Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Connect America Fund	)	WC Docket No. 10-90
	)	
ETC Annual Reports and Certification	)	WC Docket No. 14-58
	)	
Establishing Just and Reasonable Rates for Local Exchange Carriers	))	WC Docket No. 07-135
	)	
Developing a Unified Intercarrier Compensation Regime	))	CC Docket No. 01-92

COMMENTS OF

THE RANGE FAMILY
OF TELECOMMUNICATIONS COMPANIES

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The purpose of these comments is to respond to the FCC's request for comment on how alternative options to the budget control mechanism would mitigate the effects of the Averch-Johnson effect.[1] Because there are often misconceptions about the Averch-Johnson effect, a review of economic literature on the Averch-Johnson effect is provided (see Reference section for specific citations). This is followed by a discussion of the mitigating effects to the Averch-Johnson effect that are present in the current FCC-RLEC regulatory environment. Because these mitigating effects are present even in the absence of a budget control mechanism, these comments conclude by stating that a budget control mechanism is not needed for purposes of attempting to counter any perceived Averch-Johnson effect.

I.   The Range Family

The Range Family consists of three rural local exchange carriers ("RLECs") - Range Telephone Cooperative, Inc. ("Range"), RT Communications, Inc. ("RT"), Dubois Telephone Exchange, Inc. ("Dubois") – and one competitive local exchange carrier ("CLEC") - Advanced Communications Technology, Inc. ("ACT"). RT, Dubois, and ACT are wholly owned subsidiaries of Range. Between its four operations, the Range Family provides services in Montana, Wyoming, South Dakota, and Colorado.

II.   Averch-Johnson Effect

In Averch-Johnson's simple depiction of the regulatory process and firm behavior, the company is assumed to produce only one output using only two inputs – labor and capital – and the regulator impacts the firm's decisions in only one way, by establishing an authorized rate of return on its rate base. It is also "assumed that the rate of return permitted to the firm by regulation is less than the return it would obtain if it were able to maximize its profits, but is at least as great as the rate of return on capital." (Baumol and Klevorick 1970) Using mathematical proofs based on these simplified assumptions, Averch-Johnson conclude that the firm has an incentive to uneconomically substitute

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[1] Connect America Fund, et al., WC Docket No. 10-90, et al., Report and Order, Third Order on Reconsideration, and Notice of Proposed Rulemaking (rel. March 23, 2018) ("Order" or "NPRM," as applicable), paragraph 154.

capital for labor and operate inefficiently in the sense that social cost is not minimized at the output it selects. (Averch and Johnson 1962, emphasis added)

One important thing to note about this model is that it assumes that capital and labor are substitutes in the production process. In other words, to produce a unit of output, the firm could use either a unit of capital or a unit of labor. As noted by some economists, if capital and labor are complements, any impact of the Averch-Johnson effect is reduced or eliminated. (Law 2014[2] and Koplin 2001) Specifically, a network utility with a naturally high capital to labor ratio due to the nature of the associated production technology can generally be characterized as having complementary (or very low degree of substitution) of capital and labor. Thus, the kind of industry which is most often regulated is also the kind of industry in which there is least likely to be an Averch-Johnson effect. (Law 2014)

The model also assumes a lack of competition because it was published in 1962 when each telephone firm had its own exclusive local marketing area. (Averch-Johnson 1962). To determine the impact of competition on the productive efficiency of the U.S. telephone industry, one study shows that "competition induces the incumbents to use the unconstrained optima, thereby reducing the allocative inefficiency caused by the Averch-Johnson effect." (Oum and Zhang 1995)

Other studies have shown additional factors that mitigate the Averch-Johnson effect. For example, Averch-Johnson assume continuous rate of return adjustments rather than a more realistic scenario with regulatory lag. With regulatory lag considered, one study finds that the profit maximizing firm's best strategy is not clear; it may be to operate with minimum-cost inputs rather than the overly-capital intensive inputs implied by the AJ effect. (Zajac 1970) Another study finds that regulatory lag

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[2] Note, Law 2014 refers to the effect throughout his study as the Averch-Johnson-Wellisz effect because of an additional study by Stanislaw H. Wellisz on the effects of regulation on peak-load pricing for natural gas companies rather than on input usage. Other studies don't include the "Wellisz" part of the effect for these reasons (see for example, Baumol and Klevorick 1970, Footnote 1). In addition, the FCC did not include "Wellisz" in its discussion of the effect, possibly for similar reasons since it regulates telecommunications services and not natural gas services. So, these comments drop "Wellisz" when referencing Law 2014, which is the only study referenced that includes "Wellisz" in the specific discussion of the effect.

