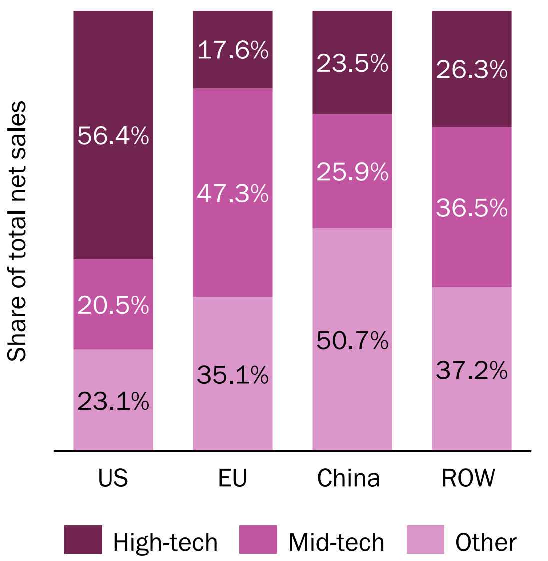
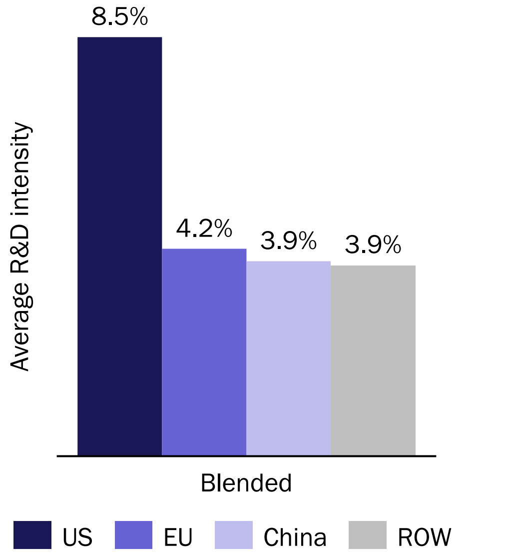


Figure 2.3: Average blended R&D intensity by region [Source: EU Industrial R&D Investment Scoreboard, 2024]

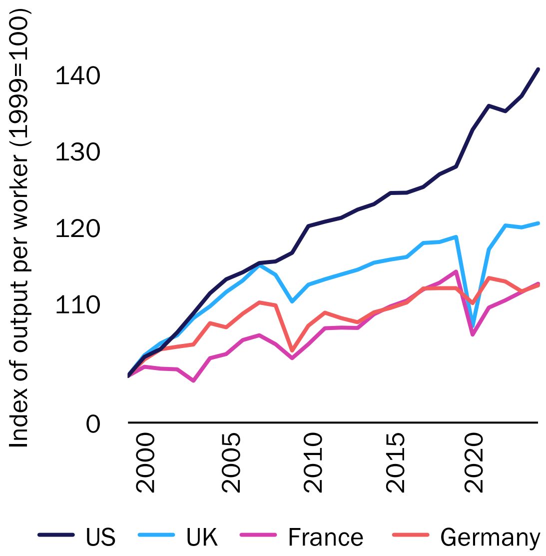


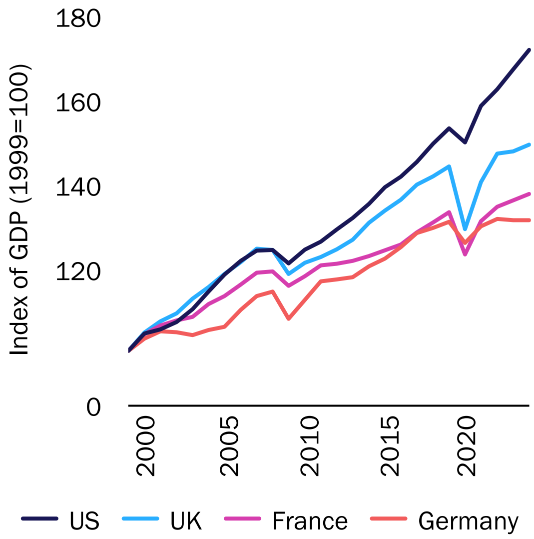
The success of the tech sector has been a major driver of overall economic growth for the United States, as investments in infrastructure, R&D, and human capital by tech companies have spillover effects on the rest of the economy. Over the longer term, gains in productivity, which result from successful R&D in the tech sector and lead to digital transformation of other industries, have a positive impact on GDP growth. As shown in Figure 2.4 and Figure 2.5, the United States has experienced higher levels of productivity growth than other Western countries since 2000.

content and information', 'internet retail', 'semiconductor equipment and materials', 'semiconductors', 'software – application', 'software – infrastructure', 'telecom services'. ROW: Rest Of the World. The top companies were defined as those with a market cap of at least USD40 billion.

Figure 2.4: Productivity growth by region *Figure 2.5: GDP growth by region*

(1999 =100) [Source: International Labour Organization, 2025]





In the United States, the contribution of the tech sector can also be seen through high levels of productivity growth in highly tech-related sectors such as data processing, internet publishing and other information services, as well as broadcasting and telecommunications (see Figure 2.6). Meanwhile, exports of 'digitally deliverable'[3] services to consumers and businesses across the world contribute to US GDP. Digitally deliverable services have accounted for most of the growth in the United States trade surplus in services, which reached ~USD300 billion in 2024 (see Figure 2.7). This provides a measure of how much the rest of the world uses digital services provided by US companies over and above what the United States uses from abroad.[4]

3 Digitally deliverable services refers to 'insurance services', 'financial services', 'charges for the use of intellectual property', 'telecommunications, computer and information services', 'other business services that are digitally deliverable' 'personal, cultural and recreational services that are digitally deliverable'. ICT services include 'charges for the use of intellectual property for licenses to reproduce and/or distribute computer software', 'telecommunications services', 'computer services'.

4 The White House (2024), *Digitally-Enabled Services Products Drive the United States Services Trade Surplus*.

Figure 2.6: Growth in US productivity by sector (1999=100) [Source: Bureau of Labor Statistics, 2025]

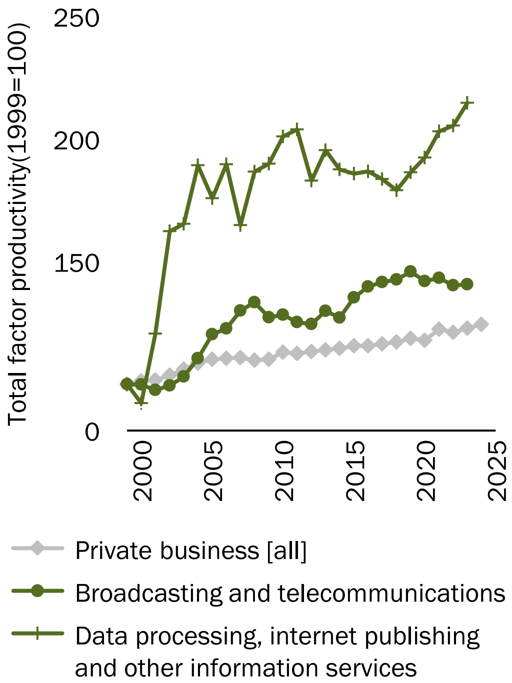
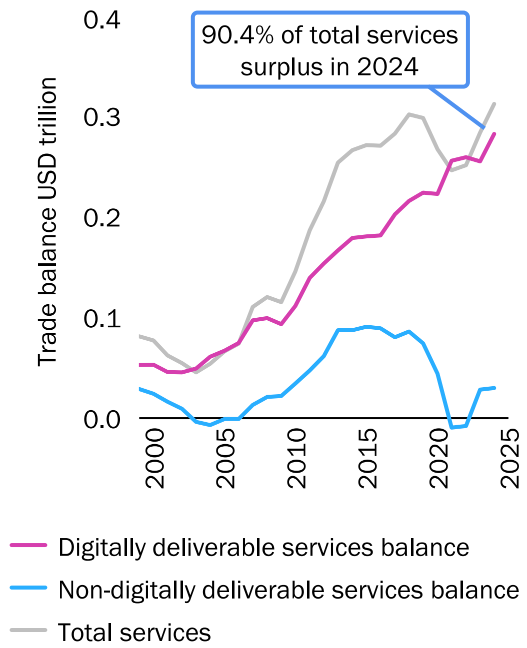


Figure 2.7: US trade balance for total, digitally deliverable and non-digitally deliverable services [Source: Bureau of Economic Analysis, 2025]



2.2 Submarine cables and the industry that deploys, operates and maintains them have been critical to the development of the United States's tech leadership

The success of the United States technology industry is underpinned by extensive infrastructure including data centers, submarine cables and other networks

The United States has not only played an important role in building the internet but has also developed into a global digital infrastructure hub. This journey can be traced from early commercial deployments (e.g. AOL's Ashburn data-center facilities and key peering points such as MAE-East) to the massive data centers, traffic exchange facilities and backbone networks seen today.

At present, the United States boasts a significant lead over other countries in data-center capacity (see Figure 2.8), and much of this footprint has been built up over time to enable content and cloud services. This capacity is now increasingly being used for developing and hosting AI models. The United States accounted for over 40% of global installed capacity as of 2024,[5] despite only accounting for 4% of global population. More recent data suggests that the eight largest US cities account for close to a quarter of global data-center capacity (see Figure 2.8).

