International Center for Law & Economics

Reply Comments of the International Center for Law & Economics

RE: Build America: Eliminating Barriers to Wireless Deployments (WT Docket No. 25-276)

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I. Introduction and Summary

The International Center for Law & Economics (ICLE) submits these comments in response to the Federal Communications Commission's (FCC) notice of proposed rulemaking (NPRM) on rules to streamline wireless broadband deployment.[1] ICLE is a nonprofit, nonpartisan research organization that applies law & economics methodologies to inform public policy, with the goal of promoting competition and consumer welfare in dynamic, technology-driven markets, including telecommunications.

The FCC has made substantial progress in reducing regulatory burdens on broadband providers and encouraging investment in next-generation networks.[2] These reforms have been especially important as wireless providers upgrade and densify their networks through both small wireless facilities and macro-cell deployments using mid-band spectrum. Nevertheless, existing rules do not fully address the continued use of state and local permitting processes to delay or effectively block network deployment and densification. Given current spectrum constraints, such barriers impede timely 5G deployment and risk harming consumer welfare and U.S. competitiveness.

As the FCC considers rule changes in this proceeding, it should focus on reducing both the direct and indirect costs that state and local permitting authorities impose on collocations, infrastructure modifications, and new deployments.[3] In particular, the commission should: (1) codify the concealment-element interpretations adopted in the 2020 Declaratory Ruling to ensure that aesthetic considerations only limit modifications that would defeat true stealth designs; and (2) extend the shot clocks and fee caps applicable to small wireless facilities to macro-cell sites supporting mid-band operations.

Congress expressly directed the FCC to preempt state and local actions that prevent the provision of personal wireless services.[4] Modern wireless networks require substantial investment to upgrade equipment and densify coverage in order to make efficient use of limited spectrum resources.[5] By

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[1] *Build America: Eliminating Barriers to Wireless Deployments*, WT Docket No. 25-276 Notice of Proposed Rulemaking (Sep. 30, 2025), https://docs.fcc.gov/public/attachments/FCC-25-67A1.pdf.

[2] *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, WT Docket No. 17-79, Declaratory Ruling and Third Report and Order, 33 FCC Rcd 9088 (2018) ("2018 Order"); *Implementation of State and Local Governments' Obligation to Approve Certain Wireless Facility Modification Requests Under Section 6409(a) of the Spectrum Act of 2012*, WT Docket No. 19-250, Declaratory Ruling and Notice of Proposed Rulemaking, 35 FCC Rcd 5977 (2020) ("2020 Declaratory Ruling").

[3] *See 2020 Broadband Scorecard Report*, R ST. INST. (2020), https://www.rstreet.org/wp-content/uploads/2021/02/updated-final-2020-Broadband-Scorecard.pdf.

[4] 47 U.S.C. §§ 253(a), 332(c)(7)(B)(i)(II).

[5] USTelecom's 2024 Broadband Capex Report indicates that broadband providers invested $89.6 billion in network infrastructure in 2024 alone. As wireless providers increasingly densify their networks to address spectrum constraints, overall investment levels are likely to continue to rise. *2024 Broadband Capex Report*, USTELECOM (Oct. 2025), https://ustelecom.org/research/2024-broadband-capex-report; *see also White Paper: 6G Spectrum – Enabling the Future Mobile Life Beyond 2030*, ERICSSON (Dec. 2025), https://www.ericsson.com/49ac9c/assets/local/reports-papers/white-papers/2024/6g-spectrum.pdf.

lowering unnecessary regulatory costs and delays, the commission can enhance the incentives for investment directly and accelerate deployment.[6] Accordingly, the FCC should adopt the proposed reforms to prevent state and local measures that impose unjustified costs, delays, or prohibitions on wireless deployment.

II. Wireless Deployment Progress and the Remaining Barriers to Densification

The FCC's prior wireless infrastructure reforms were premised on widespread deployment of small wireless facilities to support the transition from 4G to 5G.[7] Although significant progress has been made, network densification has not yet reached early industry expectations, for a variety of technical and economic reasons.[8] As the commission considers rule changes in this proceeding, it should not lose sight of that original objective or interpret the pace of deployment to date as a policy failure. Rather, the FCC should continue to promote a regulatory environment that enables network upgrades consistent with technical and economic realities, so that providers can meet growing consumer demand for wireless services.

A. Non-Permitting Cost Drivers Continue to Constrain Small-Cell Deployment

The FCC's permitting reforms have significantly reduced deployment costs, particularly for small wireless facilities. Permitting costs, however, represent only one component of total deployment expenses. A range of non-permitting cost drivers continues to constrain network densification. While the commission cannot eliminate these costs entirely, it can adopt targeted regulatory reforms that better align costs with deployment benefits.