reduces a firm's incentive to overcapitalize and, when combined with a scenario in which a regulator sets the fair rate of return as close as possible to the cost of capital, the firm will be driven to a point of efficient production (Bailey and Coleman 1971)

In addition, prudence reviews by regulators that disallow capital investments that are not used and useful have been shown to mitigate incentives to overinvest in capital (Church and Ware 2000 and Lyon 1995) Further, rate of return regulation together with a used and useful criterion is able to support an efficient investment program. Specifically, using game theory analysis with repeated relationships between a firm and a regulator, a study found that "[b]y choosing a production technique that is less capital intensive (and has higher operating costs) the utility can reduce the gain to the regulator from expropriation and mitigate the risk to itself should expropriation occur." (Gilbert and Newberry 1994)

In assessing the significance of the Averch-Johnson effect for policymakers, Baumol and Klevorick concluded that even if the Averch-Johnson effect occurs in practice, it does not seem to produce results that are very serious because firms have neither the extensive information nor the refined decision processes necessary to lead unerringly to the Averch-Johnson input distortions. (Baumol and Klevorick 1971)

Given the limitations of the model and that empirical evidence has failed to consistently support it conclusions, some researchers have questioned the wisdom of continuing research on it. Paul Joskow stated, "[i]n my view, students of the regulation of legal monopolies wasted at least 15 years extending the Averch-Johnson model of regulatory behavior and trying to test in empirically without much success" (Joskow 2005) This statement was made in an article listing lessons learned on the previous 25 years of research in industrial organization, including a citation to an article he co-authored that highlights the weaknesses of studies of the Averch-Johnson model (Joskow and Rose 1989)

As a follow-up to Joskow 2005, Stephen M. Law published an article that analyzed the theoretical and empirical support for the Averch-Johnson effect. Law summarizes several studies that

identify theoretical problems with the Averch-Johnson propositions. Then, using a survey of 192 articles published on the issue since 1962, he concludes that there is little evidence to suggest there ever was an Averch-Johnson effect. He doesn't go as far as Joskow in concluding that the research into the Averch-Johnson effect has been a waste of time because he finds that the research produced some important results for regulation economists similar to how explorers searching for the Northwest Passage made other interesting discovers. But he does suggest that research on the Averch-Johnson effect be abandoned in favor of more productive enterprises (Law 2014)

III.   Mitigating Factors in Current Telecommunications Regulation

In the nearly six decades since its publication, many questions have been raised about the Averch-Johnson effect as a matter of theory. In addition, there is, at most, mixed empirical evidence to support that it occurs in practice to a level that warrants concern. Even if the Averch-Johnson effect is theoretically sound, several studies have identified mitigating factors that reduce the risks from it occurring in practice. The following discussion presents the model's key assumptions and mitigating factors and examines whether they are applicable in the FCC-RLEC regulatory environment.

Lack of capital-labor substitution. The model's assumption that a firm can substitute between labor and capital inputs may be convenient for mathematical proofs but it is not realistic in the telecommunications industry. Specifically, fiber facilities can't be substituted with human labor. In reality, capital and labor are complements in the provisioning of telecommunications and broadband services. It takes humans to bury cable and maintain networks while the service itself is transmitted over fiber, copper, and electronic facilities. Given the complementary nature of telecommunications inputs, any impact of the Averch-Johnson effect is likely to be reduced or eliminated.

Competition. There may not have been competition for local telephone services in 1962 but there is now some competition in RLEC areas. While there is rarely complete competitive overlap in

RLEC areas, competition or the threat of competition is enough to cause providers to closely scrutinize their investment decisions.   RLECs also are cognizant that when they deploy broadband in areas unserved by facilities-based competitors, the RLECs' own broadband service allows for competition in voice service from over-the-top providers. Given the resulting uncertainty in customer retention and cost recovery, a regulated entity does not have an incentive to expend unnecessary capital resources.

Regulatory lag. There is a regulatory lag for RLECs since prices and support amounts to achieve an authorized rate of return are established up to two years after costs are incurred. As previously discussed, studies have found that in the presence of regulatory lag entities may have incentives to minimize costs rather than inefficiently increase capital, thereby mitigating any Averch-Johnson effect that may occur.

