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Potential Effects of Net Neutrality Repeal for Vermont

On December 14, 2017, the Federal Communications Commission (FCC) issued an order titled “In the Matter of Restoring Internet Freedom.” The order removes the FCC’s former policy of network neutrality, also known as net neutrality, established during the presidency of Barack Obama. Under net neutrality, internet service providers (ISPs) cannot charge content providers different prices for different qualities of broadband speed or access. Many fear the potential consequences of the new FCC order like higher costs for accessing broadband services. As the internet is increasingly tied to multiple aspects of everyday life there are additional fears that the new order will affect multiple sectors of society including healthcare, economy, education, and government service. In this report, we note the current state of knowledge on the potential impacts of the new FCC order.

Since the enactment and subsequent replacement of net neutrality rules is a recent development, research on its effects consists mainly of expert speculation and simulations based on economic models. The reader should keep this in mind—the largely speculative nature of the material presented below and the concurrent lack of empirical evidence—while reading through the rest of this report.

Methodology

The researchers first looked through the findings sections of past bills and legislation from the Vermont legislature wherein net neutrality or broadband was referenced or discussed. Resources from federal publications were then used to further explore the specifics of net neutrality. Sources published by the FCC and federal legislation provided information on the relationship between broadband and U.S. sectors as well as the legal foundations of the net neutrality debate. The researchers then looked at other telecommunications-related state legislation and reported research by using the Congressional Research Service database and the National Conference of State Legislatures database. The University of Vermont’s online peer-reviewed resource databases were also utilized.

Lastly, the researchers looked at the broadband policies present in other countries to see if they faced similar challenges to the United States regarding net neutrality. Case studies about Chile, the Netherlands, Japan and the European Union were found; however, information regarding the impacts of net neutrality regulations is generally unavailable as discussions of this kind are recent.

From these research methods the researchers assessed the state of research on the impacts of net neutrality to be largely incomplete. For instance, while the group found examples of net neutrality implications in documented state legislation, the information uncovered consisted only of generalized statements. The sources that were uncovered did not include legitimate research with sufficient evidence regarding the impacts of the repeal on U.S. sectors. Most information found was speculative, with economic research being the exception. While economic research included mathematical models, it still failed to include real-world observations of the impact of net neutrality policy changes. Further research is needed to assess the impacts of internet environments with and without net neutrality with any degree of certainty or causation.

Recent FCC Decision

The 2017 FCC order reclassifies broadband internet service from a telecommunications service to an information service.¹ According to the Communications Act of 1934, an information service is defined as

the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service.²

The reclassification means ISPs are no longer subject to the non-discriminatory rules imposed on telecommunications services in Section 254 of the Communications Act. Protections provided by the non-discriminatory clauses and sub clauses included an assurance of equitable universal service, the ability of states to intervene to ensure such equity, the requirement that providers make charges for services in high cost rural areas no higher than charges in urban areas, and fair charges for healthcare providers in rural areas, educational providers, and libraries.³ Thus, the reclassification from a telecommunications service to an information service means internet service providers, unlike other telecommunication providers, are not required to provide equitable service to anyone, they are not required to act in a non-discriminatory fashion.

Potential Impacts of Net Neutrality Repeal by Sector

Health

The relationship between broadband, healthcare, and net neutrality is centered on patient access to care and provider access to patient information through telehealth services.

¹ Federal Communications Commission, *In the Matter of Restoring Internet Freedom*, FCC-17-166 (Washington, DC: GPO, 2017), 2,

https://transition.fcc.gov/Daily_Releases/Daily_Business/2018/db0223/FCC-17-166A1.pdf.

² Communications Act of 1934, 47 U.S.C.§153 (1934), <https://transition.fcc.gov/Reports/1934new.pdf>.

³ Communications Act of 1934, 47 U.S.C.§ 254 (1934), <https://transition.fcc.gov/Reports/1934new.pdf>.

Telehealth, “the use of electronic information and telecommunications technologies to support long-distance clinical healthcare, patient and professional health-related education, public health and health administration,” includes live-video interactions with a healthcare professional, remote patient monitoring, and electronic health records.⁴ In practice, these methods lower the cost of providing care, enhance care efficiency, and improve access across geographical barriers.⁵ In the absence of net neutrality rules, ISPs can charge higher rates to content providers for higher quality network access, thereby increasing the cost of accessing high quality broadband and potentially creating financial barriers to patient access.⁶

Without net neutrality rules, patients may encounter cost barriers to accessing telehealth services. Accessing and providing electronic health records, video consultations, remote patient monitoring, becomes challenging as the costs of minimum bandwidth required to run these applications increases.⁷ There is additional concern that a discriminatory network regime will influence a patient’s choice of telehealth services. In the absence of net neutrality rules, it is possible that ISPs could discriminate against telehealth services provided by competitors. Therefore, consumers could be driven towards services that do not necessarily fit their needs because more suitable services have higher broadband costs.⁸

Additional arguments suggest that the repeal of net neutrality will present challenges to providing healthcare. As broadband is integral to providing healthcare, the absence of net neutrality rules places additional costs on healthcare providers because ISPs can charge additional for accessing the needed higher quality services. This is notably problematic for healthcare entities with access to fewer financial resources like rural hospitals and community health centers that need high quality broadband access to provide patient care.⁹