Early 5G business cases understated several non-permitting cost drivers, most notably power. Densification requires substantially more grid interconnection points, increasing the need for reliable power access. Utilities frequently require a dedicated meter for each connection point, which

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[6] For example, the implementation of Title II classification was associated with a measurable decline in broadband investment. *See* George S. Ford, *Net Neutrality, Reclassification, and Investment: A Counterfactual Analysis*, PHOENIX CTR. FOR ADV. L. & ECON. PUB. POL. STUD. (Apr. 25, 2017), https://www.phoenix-center.org/perspectives/Perspective17-02Final.pdf.

[7] 2018 Order, *supra* note 2, ¶ 3.

[8] John Celentano, *Outdoor Small Cells Grow with Escalating Mobile Data Demand*, INSIDE TOWERS (Jun. 28, 2024), https://insidetowers.com/outdoor-small-cells-grow-with-escalating-mobile-data-demand ("Our previous analysis concluded that once the first phase 5G wide area buildout with low-band spectrum on macrocells plateaued, then the MNOs would ramp up small cell deployments using both mid-band spectrum and millimeter wave frequencies to densify their networks as the anticipated mobile data demand escalates. It turns out that both Verizon (NYSE: VZ) and AT&T (NYSE: T), having invested heavily in C-band and 3.45 GHz mid-band spectrum, each with 100 MHz wide channels, and T-Mobile (NASDAQ: TMUS) using 2.5 GHz, found that much of the increased capacity demand could be handled from macrocells. As a consequence, the projected high-volume small cell rollout slowed or certainly has been deferred. Outdoor small cell installations in network applications are expected to stay muted through 2024 and into mid-2025, when network densification starts to pick up.")

can be infeasible on decorative light poles due to space or local aesthetic constraints.[9] In addition, providing power often requires trenching that can cost more than $200 per linear foot.[10] These "last-meter" power costs are largely fixed on a per-site basis. While macro sites can amortize these costs across broader coverage areas and higher traffic volumes, the same per-node costs materially increase the average cost of small-cell deployment and can push projects below investment hurdle rates, effectively foreclosing deployment.

Fiber backhaul requirements further compound these challenges. In dense urban areas, fiber access is often readily available. In suburban areas, however, individual poles frequently lack nearby fiber, requiring lateral builds that can cost between $4 and $24 per foot.[11] For a macro site serving thousands of users, an additional $50,000 per mile in fiber costs may still support a viable investment. For a small cell serving a limited footprint, the same expense can extend payback periods from months to years. Although FCC action can reduce administrative barriers and facilitate fiber expansion, it cannot overcome the underlying economics of construction. Where fiber is not proximate, lateral build costs remain a binding constraint on small-cell deployment.

Labor constraints also continue to raise deployment costs. The Fiber Broadband Association estimates a shortage of up to 30,000 skilled technicians nationwide.[12] Power-related work further requires licensed electricians, who are in high demand across competing sectors, such as electric-vehicle (EV) infrastructure and data-center construction.[13] Moreover, regulatory requirements governing rights-of-way access, pole attachments, metering, and make-ready work are often administered in isolation. Even when each requirement is reasonable on its own terms, their combined effect increases transaction costs, complicates coordination across trades, and heightens the risk of delays. This uncertainty, coupled with lower per-site margins, makes it more difficult for small wireless facilities to secure crews and can render otherwise viable deployments uneconomic.

B. Overbroad Concealment Standards Undermine Section 6409(a)

Although the FCC has made substantial progress in streamlining wireless permitting, additional reform is needed. While the 2018 Order and much of the 2020 Declaratory Ruling were upheld on

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[9] *Small Cell Siting Challenges and Recommendations*, 5G AMERICAS (Aug. 1, 2018), p. 18, https://www.5gamericas.org/wp-content/uploads/2019/07/Small_Cell_Siting_Challenges__Recommendations_Whitepaper_final.pdf.

[10] For example, a conduit-trenching project in Berkeley was estimated to cost between $150 and $200 per linear foot. Memorandum from Christine Daniel, City Manager, City of Berkeley, to Honorable Mayor and Members of the City Council, *Broadband Infrastructure Report and Recommendations*, at 4 (Jun. 23, 2015), https://newspack-berkeleyside-cityside.s3.amazonaws.com/wp-content/uploads/2015/06/2015-06-23-Item-11-Broadband-Infrastructure.pdf.

[11] *Fiber Deployment Annual Report*, FIBER B.B. ASS'N (2023), https://fiberbroadband.org/wp-content/uploads/2024/01/Fiber-Deployment-Annual-Report-2023_FBA-and-Cartesian.pdf.

[12] *Broadband Market Workforce Needs*, CONTINUUM CAPITAL (Jun. 26, 2024), https://fiberbroadband.org/wp-content/uploads/2024/08/PCCA_FBA_6-26-2024_vFinal_1.pdf.