5 International Energy Agency, 2025, *Energy and AI*

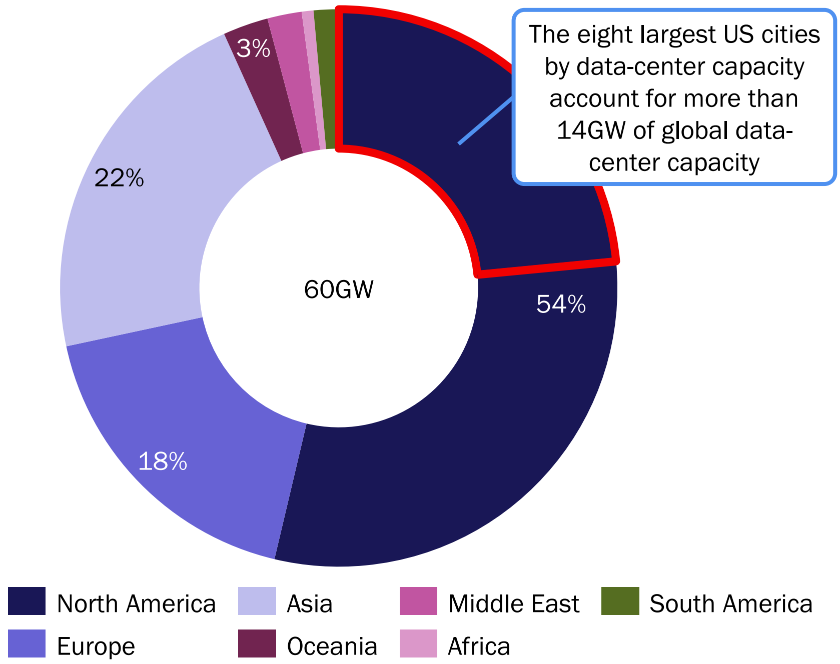


Figure 2.8: Data-center capacity by region in 2025 [Source: Knight Frank Global Data Centres Report, 2026]

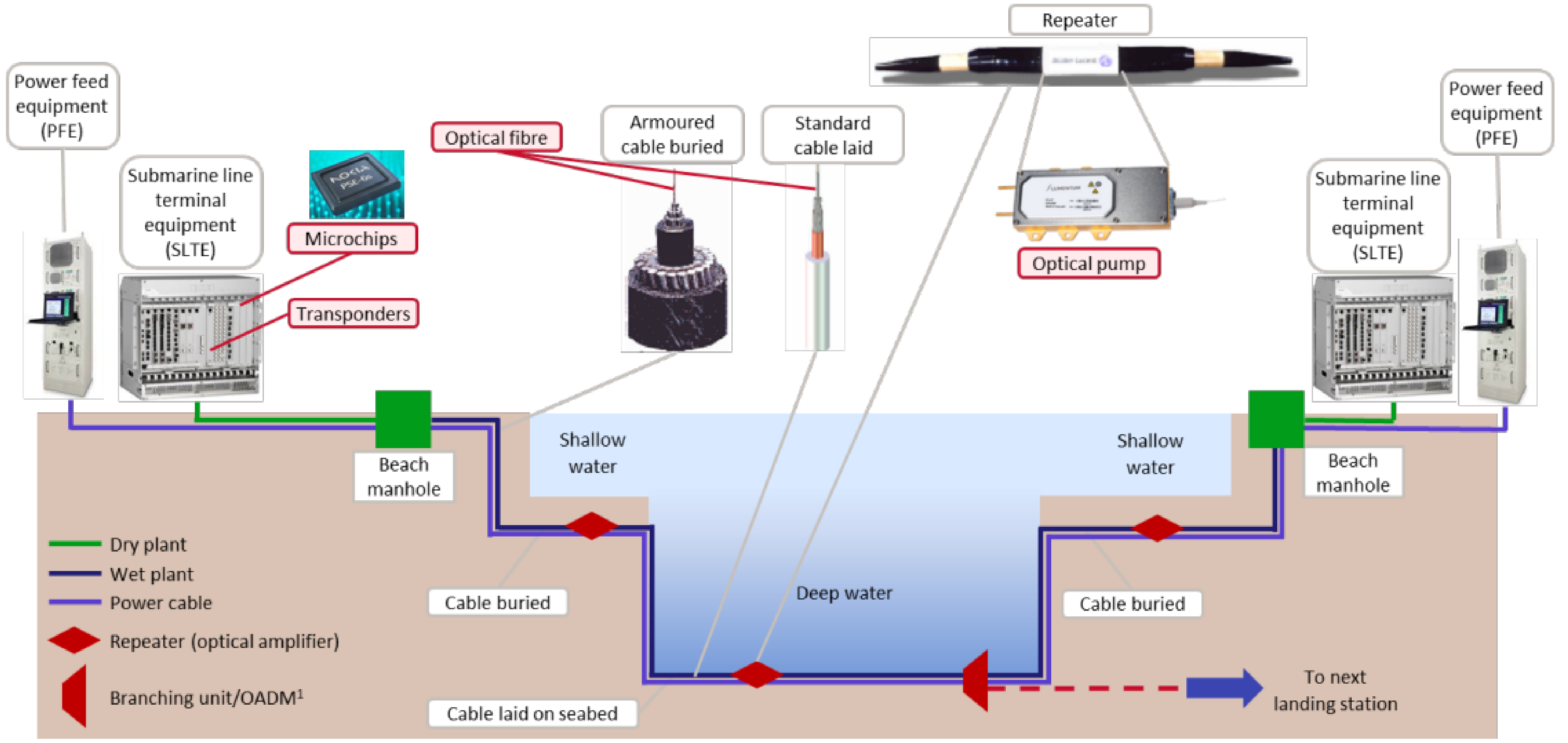
As mentioned, the United States's tech leadership relies not only on a vibrant domestic market, but also on infrastructure and services that support global demand, including in Europe and Asia. This global demand served from US infrastructure anchors demand for data centers in the continental US, and for submarine cable capacity connecting these data centers to the rest of the world. Over 70% of US trade in telecommunications, computer, and information services is with countries that are separated from the United States by either the Pacific or Atlantic oceans.[6]

Submarine cables are the backbone of the global internet, providing the pathways through which data and digital services are exchanged outside the United States

As communication needs evolved, advancements have been made in technologies for manufacturing, laying, and maintaining cables, as well as in technologies for terminating submarine cables (and enabling them to connect to terrestrial networks). Submarine cables have evolved from telegraph to telephone and coaxial cables, with the first fiber-optic cable, TAT-8, connecting the United States, the UK and France in 1988. The high-bandwidth and low-latency capabilities of fiber-optic cables sparked large investment in the early 1990s as submarine cable networks became the backbone of the internet, providing the interconnectivity between terrestrial networks in various countries, as shown in Figure *2.9* below.

6 See Table 3.3. U.S. trade in ICT services and digitally deliverable services, by country or affiliationin Bureau of Economic Analysis, 2025. *BEA interactive data application*

Figure 2.9: Example of submarine cable's importance in terrestrial fiber networks [Source: European Commission, Analysys Mason, 2025]



Initially, the market was primarily driven by traditional telecommunications operators (or 'carriers'). These carriers formed consortia that were funded by financial investors who expected significant demand for capacity and strong returns on investment. After an initial period of building too much capacity in advance of demand in the early 2000s, traditional carriers struggled to generate returns from these investments. Large content providers (i.e. hyperscalers) started to become more active in obtaining submarine cable capacity. Google first became a consortium member in 2010 on the Unity Cable connecting Japan and the United States.[7] Eventually, hyperscalers began building their own private cables, starting with the MAREA cable system, which was initially owned and funded by Meta, Microsoft and Telxius.[8]

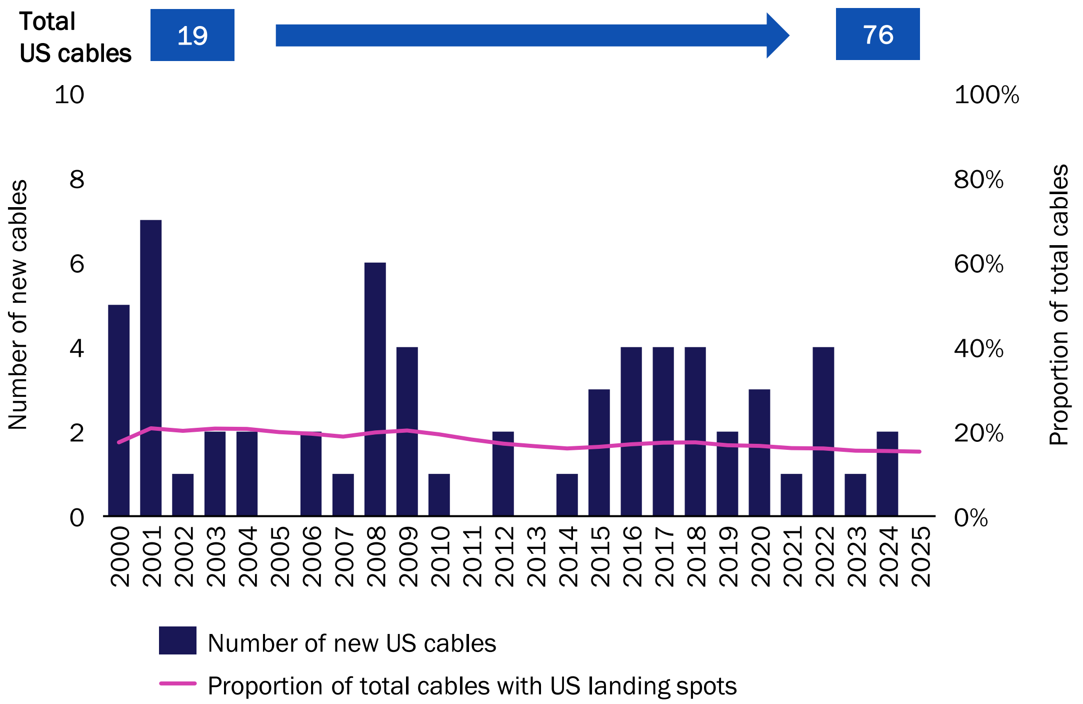
With this renewed interest in building submarine cables, anchored in fast-growing demand for online services, many new cables were commissioned and the capacity of individual cables increased materially. The FCC's latest available data (from 2023) shows owned capacity exceeding 6Pbit/s,[9] which is the equivalent to one billion high-definition movies streaming simultaneously. Today's global connectivity between the United States and the rest of the world is enabled through over 75 submarine cables. As the internet became global and further decentralized, the share of global cables that land in the United States has experienced a gradual decline over time, from ~20% in the early 2000s to ~15% at present (see Figure 2.10).

