

**Before the
NATIONAL TELECOMMUNICATIONS AND
INFORMATION ADMINISTRATION
Washington, D.C. 20230**

In the Matter of)	
)	
The Incentives, Benefits, Costs, and)	Docket No. 160810714–6714–01
Challenges to IPv6 Implementation)	RIN 0660–XC029
)	

**COMMENTS OF
NTCA–THE RURAL BROADBAND ASSOCIATION**

I. INTRODUCTION

NTCA–The Rural Broadband Association (NTCA)¹ hereby submits these comments in the above-captioned proceeding.² The Notice seeks comment about the benefits, obstacles, and other issues surrounding the implementation of IPv6.

II. OBSTACLES TO IPV6 IMPLEMENTATION INCLUDE COSTS, TRAINING, AND THE AVAILABILITY OF HARDWARE AND SOFTWARE

The Notice seeks comment on factors that may impede the adoption of IPv6.³ By way of background, as the Notice indicates, the continued proliferation of networked devices makes the limits of IPv4 increasingly problematic.⁴ At the same time, the cost of

¹ NTCA represents nearly 900 rural rate-of-return regulated local exchange carriers (RLECs). All of NTCA’s members are full service local exchange carriers and broadband providers, and many provide wireless, video, satellite, and/or long distance services as well.

² National Telecommunications and Information Administration, *The Incentives, Benefits, Costs, and Challenges to IPv6 Implementation*, Docket No. 160810714–6714–01, RIN 0660–XC029, Notice, Request for Public Comment, 81 Fed. Reg. 55182-55183 (rel. Aug. 18, 2016) (“Notice”).

³ *Ibid.*

⁴ *Id.*

replacing or updating existing hardware and software is one of the major barriers to IPv6 implementation. It may be difficult to justify the considerable expense, in staff time as well as capital, of moving to IPv6, as long as current and near-term customer needs are being met. Similarly, the time and cost of training personnel who will deploy and maintain IPv6-based devices and systems represents further challenges.

These obstacles are faced by equipment and software vendors, in addition to carriers and broadband Internet access service (BIAS) providers. While some vendors are engaged in helping their customers make the transition to IPv6, others remain focused on IPv4-based equipment and software for a variety of reasons. Establishing the unified goal of transitioning to IPv6 across industry segments remains a challenge. As marketplace demand increases the need for IPv6, this goal should become more achievable.

III. INCENTIVES TO IMPLEMENT IPV6 WILL LARGELY BE DETERMINED BY COMPETITIVE AND MARKET FORCES

The Notice asks about factors that contribute to an organization's decision to implement IPv6.⁵ Rural carriers and BIAS providers must consider marketplace demands in order to justify the business decision to invest in transitioning to IPv6, and can only do so in accordance with available resources and funding. The need to make a justifiable business case is among the most important determinative factors in deciding to implement IPv6. For rural carriers, the BIAS marketplace is rife with uncertainty. It must be remembered that these are small businesses operating in markets where customer densities are often measured in single digits per mile, and it is increasingly difficult to invest in high-cost, sparsely populated areas. While recent reforms to the Universal

⁵ *Id.*

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Service Fund may provide some improvements to regulatory clarity, many questions remain to be resolved regarding implementation and effects of those reforms.⁶ Carriers are therefore constrained in their ability to upgrade or update infrastructure and software without a compelling business case. Thus, sufficient and predictable cost recovery mechanisms, paired perhaps with tax credits and/or incentives such as accelerated depreciation, are effective necessities in making the business case to adopt and speed the transition to IPv6 in rural areas.

The Notice also requests information on the titles, and motivations, of those company officials involved in the decision to implement IPv6.⁷ Titles may include the Chief Information Officer, the Chief Technology Officer, Network Architect, Network Engineer, Chief Executive Officer, President, and General Manager. Their motivation to do so is to respond to marketplace demands, a changing technological environment, and a need to remain competitive.

Furthermore, the Notice seeks comment on the expected return on investment (ROI) related to deploying IPv6-capable technology.⁸ For rural carriers, the ROI associated with IPv6 is often not immediately apparent. The transition is undertaken in response to local market condition, customer demand, as well as for technological and competitive reasons. These factors will be highly variable depending on individual

⁶ See Petition for Reconsideration and/or Clarification of NTCA, WC Docket No. 10-90, *et al.* (filed May 25, 2016).

⁷ Notice, 55183.

⁸ *Id.*

carriers' equipment life cycle situations, local market demands, and similar considerations.

IV. PLANNING AND COSTS OF IPV6 IMPLEMENTATION WILL VARY WIDELY BY COMPANY

The Notice seeks information regarding the planning and costs of implementing IPv6.⁹ Beyond weeks or months of initial planning, the actual implementation time will vary greatly by company, its size, and business needs. In many cases, hardware replacement cycles are a major factor, which can lead to incremental changes over a period of years. Costs include staff time and training, as well as hardware and software upgrades. Again, the specifics vary greatly among companies based on their business needs, hardware and software replacement and upgrade cycles, regulatory mechanisms that affect network investment and cost recovery decisions, and many other factors.

Finally, the Notice asks if a company's size has implications on cost. As in many cases, the absence of economies of scale and scope typically result in higher investment costs for small businesses. While rural carriers often include IPv6 capability in their specifications when seeking to procure new products, rural carriers' purchase patterns and needs are often different from larger carriers. Smaller companies' lack of market power limits their ability to enhance the demand for, or drive specific development of, IPv6-capable hardware and software. Overall, the challenges associated with the transition to IPv6 makes its implementation more difficult and expensive for small businesses to achieve.

⁹ *Id.*

V. CONCLUSION

Many carriers have started to consider and explore the transition to an IPv6 environment. However, resource constraints and availability of products result in the need to proceed in a cautious manner. The implementation of IPv6 by rural carriers must occur in response to market conditions and customer demand, within the confines of available resources. Policymakers should consider what measures might be taken to help encourage and enable such transitions for small businesses serving high-cost rural markets.

Respectfully submitted,

NTCA–THE RURAL BROADBAND ASSOCIATION

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