[13] *See* Tamima Elbashbishy & Islam El-adaway, *Skilled Worker Shortage Across Key Labor-Intensive Construction Trades in Union versus Nonunion Environments*, 40 J. MGMT. ENG'G. 1, 15 (2024) ("Findings show that plumbing and electrical trades experience the highest levels of skilled labor shortages among the identified labor-intensive trades....").

judicial review, several provisions—particularly those at issue in this proceeding—were vacated or limited, creating uncertainty in the Section 6409(a) framework.

A central dispute under Section 6409(a)'s "eligible facilities request" regime concerns the scope of "concealment elements." Under existing rules, a modification that "defeats concealment" may be treated as a "substantial change" and denied. In *League of California Cities v. FCC*, the 9th U.S. Circuit Court of Appeals rejected the FCC's interpretation that "concealed" and "stealth" facilities should be treated as synonymous, observing that the 2014 Order used the terms distinctly.[14] As a result, state and local governments now have greater latitude to treat a broad range of aesthetic conditions as protected concealment, expanding the set of modifications that can be deemed "substantial changes" and denied under the Section 6409(a) framework.[15]

In practice, some localities have adopted "invisibility" standards that effectively prohibit any new or modified equipment. For example, Albemarle County, Virginia, requires denial of wireless applications unless facilities are designed to minimize visibility.[16] Similar approaches elsewhere make collocation on existing structures difficult or impossible.

Localities have also adopted expansive definitions of what constitutes "defeating" a concealment method.[17] Where a concealment element is defined as an entire structure or a specific silhouette, even minor alterations can be deemed a defeat of concealment, functioning as a *de facto* bar on upgrades.

These concealment and aesthetic requirements increasingly conflict with modern 5G network architecture. Unlike 4G systems, which relied on passive antennas and remote radio heads that generated little heat, 5G deployments use active antenna units that integrate radio and antenna components to enable beamforming.[18] These units generate significantly more heat and often cannot be fully enclosed in stealth canisters or shrouds without creating safety or performance issues.

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[14] *League of Cal. Cities v. FCC*, 118 F.4th 995, 1027 (9th Cir. 2024).

[15] The Spectrum Act requires state and local governments to approve eligible facilities requests unless the proposed modification would result in a "substantial change" to the physical dimensions of a tower. Concealment elements are relevant to that determination. In practice, however, many localities have expanded these concepts to treat nearly any modification as implicating concealment, effectively bypassing the act's mandatory-approval requirement. *See* Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6409, 126 Stat. 156, 232–33.

[16] Albemarle County, Virginia, Zoning Ordinance § 5.1.40.

[17] Comments of CTIA, *Implementation of State and Local Governments' Obligation to Approve Certain Wireless Facility Modification Requests Under Section 6409(a) of the Spectrum Act of 2012*, WT Docket No. 19-250 at 8 (Oct. 29, 2019), https://www.fcc.gov/ecfs/document/10290388730901/1.

[18] *Advanced Antenna Systems for 5G*, 5G AMERICAS WHITE PAPER (Aug. 2019), https://www.5gamericas.org/wp-content/uploads/2019/08/5G-Americas_Advanced-Antenna-Systems-for-5G-White-Paper.pdf.

Similarly, 5G's use of massive multiple-input multiple-output (MIMO) technology[19] requires physical separation of antenna elements to enable beamforming.[20] If localities treat modest dimensional changes—such as widening a "stealth" flagpole to accommodate additional antennas—as defeating concealment, those structures can be locked into legacy 4G configurations. This approach yields minimal aesthetic benefit while imposing substantial costs on providers and consumers, particularly where FCC rules already tolerate limited dimensional increases.[21]

These restrictions impose direct and indirect costs on wireless providers. Some applications are denied outright, such as when T-Mobile sought to expand a concealment shroud from 18 to 38 inches to accommodate new antennas.[22] Others become prolonged and costly, such as when Verizon faced objections to modifying a faux-pine-tree pole based on perceived "branch density."[23] In one extreme case, permit conditions in Adirondack Park, New York imposed ongoing landscaping obligations, including requirements to replace screening vegetation lost to natural causes.[24]

Lengthy, uncertain, or prohibitive permitting processes increase project-level fixed costs and regulatory risk, raising providers' cost of capital and required investment hurdle rates. The predictable result is reduced network investment: fewer small-cell deployments, fewer macro-site collocations, and fewer upgrades at the margin. Reduced deployment intensity, in turn, limits network density and coverage, degrading service quality and consumer welfare.