7 Data Center Dynamics, November 23 2021, *Submarine cables find new impetus under hyperscalers*.

8 MAREA was the first open cable system that allowed each owner to operate their portion independently. Submarine Cable Networks, 2019, *AWS acquires a fiber pair on MAREA cable system on IRU basis*.

9 FCC, 2024. *2023 Circuit Capacity Data For U.S.-International Submarine Cables*, Table 6, Comparison of Capacities Reported from Cable Operator Reports and Capacity Holder Reports (2023).

Figure 2.10: Number of US cables and proportion of total cables with US landing spots [Source: Analysys Mason Submarine Cable Tracker, 2025]



Notes:

- Design capacity for each cable has increased by 1000× since 2000 (e.g. CenturyLink, RFS in Sep. 2000, had an initial design capacity of 320Gbit/s; Google's Grace Hopper system, RFS in Sep. 2021, has a total system capacity of 352Tbit/s)
- Most of the capacity for newly deployed cables is driven by the need to connect hyperscale infrastructure across countries and regions

Submarine systems are made possible by a global ecosystem working on long timeframes under supply constraints

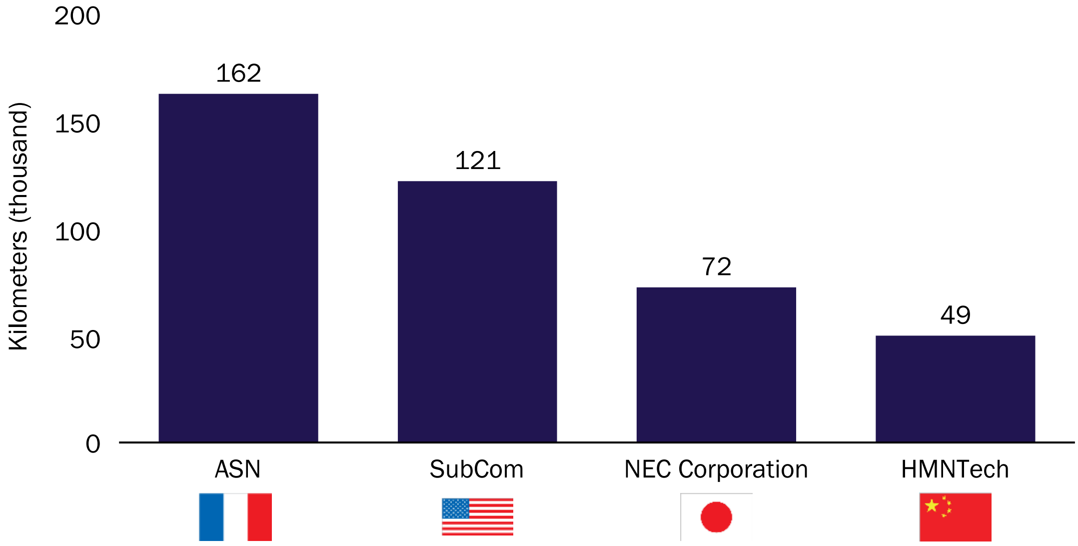
The cable industry revolves around four main global suppliers[10] that provide a range of solutions including the design, manufacture, and deployment of submarine cable systems and the relevant equipment. According to TeleGeography, these four suppliers account for more than 95% of the total length of cable deployed between 2010–25. French government-owned Alcatel Submarine Networks (ASN) leads the market, (see Figure 2.11), providing fully integrated turnkey solutions across design, manufacturing, deployment and maintenance.[11] The second vertically integrated supplier, SubCom, is the only major US-owned firm, manufacturing and deploying its own submarine cables and wet plant equipment. SubCom plays a key role in the United States submarine

10 Tier 1 suppliers are top-level suppliers with design, manufacturing and deployment capabilities.

11 Nokia completed the sale of 80% of its stake to the French State in January 2025 and will retain the remaining 20% to ensure a smooth transition - https://www.nokia.com/newsroom/nokia-completes-its-sale-of-leading-submarine-networks-business-asn-alcatel-submarine-networks-to-the-french-state/.

cable industry.[12] NEC Corporation, headquartered in Japan, follows as the third-largest supplier, manufacturing submarine cables, wet and dry plant equipment. Lastly, HMNTech is an emerging supplier in the market and is the largest fiber-optic manufacturer in China. HMNTech was previously known as Huawei Marine Networks but following security concerns over the use of Huawei equipment in telecom networks, Huawei sold its share to the Hengtong Group in 2020. HMNTech has since focused on the South-East Asian markets and has managed to develop a strong presence in the region.[13]

Figure 2.11: Submarine cable length built by the four main global submarine cable suppliers between 2020 and 2025 [Source: TeleGeography, 2025]



Although SubCom and ASN have the largest fleet of vessels, other submarine maintenance providers include Orange Marine (France), OMS (Malaysia and United States) and GMSL (United States). All of them operate maintenance vessels and have some cable-laying capacity.[14] In addition, smaller suppliers (primarily in Asia) and independent hybrid vessels install and repair submarine cable systems in small sea basins.[15]

The submarine cable market depends on a limited number of specialized suppliers for critical system components. Globally, only three companies produce optical fiber adequate for long-distance

12 Reuters, July 6 2023, *Inside the subsea cable firm secretly helping America take on China*.

13 East Asia Forum, October 17, 2025, *Southeast Asia's undersea cables under great power pressure*.

14 Orange Marine has two cable-laying vessels, while OMS and GMSL have one each. Orange Marine recently announced the construction of two new maintenance vessels which will replace two ageing vessels in 2028 and 2029. Orange, November 3 2025, *Orange Marine modernizes its fleet of cable ships to secure digital infrastructure in Europe, Africa and the Middle East*.

15 The hybrid vessels are smaller than typical installation and maintenance vessels as they are designed to work on simpler submarine cable systems such as unrepeated systems and in shallow waters.

submarine transmission,[16] and two (Corning and Lightera) have corporate headquarters located in the United States.[17] These cables are protected by specialized casing, which large suppliers manufacture themselves to withstand harsh marine environments. Signal repeaters, essential to compensate for loss over vast distances, are also produced in-house by Tier 1 suppliers, but rely on just two external companies for semiconductor optical pumps. Power feeding equipment (PFE) and Submarine Line Terminal Equipment (SLTE) are assembled either by suppliers themselves or outsourced to select third parties; ASN and NEC Corporation self-assemble PFE, while SubCom and Xtera outsource. SLTE converts terrestrial electrical signals into optical signals for underwater transmission, using transponders from a handful of manufacturers, including Ciena, Nokia, Infinera (Nokia), and Huawei. These transponders require secure microchips, primarily sourced from TSMC and Samsung. Successful submarine cable deployment therefore requires cable owners to interact with a global supply chain that contains a relatively small number of highly specialized suppliers, and several policy decisions have further reduced access to an already limited supplier market.[18]

2.3 The construction of submarine cables is a highly complex process involving fragmented regulatory approval, long term commitment, and significant upfront investment

The manufacture and deployment of thousands of miles of cables across the globe represents a a substantial, long-term investment

The deployment of a new submarine cable system starts with demand. When carriers were the primary sponsors of new cables, that demand was related to the willingness and ability to pay for traditional international voice and data transfer by individuals and corporations. With the explosion of demand for online services, hyperscalers began to self-supply private cables or participate in consortia, which has driven investment of nearly USD20 billion in submarine systems between 2014 and 2024.[19]

Once a new system has been agreed by investors, then commissioned with 'contracts in force' for the design, manufacture and installation of the cable, the surveying and permitting process starts. This starts with desktop surveys to determine the optimal route, which weighs costs against risks. Once owners approve routes, contractors need to seek operational permits for the physical surveys

16 Other producers of optical fiber typically focus on small, unrepeated submarine cable systems which cover shorter distances; for examples, see European Commission (2025), *Security and resilience of EU submarine cable infrastructures*

17 See Corning, *Our Company* and Lightera, *About us*. Lightera is the unified global brand of several of Furukawa Electric's businesses, and includes OFS (Optical Fiber Solutions), which was formerly Lucent Technologies' optical fiber solutions business prior to 2001, and is based in Norcross, Georgia.

18 These include rulings banning Huawei and ZTE telecoms equipment from military facilities from May 2018, extending to a total ban of telecom equipment that poses a national security threat under the Secure and Trusted Communications Networks Act of 2019. More recently, TSMC's validated end user (VEU) waiver, which allowed the export of microchips from Chinese facilities, was revoked and will be effective from December 31 2025. See Information Technology and Innovation Foundation (ITIF), October 27 2025, *Backfire: Export Controls Helped Huawei and Hurt U.S. Firms* and CNBC, September 3 2025, *The U.S. makes it harder for TSMC, SK Hynix and Samsung to produce chips in China*.

19 Submarine Telecoms Forum, 2025. *Submarine Telecoms Industry Report*.

to finalize the required route components (in particular, the cable armoring), and once the design is complete, permits are required to install the cables, including custom clearances, visas, and relevant shipping permits. These are separate from the licenses needed to land the cables, discussed below.

Beyond permitting, other considerations affect the design and construction of the cable systems. The cable landing station locations need to be determined to enable efficient connectivity between the submarine cables and terrestrial networks, and they must be made resilient. The equipment must be ordered from a variety of vendors and timed in a co-ordinated way, for the physical infrastructure to be completed. This must then be deployed by purpose-built ships with a skilled crew, who must navigate weather and other obstacles. Finally, when deployed, the cable must be tested before ownership is fully transferred to the owner(s).