Prudence reviews. Prudence reviews occur in the FCC-RLEC regulatory environment through FCC oversight and investigations, NECA cost study reviews and audits, USAC audits, and state ETC recertification proceedings. As noted by the FCC, "[its] rules and the used and useful standard have long governed ETCs and rate-of-return carriers' behavior."[3] The Order itself contains new used and useful standards. As Gilbert and Newberry show, an efficient investment program can occur when rate of return regulation is used together with a used and useful criterion. In addition, NECA performs prudence reviews through its annual cost study reviews and through periodic audits, which we understand can be triggered by determining that a company's reported costs are outliers relative to those reported by similarly situated companies. USAC also performs audits, which have increased in frequency and become nearly a regular occurrence for some companies. Further, state commissions are charged with reviewing financial and other data in their annual ETC recertification proceedings to determine if a carrier is using universal service support for its intended purpose. This is in addition to the traditional regulatory oversight performed by state commissions in approving local service rates. In

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[3] Ibid, paragraph 10.

short, there are many types of prudence reviews to mitigate any Averch-Johnson effect that may otherwise occur.

Lack of perfect knowledge. While the Averch-Johnson model assumes perfect knowledge by the firm such that it knows exactly what level of capital it can substitute for labor to produce a profit-maximizing level of output, perfect knowledge of this sort does not occur in the FCC-RELC regulatory environment for several reasons. Reality is more complicated with: 1) capital not being a perfect substitute for labor; 2) more inputs than just these two broad capital and labor categories; 3) more than one type of output; 4) more FCC impacts on a firm's decision than the simple establishment of a rate of return; 5) actual universal service support per entity being reduced based on factors outside of the direct control by the FCC and an individual RLEC; 6) various supply, demand, and pooling issues in the access pricing mechanism that make it difficult to achieve a targeted rate of return; and 7) the FCC being one of only two regulatory bodies (or more if a company operates in multiple states) that has oversight and pricing authority over an RLEC. In this complex regulatory environment, perfect knowledge cannot be achieved and, therefore, any Averch-Johnson effects that may otherwise occur will be mitigated.

Cost of capital less than rate of return. For the Averch-Johnson effect to work in theory, the rate of return set by the regulator needs to be set higher than the cost of capital required by a firm to provide service in a given area. Given the reduced level of broadband deployment in the most sparsely populated portions of RLEC service areas, it is at least questionable whether the authorized rate of return is greater than the cost of capital in these areas. If it is not, then by the model's own assumptions, there will not be an Averch-Johnson effect.

IV.   Lack of Need for Additional Constraints

In the NPRM, the FCC asks how each specified alternative option for establishing a level of high-cost support that would not be subject to the budget control mechanism (BCM) would "mitigate the

inefficiencies of the legacy rate-of-return system, such as the incentive for rate-of-return companies to over-invest capital to increase profits, the Averch–Johnson effect."[4] It is Range's position that the assumptions made by the Averch-Johnson model are not present in the FCC-RLEC regulatory environment and that, even if they were, there are several mitigating factors that would reduce or eliminate the effect. Moreover, the budget control mechanism is a crude hatchet and is not designed to surgically fix a carrier-specific investment decision but one that unpredictably reduces support for a large group of carriers to keep the overall budget equal to an arbitrarily established cap. If such a mechanism is discussed in economic literature as a means to address the Averch-Johnson effect, we certainly haven't seen it. If anything, this is more comparable to regulator expropriation that Gilbert and Newberry show leads to less than optimal output. Given the apparent lack of support in economic literature for a mechanism like the BCM to mitigate the Averch-Johnson effect, it is not reasonable to expect an alternative option to the BCM to meet that criterion. Further, there are many reasons why an increase in high cost support is justified, which other parties are likely to present. If the FCC chooses to establish an overall budget cap, whether at the current level or at an increased level, it should do so with goals in mind other than mitigating the Averch-Johnson effect. There are already mitigating factors in place to for those purposes.

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[4] Ibid, paragraph 154.

V.   Conclusion

There are many misconceptions about the Averch-Johnson effect. These comments

summarized the economic literature on the issue and demonstrated that the Averch-Johnson effect is

unlikely to be present in the FCC-RLEC regulatory environment due to conditions different from those

assumed by the model and because of other mitigating factors. Further, since an overall budget cap on

the high cost fund, whether through BCM or some other method, is not a type of mechanism conducive

to addressing Averch-Johnson concerns, the FCC should consider other issues when determining fund

size.

Respectfully submitted,

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