C. Mid-Band Spectrum Mitigates Deployment Costs but Remains Constrained

In response to the high costs associated with deploying small wireless facilities to support higher-frequency bands, wireless providers have increasingly shifted their deployment strategies toward mid-

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[19] *Massive MIMO for New Radio*, SAMSUNG (Dec. 2020), https://images.samsung.com/is/content/samsung/assets/global/business/networks/insights/white-papers/1208_massive-mimo-for-new-radio/MassiveMIMOforNRTechnicalWhitePaper-v1.2.0.pdf.

[20] Claire Masterson, *Massive MIMO and Beamforming: The Signal Processing Behind 5G Buzzwords*, ANALOG DEVICES (Jun. 2017), https://www.analog.com/media/en/analog-dialogue/volume-51/number-3/articles/massive-mimo-and-beamforming-the-signal-processing-behind-the-5g-buzzwords.pdf.

[21] *See* Reply Comments of the Wireless Infrastructure Association, *Implementation of State and Local Governments' Obligation to Approve Certain Wireless Facility Modification Requests Under Section 6409(a) of the Spectrum Act of 2012*, WT Docket No. 19-250 (Nov. 20, 2019), https://www.fcc.gov/ecfs/document/1120077802948/1.

[22] *See Bd. of Cnty. Comm'rs v. Crown Castle USA, Inc.*, 2020 WL 109208 (D. Colo. Jan. 9, 2020).

[23] Although the request was ultimately approved, the application remained pending for more than 18 months before Verizon received approval. *Verizon Wireless Fort Rosecrans. Process Three Decision*, City of Berkeley Off. of the City Manager, Report No. HO-17-082 (Dec. 13, 2017), https://www.sandiego.gov/sites/default/files/ho-17-082.pdf.

[24] In particular, the permit was approved subject to a condition requiring Verizon to restore "substantial invisibility" through revegetation or redesign if natural causes resulted in the partial loss of vegetation providing screening or backdrop for the antennas. *Cellco Partnership d/b/a Verizon Wireless , and Thomas E. Jenkin & Mary Joan Jenkin*, Adirondack Parak Agency Permit 2013-128, Condition 9 (Jul. 3, 2014), https://ru.apa.ny.gov/meeting/2014/07/FullAgency/P2013-0128-20140703-Verizon-permit-mlr.pdf.

band spectrum. Mid-band frequencies offer comparable bandwidth and latency to higher-frequency bands, while providing broader coverage due to more favorable propagation characteristics.

This shift has allowed providers to rely more heavily on existing macro-cell infrastructure. Rather than deploying large numbers of new small cells, providers can upgrade approximately 250,000 existing macro-cell sites in a more cost-effective manner.[25]

Mid-band spectrum, however, is already heavily encumbered. Federal users rely on mid-band frequencies for mission-critical applications, including high-power radar for air and missile defense, tactical data links for unmanned aircraft systems, and radio telemetry for testing.[26] Commercial users also operate extensively in these bands, supporting functions such as radio altimeters, unlicensed services, vehicle-safety systems, and public-safety communications.

As a result, even with increased reliance on mid-band spectrum, interference constraints and sharing requirements continue to necessitate additional network investment to ensure reliable service and capacity.

D. Rising Demand Requires Continued Network Investment and Densification

Wireless providers have upgraded and densified their networks where economically feasible, even if deployment has not yet reached early industry expectations. As of 2025, providers have deployed 166,264 small wireless facilities nationwide, representing approximately 6% year-over-year growth.[27]

At the same time, network usage has increased substantially. Video content now accounts for approximately 82% of all internet traffic, and rising upload demand has begun to strain wireless networks.[28] In addition, a growing number of households are relying on fixed wireless access in place of traditional cable or fiber service, further increasing network load.[29]

To meet this growing demand, wireless providers must continue to upgrade equipment and further densify their networks. Modern 5G equipment allows more efficient use of existing spectrum and increases throughput, but these upgrades require collocation on existing structures and remain

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[25] Mike Dano, *Small Cells Cool Off While Midband 5G Buildouts Begin*, LIGHTREADING (May 11, 2021), https://www.lightreading.com/5g/small-cells-cool-off-while-midband-5g-buildouts-begin; Tracy Ford, *Wireless Infrastructure By the Numbers: 2024 Key Statistics*, WIA – WIREL. INFRASTRUCTURE ASS'N (May 7, 2025), https://wia.org/wireless-infrastructure-by-the-numbers-2024.

[26] 47 C.F.R. § 2.106 (2024).

[27] *Summary of CTIA's Annual Wireless Industry Survey*, CTIA (Aug. 2025), https://api.ctia.org/wp-content/uploads/2025/08/2025-CTIA-Survey-Summary-and-Background.pdf.