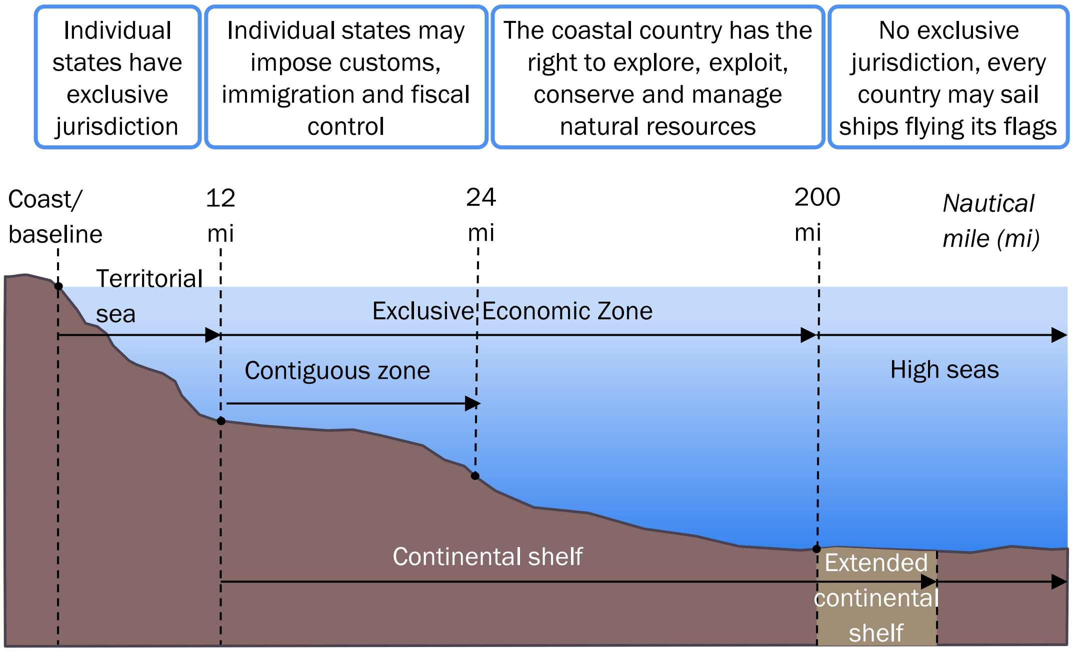
Thereafter, consortium members take on the operation and maintenance responsibility for the system. Maintenance typically requires membership of a maintenance agreement, which typically involves a retainer fee and an incremental repair charge.[20]

The ability to land new submarine cables in the United States relies on government permits

The governing of submarine cables is established by the 1884 International Convention for the Protection of Submarine Telegraph Cables and the 1982 United Nations Convention on the Law of the Sea (UNCLOS), enforced in 1994. This provides that, in general terms, prospective owners of submarine cables (or 'sponsors') must seek permits in principle to deploy and operate the cable system and build the cable landing stations connected to the system.

20 See Analysys Mason and Axiom for the European Commission, 2025, *Report on Security and Resilience of EU Submarine Cable Infrastructures | Shaping Europe's digital future*.

Figure 2.12: UNCLOS determined maritime zones and boundaries [Source: Analysys Mason and Axiom, European Commission, 2025][21]



The permitting process is often long and complex as each country has its own regulatory and policy requirements. In addition to coordinating among consortium members and contracted suppliers, the owners must co-ordinate with multiple government stakeholders, in at least two countries for international cables.

In the United States, the permitting process for landing submarine cables has evolved significantly over the years from its first official introduction in the Cable Landing License Act of 1921.[22] The Act set the legal requirement for owners and operators of submarine cables with at least one landing station in the United States connecting to a foreign State, country or territory, or passing through international waters, to obtain a permit.[23]

Under the Cable Landing License Act, only the President of the United States has the power to grant and revoke cable landing licenses. This Presidential authority was delegated to the FCC under Executive Order 10530 in 1954, requiring the FCC to co-ordinate with the Department of State and other executive agencies before issuing licenses,[24]each overseeing different aspects of cable installation, operation, and environmental impact.

21 Ibid.

22 Cable Landing License Act of May 27 1921, Chapter 12 – *An Act Relating to the landing and operation of submarine cables in the United States*.

23 The Cable Landing License Act focused on international connectivity and as such, cables with landing stations connecting the United States only do not fall under the remit of this Act.

24 Executive Order 10530 of May 10 1954, *Providing for the Performance of Certain Functions Vested in or Subject to the Approval of the President.*

In line with its regulatory role in international telecommunications, the FCC requires prospective cable owners to obtain a license, further to the FCC's oversight of international telecommunications. The FCC requests the views of the Department of Justice, Department of Defense, and the Department of Homeland Security, or 'Team Telecom', as the agencies with expertise in those areas. This process was formalized by an executive order in 2020, and its impact is discussed in Section 3 below.

The FCC license is only part of the government approvals needed for a new submarine cable to be deployed in the United States. The US Army Corps of Engineers (USACE) reviews applications with a focus on navigation and the physical impacts resulting from cable installation off the United States coast. USACE oversight includes requirements for dredging and filling activities associated with cable burial. In addition, cable projects may require consultation with, or permits from, other federal agencies, including the National Oceanic and Atmospheric Administration (NOAA),[25] the Department of the Interior,[26] and the Bureau of Ocean Energy Management (BOEM), depending on the landing location and route of the cable system. These agencies review project proposals to ensure compliance with environmental regulations, protection of marine sanctuaries, and conservation of fisheries and wildlife habitats. Finally, the Department of Transportation (DOT) and the US Coast Guard (USCG) have Federal oversight on shipping lanes and navigational safety.

State and local permitting processes add more complexity. Under the Submerged Lands Act of 1953, coastal states control waters up to at least three nautical miles from their shores, with the responsibility to administer seabed leases, require environmental reviews, and regulate any use of natural resources. Local governments may impose additional requirements related to land access, easements, pollution abatement, and use of public infrastructure such as beaches and roads for deploying and landing the cables.

These overlapping regulatory regimes create significant costs and complexity for project sponsors, who must comply with regulatory requirements and implement customized mitigation measures that stem from the review processes. These challenges can result in legal costs amounting to millions of dollars, as well as changes to routes and system designs very late in the manufacturing and deployment process. Operationally, the ease or difficulty of obtaining and complying with permits can influence where cables land, potentially leading to multiple cables landing in fewer, more geographically constrained areas where permitting is more predictable. Such clustered landing locations put multiple cables at risk from a singular human or natural event, which affects the resilience and diversity of the US cable network.

25 Including its National Ocean Service (NOS) and National Marine Fisheries Service (NMFS).

26 Including the National Park Service (NPS), U.S. Fish and Wildlife Service (FWS).

3 The global technology sector is at an inflection point, and US leadership could erode unless improvements are made to the submarine cable review process

The process for landing submarine cables in the United States has increased in complexity and length in recent years. This creates regulatory uncertainty, delays, and additional costs, which poses a risk for future investment in US tech leadership, particularly given the current inflection point of the global technology sector.

3.1 The lengthy, complex and unstandardized process for landing submarine cables in the United States has increased costs and uncertainty for cable sponsors and investors

The current application process for cable landing licenses in the United States is summarized in Figure 3.1. It follows the rules and regulations adopted in 2001, and modified in the FCC's 2020 *Executive Branch Review Report and Order.*[27] The FCC adopted rules to streamline submarine cable applications in a Report and Order (R&O) released in August 2025,[28] and also proposed further changes in a Further Notice of Proposed Rulemaking (FNPRM).[29] We note that the August 2025 rules provide some clarity but also some constraints including shorter license durations, and, although adopted, have not been implemented. The changes proposed though the FNPRM, which could streamline some applications from trusted parties and maintain 25-year licenses, have not been adopted at the time of this writing.[30]

In addition to being complex and multi-layered, the permitting and licensing process is viewed by cable sponsors, builders, and law firms as unpredictable – characterized by stages of undefined length and unlimited extensions that often result in protracted applications. The FCC's decision to review the process and propose changes to it suggests a degree of consensus across the board on this issue.

Application	Applicants must submit highly detailed applications to the FCC at least 90 days before construction, including ownership structures, technical specifications, landing station details, and foreign affiliations. Responses to standard questions are mandatory. These requirements effectively mean most

27 FCC, 35 FCC Rcd 10927 (13), October 1 2020, *FCC Improves Transparency and Timeliness of Foreign Ownership Review*. This codified the actions from *Executive Order 13913*.

28 FCC, 40 FCC Rcd 6481 (7), August 13, 2025, *Review of Submarine Cable Landing License Rules and Procedures to Assess Evolving National Security, Law Enforcement, Foreign Policy, and Trade Policy Risks.*

29 FCC, 2025 FNPRM.

30 Hogan Lovells, September 16 2025, *FCC issues submarine cable rules, seeks comment on additional proposals.*

key contractual arrangements for the cable system must be finalized before filing.

FCC review

The FCC checks applications for completeness, and determines eligibility for a streamlined application process. In theory, streamlined applications should be decided within 45 days of public notice. However, this option is rarely (if ever) used because the FCC generally refers any application to Team Telecom. Non-streamlined applications have a 90-day review period, subject to 90-day extensions for complex cases, with no limit on extensions. This alone introduces major uncertainty on the overall timing of applications.

Review by Team Telecom

If an application is referred by the FCC to Team Telecom, the latter assesses the national security and law enforcement risks associated with the proposed cable. The review begins only after responses from the applicant are deemed complete by Team Telecom, kick-starting an initial 120-day review period. If this review finds that risks cannot be mitigated through 'standard measures', the review is extended by a further 90 days. In practice, delays often arise from tailored, unstandardized questions that must be answered as they arise. This often triggers multiple rounds of clarification and additional questions, with no prescribed time limit.

