Can Wholesale Broadband Regulation Prevent and Eliminate Digital Discrimination?

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Motivation

• All-of-government, once-in-a-generation effort to deploy fast broadband to unserved and underserved locations

• Targeted goal to prevent and eliminate disparities that relate to income, race and other “covered populations”

• Bulk of funding devoted to last-mile deployment and adoption, but the potential of the middle-mile network is often overlooked

• How can middle-mile deployment expand coverage so as to remove disparities?

• How might wholesale middle-mile regulation unlock this potential?
Middle mile networks
Benefits of middle mile expansion

• Lower wholesale cost due to facilities-based competition
  • Expands capacity that drives down cost to last-mile providers
  • Facilitates last-mile entry that, in turn, drives down retail prices

• Higher quality of wholesale services
  • Greater transport capacity
  • Greater redundancy and route diversity
  • Adoption of advanced technology
Middle mile policies in action

- Federal MM grant program
  - IIJA allocated $1B ($930M awarded to 35 projects)
    - Combined with $848M state and local match
    - Screen grantees based on financial, technical, managerial capacities

- State MM projects
  - CA, CO, DC, IL, KY, MA, MD, ME, ND, OR, VT, WA, et al. have built networks
  - Most are open access that offer service, often under negotiated rates, terms & conditions

- Last mile support
  - FCC high-cost subsidies: CAF ($4.2B/2022), RDOF ($20.4B/10 years)
  - Lifeline ($700M) and ACP ($14.2B) for broadband service and devices
  - E-Rate ($11.9B) and ECF ($7.1B) for elementary/secondary education
California MM broadband initiative

• Financing of MMBN
  • S. 156 allocates $6B for state broadband
    • $3.25B for statewide middle mile network administered by the CDT
    • $2.0B for last-mile projects selected by the CPUC
  • $73M from NTIA MM Grant Program
  • CASF Broadband Infrastructure Grants

• Design of MMBN
  • Topology follows state highway ROWs, targeting un/under-served areas
  • Deployment options: Lease, purchase, joint build, construct

• Operation of MMBN
  • Open access at stipulated interconnection points
  • Unbundled service components (vault, HVAC, power, etc.)
California Statewide Middle Mile Broadband Network
Open access provisions

• Customer eligibility
  • Financially and technically capable last-mile ISPs
  • Neutral to customer’s technology, ownership structure
  • Participate in consumer subsidy programs (e.g., Lifeline)

• Interconnection points
  • Regular spaced handholes, vaults
  • Anchor institutions
  • Carrier hotels

• Wholesale services
  • Lit or dark fiber, wavelengths, colocation, SD-WAN, cloud, VoIP
  • Interconnection
  • Purchases capped at a maximum
Pricing middle mile services

• Rate setting methodologies
  • Engineering cost model (e.g., HCPM/TELRIC)
  • Accounting cost model
  • Retail-minus methodology
  • Yardstick regulation, price benchmarks
  • Bilateral commercial negotiations

• Regulated pricing principles
  • Just, reasonable and non-discriminatory
  • Competitively neutral
Wholesale regulation of middle mile

Middle mile

Last mile

ISP1

ISP2

Retail consumers
Summing up

• Middle mile is an essential, but often overlooked, element of broadband infrastructure

• Middle mile deployment can help close the digital divide and address digital discrimination

• Middle mile deployment can be promoted by a variety of direct and indirect subsidies and policies

• Middle mile wholesale regulation can foster last-mile competition, but net effects on consumers are unclear
Thank you. Questions?