[28] Naveem Kumar, *93 Latest Video Marketing Statistics 2026 [Data & Trends]*, DEMANDSAGE (Nov. 24, 2025), https://www.demandsage.com/video-marketing-statistics; *Mobility Report*, ERICSSON (Nov. 2025), at 30 ("Ericsson Mobility Report"), https://www.ericsson.com/4aca6f/assets/local/reports-papers/mobility-report/documents/2025/ericsson-mobility-report-november-2025.pdf.

[29] *Id.* at 6.

subject to the cost constraints described above. In high-traffic areas, providers will also continue to rely on the streamlined treatment of small wireless facilities to support additional densification.

These investments will proceed only where expected returns justify the associated costs. While some costs are fixed and unavoidable, the FCC can reduce others through targeted reforms, thereby improving investment incentives and supporting continued network upgrades and densification.

E. Targeted Commission Action Is Needed to Effectuate Congressional Intent

Congress directed the FCC to reduce barriers to broadband deployment and to ensure that state and local zoning authorities do not use zoning processes to delay or prevent network construction. The commission's prior reforms have helped foster substantial investment, but as discussed above, some localities continue to exploit gaps in the rules to impede deployment. The FCC should adopt the proposals outlined below to prevent such practices from undermining congressional intent.

In addition, many of the protections applicable to small wireless facilities do not extend to macro-cell projects, even though macro-cell upgrades and collocations are now central to 5G deployment. The FCC should therefore apply existing small-cell shot clocks and fee caps to applications for macro tower collocations, modifications, and new deployments.

Most importantly, the FCC should preempt state and local measures that prohibit or effectively prevent network densification. Sections 253 and 332 direct the commission to preempt laws that impede the provision of personal wireless services, and as explained above, densification is essential to the deployment of next-generation networks.

By adopting targeted regulatory reforms, the FCC can better enable wireless providers to make the investments necessary to upgrade their networks and meet consumer demand.

III. Codifying Concealment Standards to Preserve Section 6409(a)'s Purpose

The FCC should codify the concealment definitions adopted in the 2020 Declaratory Ruling to ensure that "concealment" does not become a discretionary veto under Section 6409(a). Much of the commission's broader deployment policy addresses new construction, where local siting concerns are naturally more significant. Section 6409(a), by contrast, is specifically designed to expedite collocations and modifications on existing structures.

In many collocation cases, siting concerns are materially reduced because the structure is already in place and the proposed change is incremental, often limited to the addition of antennas or related equipment. Reflecting this premise, Section 6409(a) requires state and local governments to approve eligible modification requests unless they would result in a "substantial change," including a substantial change to the physical dimensions of the tower or base station.

A. Section 6409(a) Focuses on Physical Dimensions, Not Aesthetic Judgments

Section 6409(a) refers only to changes in the physical dimensions of a tower or base station. In implementing the statute, the FCC concluded in the 2014 Order that certain changes defeating concealment elements of stealth facilities could constitute a "substantial change."[30] Notably, however, the statutory term "substantial change" is expressly limited to changes in "the physical dimensions of such tower or base station."[31] Read naturally, this language encompasses objective measurements—such as height, width, depth, or length—not broader aesthetic or design considerations. Treating the defeat of a concealment element as a "substantial change" in physical dimensions therefore risks extending beyond the text of the statute.

League of California Cities v. FCC did not resolve this underlying statutory question. Instead, the 9th Circuit addressed only whether the FCC's interpretation of its own rules was entitled to deference. The court focused on whether the 2014 Order treated "concealed" and "stealth" facilities as a single category or as distinct concepts.[32] Challenges to the 2014 Order itself similarly argued that the commission's interpretation did not go far enough in defining what constitutes a "substantial change," not that the FCC lacked authority to consider factors beyond physical dimensions.

If the FCC elects to further interpret Section 6409(a), it should codify the definitions adopted in the 2020 Declaratory Ruling. The NPRM proposals that track the 2020 Declaratory Ruling would treat a "defeat of concealment" as a substantial change only for true stealth facilities—such as poles designed to appear as something other than a tower or base station. That approach more closely aligns with Congress' focus on physical dimensions, because modifications to such facilities often alter dimensions in ways that undermine the concealment design itself.

To the extent localities are concerned that modifications may make existing towers more visible, Congress explicitly considered that possibility and nonetheless chose to prioritize deployment.[33] Congress recognized that some approved modifications would affect appearance but determined that non-substantial changes should not prevent wireless providers from upgrading facilities and deploying service.

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[30] *Acceleration of Broadband Deployment by Improving Wireless Facilities Siting Policies*, WT Docket Nos. 13-238 and 13-32, WC Docket No. 11-59, Report and Order, 29 FCC Rcd 12865 (2014) ("2014 Order").

[31] 47 U.S.C. § 1455(a).