Mitigation measures

Team Telecom requires applicants to enter into bespoke national security agreements that are negotiated on a case-by-case basis to mitigate the risks identified by Team Telecom. Because national security agreements are typically tailored for each project, contracts involving the cable system may need to be amended and technical measures implemented after construction and deployment have started, adding further cost and delay to each project.

All the parties interviewed for this paper consistently raised the detrimental impact of complexities, open-ended timelines and bespoke remedies as major pain points. These interviews were conducted with cable sponsors and owners, submarine cable suppliers who often contribute to the permitting and licensing process, as well as lawyers who support those processes (and could arguably be seen as profiting financially from the complexity, time and effort required to successfully permit and license a new submarine cable). All interviews were conducted on a confidential basis, to elicit candid views.

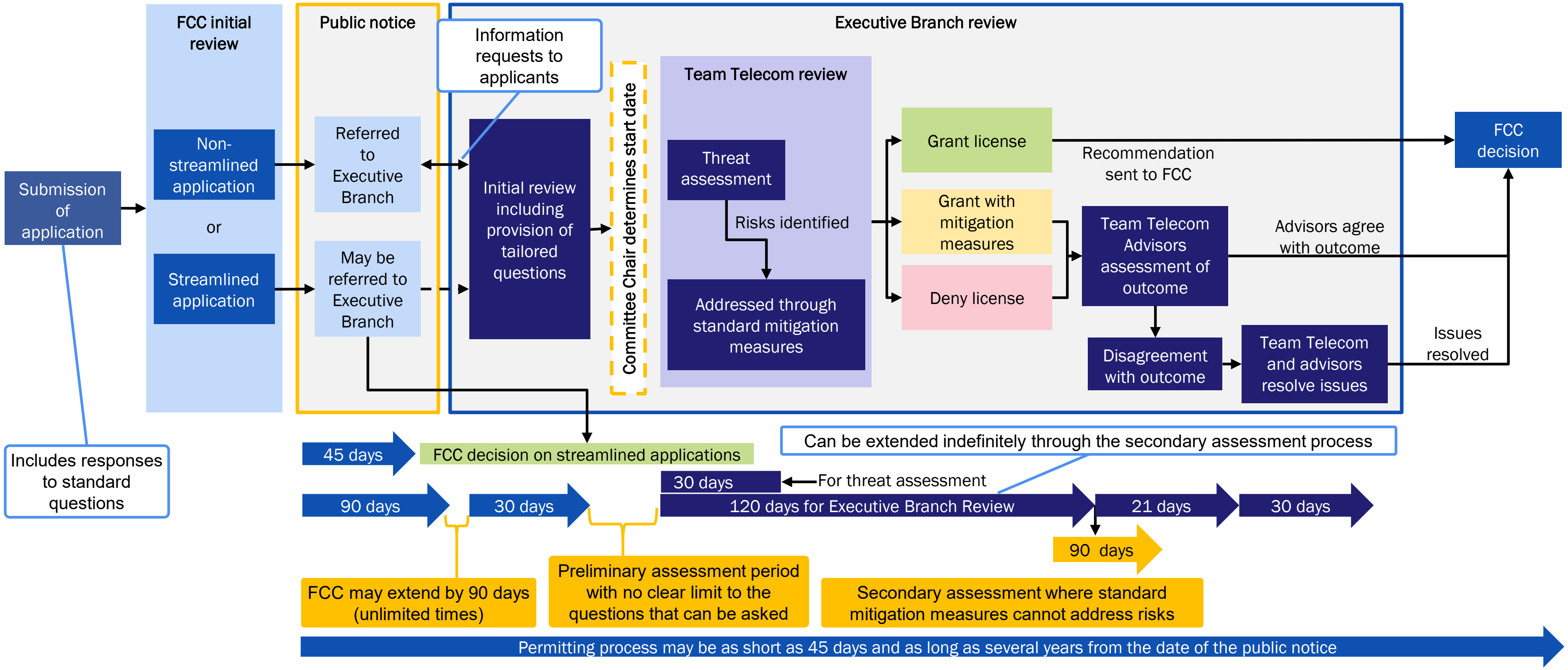
"We should be able to anticipate what's going to be required of us. It shouldn't be this murky, opaque process where every time we come, we never know what we're going to get. It should be a predictable, transparent, scalable process, [this is] what we're looking for."

– US-headquartered hyperscaler

"Team Telecom is an ad hoc, case specific and adversarial process that produces suboptimal outcomes, including from a security perspective."

– US law firm active in submarine cable permitting advice and support

Figure 3.1: Timeline of the Cable Landing License permitting process [Source: Analysys Mason, 2025]



The application timeline has increased materially, both on paper and in practice. The Team Telecom process adds at least 90 days to the formal process, and in practice this additional time is not capped and can extend for months or years. Applicants are unable to predict the duration of the application process, in large part because the preliminary assessment period (shown in the "Unknown" period above) and the secondary assessment process are not subject to firm deadlines and can be extended at Team Telecom's discretion. Overall, stakeholders have seen the overall timeline to deploy a new cable increase from about 3 years to over 5 years. This has led to cost increases, including in legal fees that even lawyers representing system owners see as excessive and unnecessary. Specific state and local provisions, unrelated to the Team Telecom process, add to complexity and costs.

"On average, 10 years ago, it took about three years from the day you dreamed up the cable to the day the cable would be ready for service (RFS). It is now a minimum of five years, and that is pretty much entirely directly attributable to the increase in permitting timelines."

– US-headquartered hyperscaler

"Initial processing of applications [by the FCC] for new systems used to take about three weeks. It can now take up to six months, depending on staffing and other priorities within the Office of International Affairs."

– US law firm active in submarine cable permitting advice and support

3.2 Permitting fundamentally affects the supply of abundant and resilient submarine cable capacity to the United States, which is essential to economic and national security

We note that changes to the submarine cable licensing process were adopted in an August 2025 FCC R & O , and it is currently undergoing further review by the FCC in its FNPRM; however, it is vital that the government as a whole recognize the potential risks of extended delays to, and denial of, submarine cable landing permits, and work to minimize the regulatory burden placed on cable operators.

While complexities in the process for landing submarine cables have so far not put the United States's global tech leadership in jeopardy, submarine cables typically take years to deploy, meaning that the full effects of increasing delays and uncertainty would not be felt in the short term. In addition, changing global dynamics brought about by the emergence of AI and a race to deploy new AI infrastructure could threaten to erode US tech leadership in the long term unless improvements are made to the submarine cable review process.

Resilient systems are a matter of national security: redundant and diverse routes are vital for continued connectivity in the event of cable cuts from natural events, human error or sabotage

Submarine cables carry nearly all intercontinental data traffic, including internet traffic, and such flows of information are important for economic, civic, and government functioning. It is therefore critical that submarine cable systems remain resilient. Resilience comes from having a diversity of routes and redundant cables into each country or region, starting with the landing station, the path through shallow waters, and the route to other countries. These steps help to protect the overall system from any cuts that render a cable unusable.

Submarine cables must pass through shallow water to reach shore landing stations (see Figure *2.9*), and this makes them vulnerable to cuts from three sources. The first can be human activity, notably from fishing lines or ship anchors, which can drag across and cut cables. This represents the vast majority of disruptions, over 85% on some measures.[31] The second source can be from natural events, such as underwater earthquakes, volcanic eruptions, or rockslides (which can also take place in deeper water) and account for nearly all other cable cuts. Targeted sabotage undertaken by bad actors is possible, although it has historically been exceedingly rare. When there is a cut, the cable can be fixed, but the time to repair can vary depending on the availability of repair ships and crew (which are typically in short supply), extra lengths of cable if needed, and in some jurisdictions cabotage laws and visa restrictions, if foreign ships and manpower are used.

The impact of a lack of submarine cable resilience for the United States and its tech sector would be very significant. A cut overseas that slows or stops traffic flow into a country or region, such as happened off the coast of Côte d'Ivoire in 2024 when four cables were cut by an underwater event,[32] impacts both the users in that region and US tech companies that provide services into the region. A cut closer to home can also affect domestic users, along with the tech companies, creating further economic cost. The overall impact of a submarine cable system that lacks resilience can be significant, as described by the FCC in its recent FNPRM:

> "Globally, the volume of financial transactions flowing over submarine cables has been estimated to be greater than ten trillion dollars per day. Thus, even a temporary, localized disruption to data passing through submarine cables would likely result in very substantial economic losses. The harms would encompass business imports and exports, the operations of multinational corporations, international financial flows, online commerce, residential and government communications, and online access to information including emergency services."[33]

To mitigate the impact of such events, cable system owners design their networks to be resilient, by building or buying redundant capacity over diverse routes. The uncertainty and delays resulting from the landing licensing and approval process in the United States requires system owners to over-provision capacity in advance, increasing costs and diverting capital from other investments. Even then and beyond the remit of Team Telecom, the regulatory challenges of landing cables can result in multiple cables landing with the same route (e.g. for compliance with NOAA requirements), which creates a systemic risk where multiple cables can be cut simultaneously, reducing the value of investments in redundant cables.

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31 Submarine Cable Networks (2025), *Statistics on Subsea Cable Fault and Repair*, referencing data included in a presentation at SubOptic 2025 by Andy Palmer-Felgate.