[32] The 2014 Order used both "concealed" and "stealth." In the 2020 declaratory ruling, those terms are interpreted as synonymous. The court applied *Auer* deference in assessing whether that interpretation was entitled to judicial deference. The court's decision applied *Auer* deference to determine whether the interpretation should receive deference. *See League of Cal. Cities v. FCC,* 118 F.4th at 1014.

[33] The House Report on the Spectrum Act makes clear that, although state and local governments retain authority to apply zoning procedures to modification requests, the act intended to preempt those procedures when they operate as barriers to wireless deployment. H.R. Rep. No. 112-399, at 133 (2012), https://www.congress.gov/committee-report/112th-congress/house-report/399/1?outputFormat=pdf.

B. Aesthetic Conditions Are Being Used to Circumvent Section 6409(a)

Permitting authorities too often use aesthetic considerations to delay or deny modification requests. The record contains numerous examples. CTIA reports that one California county limits wireless facility height to 60 feet or less based on "visual impact."[34] AT&T describes a case in New York in which a town denied eligible facilities request status for a lattice-tower modification because an exterior cable run was deemed to defeat concealment of interior cabling.[35] AT&T also cites an example in Oregon where a city treats antenna height itself as a concealment element.[36]

To address these practices, the FCC should clarify that a modification implicates a concealment element—and may constitute a substantial change—only where the concealment element is part of a true stealth facility, such as a pole designed to appear as something other than a tower or base station. The commission should further clarify that siting conditions based on aesthetics may not be used to deny modifications that otherwise comply with 47 C.F.R. § 1.6100(b)(7)(i)–(iv), which define the dimensional changes that constitute a "substantial change."

As wireless providers continue to upgrade equipment and collocate facilities to densify their networks, aesthetic-based delays and denials will increasingly constrain deployment. When approval costs are uncertain or the risk of denial is significant, providers may forego otherwise efficient upgrades altogether. Congress made clear its intent to promote wireless deployment, and clarifying the FCC's rules would provide greater certainty for investment and planning.

Allowing localities to use aesthetic criteria to circumvent Section 6409(a) would also discourage providers from deploying higher-frequency technologies and small wireless facilities. Reduced deployment in these bands would place additional strain on already-encumbered mid-band spectrum and increase pressure for reallocation. Given the wide range of existing mid-band uses—including Wi-Fi, public safety, and government operations—such constraints risk slowing the development of 5G and 6G networks while also affecting other critical services.

IV. Extending Small-Cell Deployment Protections to Macro-Cell Sites

As discussed above, wireless providers are increasingly relying on macro-cell towers to collocate and deploy 5G equipment using mid-band spectrum. The FCC's recent infrastructure reforms, however, have focused primarily on small wireless facilities, resulting in different regulatory treatment for different deployment technologies. The commission should use this proceeding to update its rules to apply the same shot clocks and fee caps to macro-cell sites that currently apply to small wireless

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[34] Comments of CTIA, *Build America: Eliminating Barriers to Wireless Deployments*, at 22, WT Docket No. 25-276 (Dec. 31, 2025), https://www.fcc.gov/ecfs/document/12312417000463/1.

[35] Comments of AT&T, *Build America: Eliminating Barriers to Wireless Deployments*, at 6-7, WT Docket No. 25-276 (Dec. 31, 2025), https://www.fcc.gov/ecfs/document/123130126615/1.

[36] *Id.* at 7.

facilities. Doing so would reduce deployment costs, encourage additional investment, and promote more efficient use of limited mid-band spectrum resources.

A. Permitting Delays Impose Significant Costs and Warrant Updated Shot Clocks

Unreasonable permitting delays impose significant costs on wireless providers, both at the individual project level and across the industry as a whole. At the site level, delays can prevent providers from deploying upgraded equipment and more resilient networks, undermining service quality and competitive positioning. Delay risk also increases uncertainty around new collocations and builds, including the risk that approval may never be granted. When approval timelines extend by even a few months, capital tied to a pending project may remain unavailable for other investments until the site is approved and deployed. Where disputes result in litigation, delays can extend for years, leaving providers with "dead capital" that generates no revenue for extended periods.

At scale, these site-specific delays accumulate and slow the broader deployment of 5G networks. As 5G increasingly competes with traditional fixed broadband and supports new services and usage patterns, permitting delays at individual sites can materially constrain network expansion.[37] Available data indicate that deployment delays can result in billions of dollars in lost consumer value annually and have a direct, negative effect on U.S. gross domestic product (GDP).[38]

The FCC should therefore update its existing shot clocks for macro-cell sites to align with the 60-day and 90-day shot clocks that apply to small wireless facilities.

First, doing so would better align with Section 332, which provides that state and local regulation of wireless facilities "shall not prohibit or have the effect of prohibiting the provision of personal wireless services."[39] Lengthy permitting delays can effectively preclude service at a specific location and, by increasing time-to-revenue and tying up capital, reduce investment across a provider's broader network footprint.[40] Both effects ultimately reduce consumer welfare.