32 Internet Society (2024), *West Africa submarine cable outage report*.

33 FCC, 2025 FNPRM (paragraph 232).

Challenges with landing submarine cables in the United States could deter investment in digital infrastructure and AI, and create unforeseen challenges to national security

The United States Executive Branch recognizes explicitly that "economic security is national security".[34] In the context of the challenges associated with permitting and licensing new submarine cables landing in the United States, uncertainty dampens investment and does not further the interest of national prosperity nor security. The FCC recognizes this in its recent FNPRM:

"The Commission tentatively concludes that extensive delays to submarine cable applications that do not threaten national security or law enforcement interests are not in the public interest. Such delays impose economic costs without national security benefits. Furthermore, not only do such delays not benefit national security; in fact, they may undermine national security by deterring investment in submarine cables and thus reducing the resilience of America's submarine cable network."[35]

Submarine cables are essential to the success of ongoing investments for future economic growth. Since generative AI was released to the mass market in 2022, companies and countries across the globe have increased their focus on developing and investing in the technology, and the United States government has announced ambitious plans to preserve US leadership and innovation in AI and digital technology more broadly.[36]

The vast majority of AI investment is directed toward expenditure on the construction of data centers and the hardware contained within these facilities, to be used for training models and for inference from those models. In 2024, actual US private AI investment grew to USD109 billion, widening the gap between the United States and other regions (see Figure 3.2). Since then, investment plans have further accelerated, with investment in data centers about 20% higher in the first half of 2025 compared to the first half of 2024.[37]

While the United States maintains a substantial lead over all other countries in AI investment, its advantage in developing the most performant AI models has narrowed over the past year, and it continues to trail China on measures such as AI publications and patents (see Figure 3.3).

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34 *America First Investment Policy – The White House*.

35 FCC, 2025 FNPRM (paragraph 276).

36 See most recently The White House, November 2025, *Launching the Genesis Mission*: "This order launches the "Genesis Mission" as a dedicated, coordinated national effort to unleash a new age of AI-accelerated innovation and discovery that can solve the most challenging problems of this century."

37 US Bureau of Economy Analysis (Table 5.4.5U. Private Fixed Investment in Structures by Type) and OpenAI (2025), *Letter to Michael Kratsios, Office of Science and Technology Policy*, highlighting OpenAI's infrastructure investment plans, their dependency on securing electrical power supply in the United States, and a potential impact on GDP growth of 5% over three years for "the first trillion invested in AI infrastructure".

Figure 3.2: Global private investment in AI by region [Source: Stanford AI Index Report, 2025]

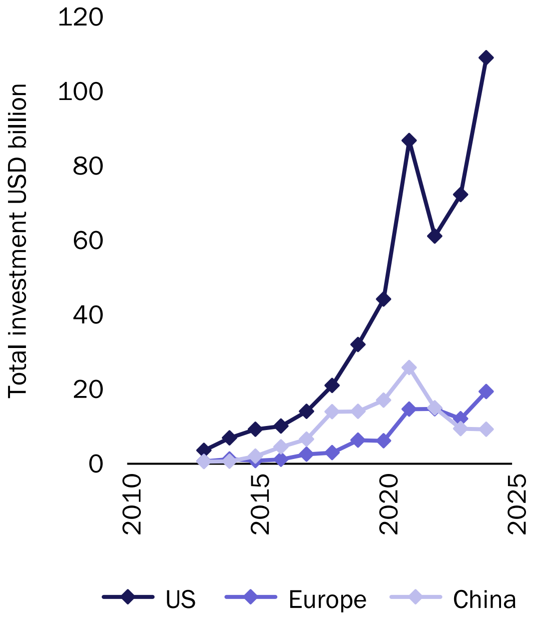
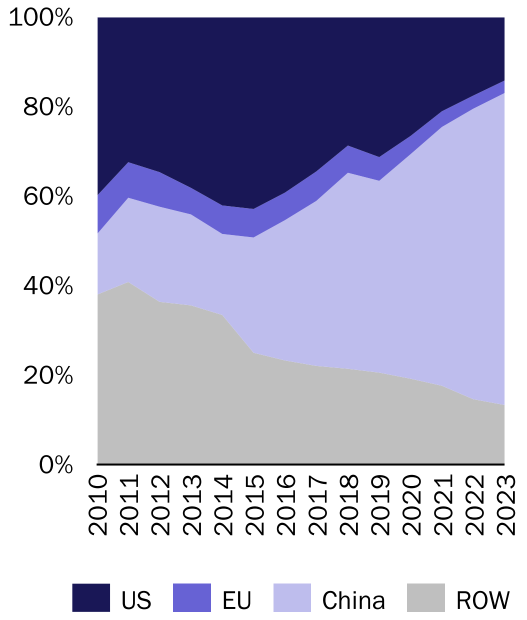


Figure 3.3: AI patents granted as % of world total [Source: Stanford AI Index Report, 2025]



These trends suggest that US leadership in the global tech industry (reflected in part by its vast advantage in data-center infrastructure), should not be taken for granted, particularly as other countries across the globe pursue their own AI ambitions, including training smaller models using less compute power. In particular, the current boom in data-center construction (with global data-center capacity forecast to increase by 2–3 times by 2030) could lead to the global 'center of gravity' of data-center capacity shifting away from the United States if supply constraints are too great.

We are already witnessing some interesting developments outside the United States, linked to new market participants (e.g. 'GPU as a service' or GPUaaS providers), professional private equity and infrastructure investors, and sovereign wealth funds. Data-centers to train AI models can be geographically removed from demand for AI inference, so locations offering attractive access to land, power and connectivity are increasingly seeking to develop large data-centers. Recent examples that Analysys Mason has worked on include New Zealand and the UAE.[38]

38 See, for instance, https://www.axios.com/2025/05/22/uae-openai-stargate-deal

Irrespective of where these data centers are built, international submarine cable connectivity and access to global markets remain essential. If the submarine cable landing process in the United States does not improve, this could provide further incentive to invest in data centers elsewhere in the world. For example, Singapore is one of the best-connected countries in the world and has restarted its data-center licensing process, with calls for applications for new facilities due in the coming months.[39]

As recognized by the FCC in a Proposed Rule released in October 2025, "investment in such infrastructure is vital to American prosperity and economic dynamism. The rules that we adopt today will ensure that the United States remains ready and able to deploy submarine cable infrastructure with increasing amounts of capacity to meet current and future internet and data demands so that the United States remains "the unrivaled world leader in critical and emerging technologies—such as artificial intelligence."[40]

3.3 The United States could benefit from adopting measures that could improve certainty and reduce timescales and the regulatory burden for most cable projects, while preserving national security objectives

As discussed above, there may be up to a dozen agencies at different levels of government involved in the permitting process, addressing issues including environmental protection, navigation, fishing rights, land access, as well as national security. The result is that permitting can take up to 3 or more years, with corresponding costs of delays, uncertainty, and risks of stranded assets. Once cables are approved, they can be subject to bespoke national security agreements, which can require substantial back-and-forth and pre-approval from up to three agencies in order to conduct basic maintenance and operations.

A few steps could help to reduce these costs, building on identified best practices. First, an agency such as the FCC could be appointed as a single point of contact to engage with cable applicants to simplify procedures, while co-ordinating access to other agencies involved in the process. This has been done in Singapore, which has designated the communications regulator, the Infocomm Media Development Authority (IMDA), as the point of contact, while other agencies maintain their role in the review process.[41]

Second, for those cables subject to review, the FCC could standardize mitigation under its own rules with input from Team Telecom, rather than relying on Team Telecom to propose ad hoc, bespoke mitigation. It could also facilitate a more collaborative approach, which could empower cable

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39 Reed Smith, 2025, *Singapore's data centre expansion: Jurong Island and the next phase of sustainable growth*.

40 Federal Register, 2025, *Review of Submarine Cable Landing License Rules and Procedures To Assess Evolving National Security, Law Enforcement, Foreign Policy, and Trade Policy Risks* (paragraph 1).

41 International Cable Protection Committee, "Government Best Practices for Protecting and Promoting Resilience of Submarine Telecommunications Cables", Version 1.2, p. 6. See also Center for Cybersecurity Policy and Law, "Shoring up Subsea Security: A Comprehensive Action Plan to Promote Submarine Cable Resiliency, Security & Governance." September, 2025, p.31.

sponsors to propose their own measures to mitigate national security threats and other risks rather than prescribe them, and proactive two-way threat intelligence sharing mechanism between Team Telecom and industry stakeholders. This could also involve more guidance on the development of systems and the reviews of their applications in a compliant way.

To help further reduce challenges, the FCC and other relevant government agencies can provide guidance on high-risk equipment, vendors, and potential partners, based on the threat information and other relevant sources.[42] In addition, the FCC should establish a streamlined 'frequent flier program' licensing process for known US tech companies and vendors seeking to deploy submarine cables to non-adversary countries.

And finally, economic agencies, such as from the Department of Commerce, could be included as members of Team Telecom to promote the position that economic security also contributes to national security. The economic security assessment should include the importance of route diversity as critical for resilience and the functioning of the internet centered on US tech leadership. This would, in turn, promote the importance of streamlined permitting and encouraging multiple landing points and routes at all levels of government.[43]

These steps would bolster certainty in the system, and enable companies considering cable deployments to predict which systems would be subject to more rigorous Team Telecom review. With the increasing number of cables being deployed, this will help to focus Team Telecom resources on certain higher-risk cables, and reduce the time needed to review all applications.

42 "Shoring up Subsea Security,"p. 32.

43 See United Nations General Assembly Joint Statement, "The New York Joint Statement on the Security and Resilience of Undersea Cables ina Globally Digitalized World", and "Government Best Practices", pp. 6-7.

4 Persistent challenges in licensing new submarine cables could impose large opportunity costs to the US economy

Given an increasingly competitive global technology sector, it is important for the United States to improve its submarine cable landing approval processes to be able to maintain its leadership position of technology. Although the United States remains in a favorable position at present, failing to address these issues could lead to a gradual erosion of leadership over time, which would contribute to slower growth for the US economy in the long term.

Section 4.1 explores the short-term costs faced by cable sponsors as a result of the licensing and permitting process in the United States. Delays cause direct costs in the form of more complex and costly applications; they also cause indirect costs as cable sponsors have to commission more projects than they would otherwise to maintain service quality, route diversity and resilience.

Section 4.2 discusses the potential long-term implications of persistent delays and uncertainties generated by a challenging cable approval process, including growing cost disadvantages associated with serving consumers in international markets by continuing to use the United States as a hub for infrastructure, and the risk of efficient investment by US companies shifting overseas over time.

Section 4.3 explains how challenges in obtaining permits for new submarine cables could lead to an erosion of tech leadership, which would likely affect the rate of digitally-driven growth in the United States. Even a small change in growth trajectory, starting in 2030, would have material consequences for US GDP by 2035.

4.1 US cable sponsors are incurring higher costs in the short term to mitigate the risks associated with delays and uncertainties in the cable approval process

Although growing challenges in the process of landing submarine cables in the United States have not yet led to a noticeable erosion in US tech leadership, these delays are already introducing higher direct and indirect costs for US companies. If the situation does not improve, these companies would have to either shift demand to other regions around the world where international connectivity is not a constraint, or to bear durably higher costs, at the expense of their investments in other productive activities and assets.

In recent years, submarine cable sponsors have had to abandon or substantially modify several projects at advanced stages of deployment. As cables typically need to be custom-built before approvals can be sought, and due to the long delays before being refused permits to operate part or all of these cables, these abandoned cables each effectively represent hundreds of millions of dollars in stranded investments. To date, permit refusals have led to partial or fully stranded costs for at least three known projects (HKA, PLCN and BtoBE),[44] with direct costs likely amounting to between USD500 million and USD1 billion in total.[45]

"We were investors in a cable system that went across the Pacific. We had to withdraw the FCC application. Overall, 80% of the cable has been deployed and is sitting at the bottom of the ocean, unused. The total spend on that cable system was at least USD300 million."

– *US-based cable sponsor*

"In most cases, lawyers have to respond to multiple information requests, not just from the FCC, but more importantly from Team Telecom. This increases the regulatory cost associated with securing these types of licenses and delays the granting of the cable landing license, which has an impact on deployment of the cable project as a whole."

–*Global law firm*

US technology companies have chosen to play an active role in deploying new submarine cables precisely because of the lack of available market alternatives. This means that delays to cable systems that cannot be mitigated using market alternatives in the short-term result in decreased network resilience for US companies, and an associated increase in the likelihood of service outages. Service outages have the potential to impact many businesses and individuals, and could lead to negative economic and social outcomes for those affected. For example, a 2024 outage in the Red Sea, caused by disruptions to several submarine cables, affected a quarter of internet traffic between Asia, Europe and the Middle East, and resulted in an estimated economic loss of USD3.5 billion.[46]

This illustrates the link between abundance and resilience in submarine cable networks. Growing uncertainty about new cable approvals means that US companies need to plan for more submarine cables to be sure to achieve their desired outcomes in a timely manner.[47] This results in a greater allocation of resources toward the maintenance of service quality, rather than investing in growth and competitive advantage (e.g. through cutting-edge R&D).

These potential effects are summarized in Figure 4.1. Ultimately, persistent delays in permitting could contribute to slower GDP growth (see Section 4.3).

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44 Hong Kong-America Cable System（HKA）, Pacific Light Cable Network (PLCN), Bay to Bay Express Cable System (BtoBE)

45 Direct costs here include costs of entirely abandoned cables, as well as abandoned segments of cables which have been reconfigured. The HKA cable was abandoned entirely, and BtoBE was first reconfigured into the CAP-1 cable (that limited landings to the United States and the Philippines) and then later abandoned. Meanwhile, the Hong Kong landing for PLCN was abandoned, but the rest of the cable still connects the United States to Taiwan and the Philippines. Transpacific submarine cables cost ~USD400 million on average, according to Carnegie Endowment for International Peace (2024), *Subsea communication cables in Southeast Asia.*

46 Subsea cables (2025), *Invisible infrastructure, visible chaos: Building B2B continuity in a subsea-dependent world.*

47 See also The New York Joint Statement on the Security and Resilience of Undersea Cables in a Globally Digitalized World from 2024, and the recent report to the UN General Assembly from the Center for Cybersecurity Policy & Law, 2025, Shoring Up Subsea Security: A Comprehensive Action Plan to Promote Submarine Cable Resiliency, Security, & Governance.

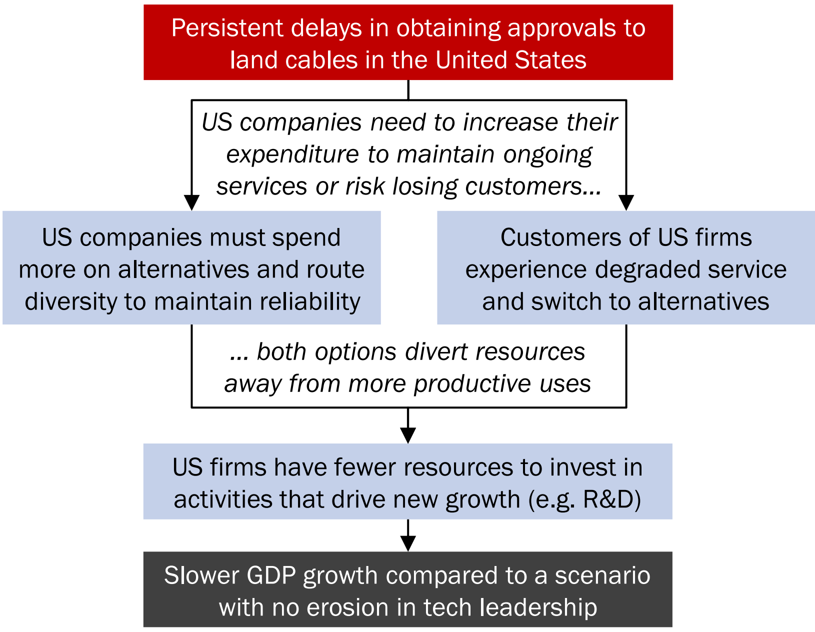


Figure 4.1: How short-run challenges associated with cable delays could impact US economic growth [Source: Analysys Mason, 2025]

4.2 In the long term, persistent cable-related issues disadvantage US companies competing in international markets, and could shift new investment overseas

As discussed above, US technology firms have built global leadership by serving customers across the world using a combination of US-based infrastructure and infrastructure located in friendly countries and trusted trade partners, connected by submarine cables. US leadership is coming under pressure, due to growing geopolitical risk and uncertainty, as well as increased competition and investment by international competitors and economic rivals, in particular in China and the European Union. AI-driven disruptions and emerging opportunities are creating conditions for innovators in these regions to challenge the dominance of US technology firms and their leadership position. This would not only affect US companies and the US economy, but also trusted international partners in the supply chain that have long-standing commercial relationships with US firms.

These challenges would likely be magnified if US companies and their trusted partners are not able to deploy new submarine cables in a timely manner. Competitors in international markets could be better placed to provide reliable and scalable services to customers outside the United States, at a lower cost than US firms. This could lead to improved margins for those competitors, and pressure on the market share and profits of US firms over time, progressively reducing the resources available to US companies to invest in long-term growth.

To mitigate or avoid this loss of competitiveness, US companies may instead choose to reduce their own reliance on submarine cables to protect market share. For example, while some data-center workloads can be performed most efficiently in the United States,[48] other workloads may be performed most efficiently and reliably in the same country or region as the user. As the cost of

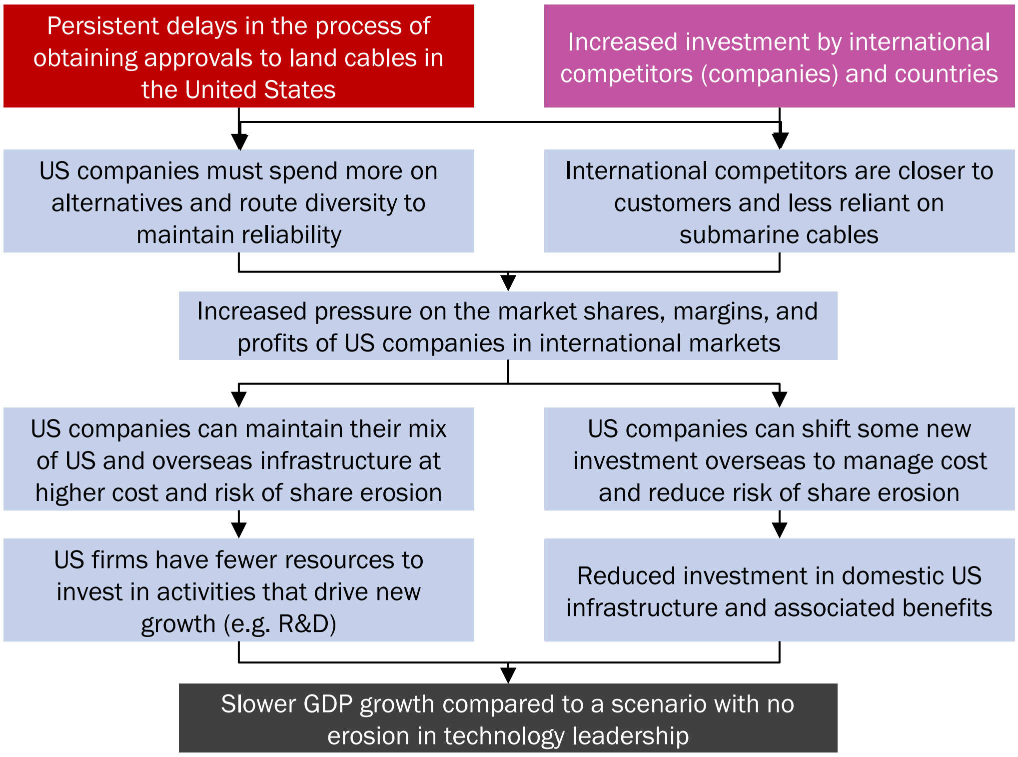
48 Low US energy and land costs offset the cost of international connectivity to run these workloads in the United States.

deploying submarine cables increases, the share of workloads that is more efficiently performed in the United States decreases, and it becomes more efficient for more workloads to be performed in data centers located closer to end users.