Second, there is little practical justification for treating small wireless facilities and macro towers differently with respect to review timelines, particularly as permitting workflows have modernized.[41] Some municipalities report that review processes that once took months have been reduced to days

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[37] Ericsson Mobility Report, *supra* note 28, at 6.

[38] Debra J. Aron & Olga Ukhaneva, *Economic Impacts of Delayed 5G Deployment and Adoption in the US*, CHARLES RIVER ASSOCS. (*last visited* Jan. 6, 2025), https://www.crai.com/engagements/economic-impacts-of-delayed-5g-deployment-and-adoption-in-the-us.

[39] 47 U.S.C. §332(c)(7)(B)(i)(II).

[40] T. Randolph Beard, George S. Ford, & Michael Stern, *Infrastructure Investment and Franchise Fee abuse: A Theoretical Analysis*, PHOENIX CTR. POL'Y BULL. No. 45 (2019), at 3, https://www.phoenix-center.org/PolicyBulletin/PCPB45Final.pdf.

[41] Karyn Hede, *Faster, More Informed Environmental Permitting with AI-Guided Support*, PACIFIC NORTHWEST NAT'L LAB'Y (Dec. 3, 2024), https://www.pnnl.gov/news-media/faster-more-informed-environmental-permitting-ai-guided-support#:~:text=PNNL%20data%20scientists%20collected%20and,Share%3A.

through the use of digital permitting platforms and AI-assisted prescreening.[42] These developments should allow localities to conduct any additional review required for macro-cell applications in a fraction of the time currently asserted.

At the same time, some localities may lack the infrastructure needed to implement these tools. The FCC's Broadband Deployment Advisory Committee (BDAC) found that, during the COVID-19 pandemic, certain local offices struggled to process applications due to inadequate digital infrastructure.[43] Where appropriate, the commission should support state and local governments by identifying best practices and facilitating adoption of modern permitting tools, including AI-assisted review.

Ultimately, however, Congress placed the responsibility on local permitting authorities to review applications in a timely manner. Updating macro-cell shot clocks would encourage permitting offices to modernize their processes, benefiting local communities, the wireless industry, and U.S. leadership in wireless technologies.

B. Above-Cost Fees Depress Investment and Warrant Cost-Based Caps

The FCC's approach to small wireless facilities rests on a core economic principle: capital available for network investment is finite, and costs imposed on one deployment necessarily reduce investment elsewhere.[44] That principle applies equally to macro-tower modifications and small wireless facilities. Because local governments control access to public rights-of-way and face little competitive discipline in granting that access, they can impose fees that materially exceed the direct and reasonable costs of application processing and rights-of-way management.[45]

The economic rationale underlying the FCC's deployment policy remains valid today. Wireless providers must make large, upfront capital investments with long payback periods, and investment decisions are governed by the net present value of expected cash flows, discounted by the firm's cost of capital. In practice, providers' ability to deploy capital is constrained by balance-sheet limits, free cash flow, and investor risk tolerance. As a result, firms must prioritize among competing projects,

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[42] Although not specific to telecommunications permitting, Honolulu's adoption of online permitting portals and AI-based prescreening reduced review times from approximately six months to two to three days. Ludo Fourrage, *How AI Is Helping Government Companies in Honolulu Cut Costs and Improve Efficiency*, NUCAMP (Aug. 19, 2025), https://www.nucamp.co/blog/coding-bootcamp-honolulu-hi-government-how-ai-is-helping-government-companies-in-honolulu-cut-costs-and-improve-efficiency; *see also Use AI to Transform City Operations*, NAT'L LEAGUE OF CITIES (Jul. 31, 2025), https://www.nlc.org/article/2025/07/31/use-ai-to-transform-city-operations/#:~:text=In%20Honolulu%2C%20the%20city%20added,months%20to%202%2D3%20days.

[43] *Report and Recommendations: COVID-19 Response*, Disaster Response and Recovery Working Group of the Broadband Deployment Advisory Committee (Oct. 29, 2020), 12-13, 38, https://www.fcc.gov/sites/default/files/bdac-disaster-response-recovery-approved-rec-10292020.pdf.

[44] 2020 Declaratory Ruling, *supra* note 2, at ¶ 60.

[45] *Petition for Rulemaking to Accelerate Wireless Broadband Deployment by Amending the Rules Implementing Section 6409 of the Spectrum Act of WIA – The Wireless Infrastructure Association*, RM-11849 at 12 (Aug. 27, 2019), https://www.fcc.gov/ecfs/document/108273047516225/1.

allocating scarce capital to deployments with the highest risk-adjusted returns and the most predictable payback periods. When regulatory costs reduce expected returns below a firm's cost of capital, investment is deferred or redirected to other sectors.