This potential shift would likely lead to negative economic consequences for the United States, by reducing domestic investment, in particular as US technology firms rebalance investments away from the United States to protect their market share internationally. According to a study by PwC, value added by the US data-center industry grew from USD355 billion in 2017 to USD727 billion in 2023.[49] Recent data suggests nearly all of the recent GDP growth in the United States is now linked to data centers.[50] Persistent delays in submarine cable approvals could thus have a material impact on forward-looking GDP growth if it incentivizes US companies to shift their new investments in data centers increasingly overseas.

The potential effects discussed in this sub-section are summarized in Figure 4.2, which shows how persistent delays in permitting could contribute to erosion in US tech leadership and slower GDP growth in the long term (see Section 4.3).

Figure 4.2: How long-run challenges associated with cable delays could affect US economic growth [Source: Analysys Mason, 2025]



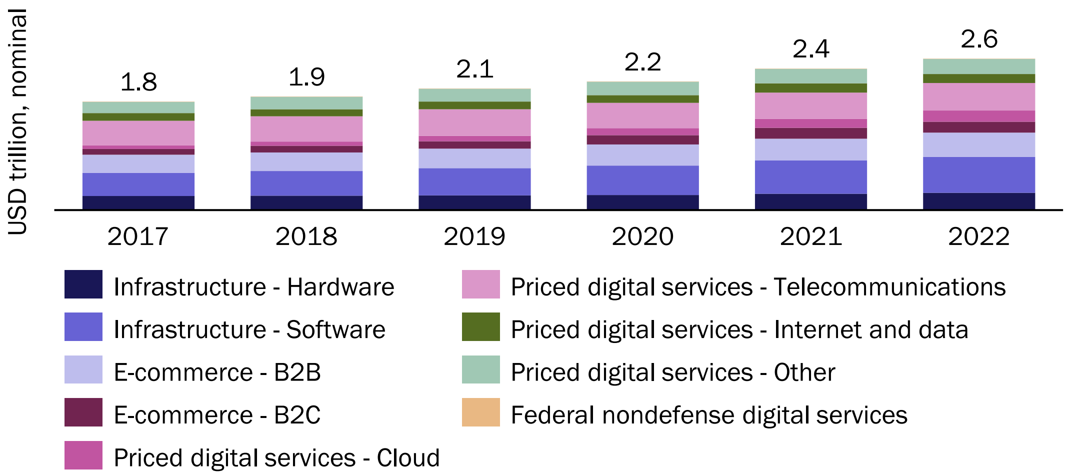
49 This represented roughly 1.8% and 2.6% of US GDP in those respective years.

50 Fortune (2025), *Without data centers, GDP growth was 0.1% in the first half of 2025, Harvard economist says.*

4.3 Even a modest decline in digitally driven growth after 2030 could lead to a material loss in US GDP by 2035, stressing the importance of preserving tech leadership

The US Bureau of Economic Analysis last produced an estimate in 2022 of the value added by the 'digital economy', which is defined to include hardware and software infrastructure, business-to-business (B2B) and business-to-consumer (B2C) e-commerce, a variety of priced digital services (incl. cloud, telecommunications, internet and data, etc.), as well as federal nondefense digital services. This amounted to USD2.6 trillion in 2022 (see Figure 4.3), or roughly 10% of US GDP.

Figure 4.3: Value added by the United States's 'digital economy' [Source: Analysys Mason based on US Bureau of Economic Analysis,[51] 2025]



The contribution of the digital economy to GDP has grown over time (see Figure 4.4), and extrapolating long-term historical trends forward suggests that value added by the digital economy could account for close to 12% of US GDP by 2035. We can then multiply this extrapolated contribution to GDP by projections of total US nominal GDP, which would suggest that value added by the digital economy could reach USD5.2 trillion in nominal GDP by 2035 (see Figure 4.5).[52]

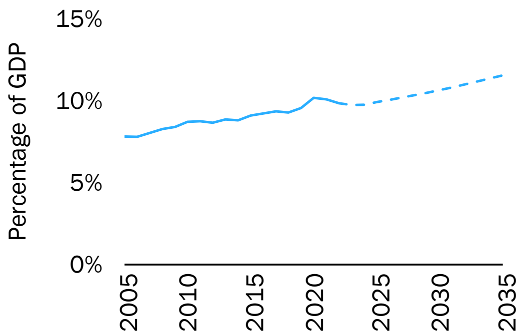
51 US Bureau of Economic Analysis (2023), *US digital economy: New and revised estimates, 2017-2022*.

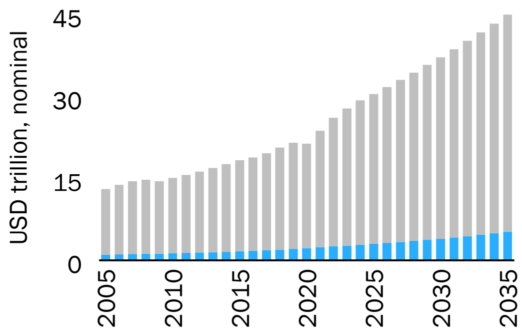
52 Projections of total US nominal GDP are based on historical nominal GDP data from the BEA, and annual growth rates from Statista forecasts of nominal US GDP.

Figure 4.4: Projections of value added by the digital economy as a percentage of nominal GDP

Figure 4.5: Forecast of US nominal GDP, with value added by the digital economy split out

[Source: Analysys Mason based on US Bureau of Economic Analysis, Statista,[53,54] 2025]





These extrapolations to 2035 rely on an implicit assumption that US technology companies continue to maintain their position of leadership in the global technology sector. This is far from guaranteed: ambitious plans across many countries to strengthen home-grown digital industries are challenging US leadership. US technology companies will therefore need to continue offering highly competitive products, services and experiences to protect existing market shares globally. In this context, growing challenges in obtaining permits for new submarine cables could harm the competitiveness of US companies overseas and lead to an erosion of tech leadership.

Given that investment plans are typically made several years in advance, we do not expect ongoing challenges with the submarine cable approval process to have a material impact on investments in the next few years. However, even a small change in the trajectory of digitally driven growth starting 5 years from now would result in a material reduction in economic growth by the middle of the next decade.

Figure 4.6 and Figure 4.7 show that even a 5–10% reduction in incremental growth in value added by the digital economy after 2030 would result in a USD62–124 billion reduction in nominal US GDP per annum by 2035.

53 US Bureau of Economic Analysis, *Digital economy* and US Bureau of Economic Analysis, *National income and product accounts*; historical percentage-of-GDP figures are calculated based on digital economy estimates from 'New and revised estimates, 2017–2022' for 2017 onwards and from 'New and revised statistics of the United States digital economy, 2005–2021' for 2005–2016.

54 US Bureau of Economic Analysis, *National income and product accounts* and US Congressional Budget Office (February 2024). Forecast of the gross domestic product of the United States from fiscal year 2024 to fiscal year 2034. In Statista: https://www.statista.com/statistics/216985/forecast-of-us-gross-domestic-product/.

Figure 4.6: Projections of value added by the digital economy after 2030, with and without erosions in US tech leadership [Source: Analysys Mason, 2025]

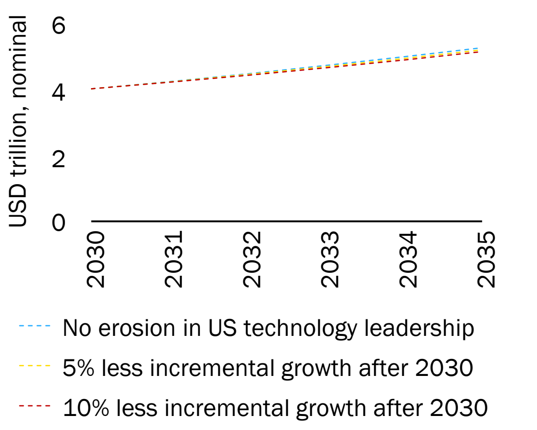
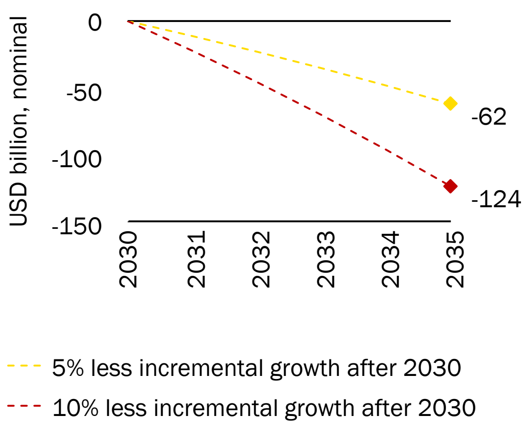


Figure 4.7: Annual reduction in nominal GDP in cases where erosion in US tech leadership leads to less incremental growth post-2030 [Source: Analysys Mason, 2025]



Assuming an inflation rate of 2%,[55] this reduction in nominal GDP in 2035 translates to a reduction of USD51–102 billion in real GDP at 2025 prices. These figures represent 0.15–0.3% of GDP in 2035, or roughly a quarter to half of what the United States has historically spent, in percentage-of-GDP terms, on federally funded R&D in recent years (~0.6% of GDP in 2022). Over the 5-year period from 2031 to 2035, the cumulative reduction in real GDP based on the assumptions above reaches a total of USD151–301 billion in 2025 prices.

It is therefore important for the United States to resolve challenges in the cable approval process, in order to enable US companies to be as competitive as possible in the face of a more competitive global technology landscape, and to continue enabling digitally driven growth in the United States economy.

55 Which is in line with the long-term inflation target set by the United States Federal Reserve; see US Federal Reserve, *Economy at a glance – Inflation.*