In practice, this means that high-return locations are prioritized, and local governments in those areas may be able to extract economic rents.[46] When fees materially exceed cost-based levels, however, they operate as transfers that reduce capital available for other network investments.[47] In competitive markets with elastic demand, such fees cannot be fully passed through to consumers without reducing usage. Instead, they are largely absorbed by providers and result in reduced deployment.[48] Excessive fees can also deter entry by new competitors, including cable operators seeking to expand wireless offerings.

The FCC should therefore adopt fee caps for macro-cell sites that limit charges to the direct and incremental costs of processing applications and administering access to the rights-of-way. While it is appropriate for providers to compensate localities for the reasonable costs associated with managing public rights-of-way, fees should not be used as a general revenue source. Allowing recovery of unrelated or common costs would improperly shift expenses that benefit multiple users onto wireless providers alone, creating cross-subsidies and enabling above-cost charges that function as economic rent extraction.

Imposing cost-based fee caps would reduce barriers to macro-cell deployment. Excessive fees not only discourage individual projects but also depress investment more broadly by making marginal deployments in other communities less attractive. Limiting such fees is consistent with congressional intent, promotes broadband deployment, and still allows local governments to recover reasonable costs associated with rights-of-way access.

The FCC should also prohibit localities from imposing unrelated fees as a condition of permitting approval. As the NPRM notes, these may include consulting fees or gross-revenue-based charges that bear no relationship to the costs of processing an application. Fees unrelated to actual permitting costs should be barred.

Finally, to the extent that some states continue to impose *de facto* moratoria on new collocations or deployments, the FCC should use this proceeding to preempt inconsistent state laws that prohibit or delay the acceptance and approval of broadband applications.

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[46] Anita Thronipara, Rolf Sternberg, Till Proeger, & Lukas Haefner, *Digital Divide Craft Firms' Websites and Urban-Rural Disparities – Empirical Evidence from a Web-Scraping Approach*, 43 REV. REG. RES. 69, 76 (2023).

[47] For example, imposing spectrum-auction fees unrelated to the costs of repurposing the spectrum reduces the amount of spectrum made available for use. T. Randolph Beard, George S. Ford, Michael Stern, *Innovation in Spectrum Repurposing: The C-Band as a Principle-Agent Problem*, PHOENIX CTR. POL'Y BULL. No. 4 (Sep. 2019), at 12, https://www.phoenix-center.org/PolicyBulletin/PCPB47Final.pdf.

[48] 2018 Order, *supra* note 2, ¶ 62.

C. Preventing Network Densification Constitutes a Prohibition of Service

As discussed above, network densification is essential to the provision of modern wireless services, particularly given the scarcity of spectrum resources. Sections 253 and 332(c)(7) prohibit state and local governments from using zoning authority to prevent the provision of personal wireless services and grant the FCC authority to preempt laws and regulations that have that effect. As the commission observes in the NPRM, some state and local governments condition approval on whether a "coverage gap" exists. Such criteria necessarily impede densification, because providers must deploy additional facilities within already-served areas to improve capacity, reliability, and service quality.

By restricting network densification, these requirements effectively prevent the provision of personal wireless services. The FCC should therefore preempt state and local regulations that restrict or prohibit densification.

V. Conclusion

The FCC's wireless infrastructure reforms have produced meaningful progress, but additional action is needed to sustain network investment and deployment. Wireless providers must continue to upgrade equipment and densify their networks to meet rising demand and to make efficient use of limited spectrum resources. Yet state and local permitting practices continue to impose unnecessary costs, delays, and uncertainty that constrain investment, particularly for collocations and upgrades on existing macro-cell sites.

As the record demonstrates, permitting delays, above-cost fees, and expansive aesthetic and concealment standards can raise project-level costs, increase regulatory risk, and push otherwise viable deployments below investment hurdle rates. These burdens divert scarce capital away from network upgrades, slow densification, and ultimately reduce service quality and coverage for consumers. Although the FCC cannot eliminate all deployment costs, it can address those that are regulatory in origin.

Targeted reforms—such as clarifying concealment standards under Section 6409(a), extending existing shot clocks and fee caps to macro-cell deployments, and preempting state and local measures that effectively prohibit densification—would directly reduce deployment costs and uncertainty. Aligning the regulatory treatment of macro-cell sites with that of small wireless facilities would reflect current 5G deployment realities, lower barriers to investment, and promote more efficient use of mid-band spectrum.

By building on its prior reforms and closing remaining regulatory gaps, the FCC can better effectuate congressional intent, encourage continued private investment in wireless infrastructure, and ensure that next-generation networks are deployed in a timely and economically sustainable manner.