Some arguments suggest that net neutrality has the potential to harm the healthcare industry. This particularly applies to time sensitive data delivery. Under net neutrality rules, all data must be treated and delivered equally.¹⁰ Theoretically, this means ambulatory or ICU data would receive the same delivery priority as non-essential services like social media. Since healthcare services would not be able to buy access to internet fast lanes, patient health could be put at risk, especially in emergency care scenarios.¹¹ There are also estimates that net neutrality would prevent innovation in telehealth as the rules

⁴ Christina Susanto, “Net Neutrality and a Fast Lane for Health,” *Journal of Legal Medicine* 37, no. 1 (2017): 105-27, <https://doi.org/10.1080/01947648.2017.1284701>.

⁵ Federal Communications Commission, *Connecting America: The National Broadband Plan*, (Washington, DC: GPO, 2010), 201-202, <https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf>.

⁶ Susanto, “Net Neutrality, Fast Lane for Health,” 119.

⁷ Susanto, “Net Neutrality, Fast Lane for Health,” 110.

⁸ Susanto, “Net Neutrality, Fast Lane for Health,” 119.

⁹ Susanto, “Net Neutrality, Fast Lane for Health,” 119.

¹⁰ Susanto, “Net Neutrality, Fast Lane for Health,” 116.

¹¹ Susanto, “Net Neutrality, Fast Lane for Health,” 121-122.

are estimated to lower network investment. Telehealth services would thus have fewer investments to work with and innovation could be limited.¹²

Economy

Under a discriminatory network regime, economic models indicate that ISPs have an incentive to provide different levels of access to content providers.¹³ Under a neutral network regime, ISPs would be prohibited from charging different rents for different qualities of service delivery.¹⁴ A commonly cited model and study in the field, conducted by Choi et al., concludes that this is not necessarily beneficial.¹⁵ Since different content providers face different levels of urgency when delivering data, providing all content providers with an equal portion of network capacity is not necessarily efficient, especially with data highly sensitive to delay like video and emergency healthcare data.¹⁶ Additionally, models predict that a neutral network environment will decrease the incentive for ISPs to invest in network improvements, and thereby harm the potential for network innovation due to an inability to extract revenue from content providers.¹⁷

Education

Without net neutrality in place, supplying internet access could require higher monetary costs and Vermont school systems may be forced to re-adjust or cut budgets accordingly. The state has a commitment to enhancing the educational opportunities available to students. For example, Vermont legislators have previously made it clear that they support the advancement of cellular, broadband, and other technology infrastructure, thus creating bills such as S.78 (Act 53). Act 53 exemplifies the importance of broadband in schools in states like Vermont “where many of our student population are isolated and without the wherewithal to travel, high speed, redundant, reliable, and secure Internet connectivity is imperative.”¹⁸ Within Act 53 the importance of internet accessibility to education is specifically laid out, illustrating how vital the inclusion of broadband technologies in Vermont educational institutions is.

At the federal level, the FCC declared education a sector of importance in providing widespread broadband access. The FCC’s 2010 National Broadband Plan was created to help the country expand accessibility in order to create easier connections between teachers and parents allowing schools to “provide more personalized learning

¹² Susanto, “Net Neutrality, Fast Lane for Health,”122.

¹³ Jay Pi Choi and Byung-Cheol Kim, “Net Neutrality and Investment Incentives,” *Rand Journal of Economics* 41, no. 3 (2010): 446-71, <http://doi.org/10.1111/j.1756-2171.2010.00107.x>.

¹⁴ Choi and Kim, “Net Neutrality and Investment Incentives,”448.

¹⁵ Choi and Kim, “Net Neutrality and Investment Incentives.”

¹⁶Choi and Kim, “Net Neutrality and Investment Incentives,”462-464.

¹⁷ John Musacchio, Galina Schwartz, and Jean Walrand, “A Two-Sided Market Analysis of Provider Investment Incentives with an Application to the Net-Neutrality Issue,” *Review of Network Economics* 8, no. 1, (2009): 15, <https://pdfs.semanticscholar.org/98fd/3b7d7a471920d49fdf2a412e6511fea2a7d1.pdf>.

¹⁸ VT Legislative Assembly s.78. Reg. Sess. 2011-2012.

opportunities for students.”¹⁹ In 1996, Congress found in the U.S Code for Protection Against Blocking and Screening of Offensive Material that “ increasingly Americans are relying on interactive media for a variety of political, educational, cultural, and entertainment services.”²⁰ As educational technology has grown, so has its reliance on broadband. The educational advancement of Americans increasingly depends on a free and open internet and the variety of resources it provides to students and educators.

Net neutrality rules imposed in 2015 during the presidency of Barack Obama prevented broadband companies from blocking or slowing down access to websites and servers.²¹ The FCC itself has acknowledged that with its recent repeal, service providers will have the chance to create rate brackets, which designate faster internet speeds to higher paying customers—creating a “pay to play situation.”²² After the repeal goes into effect, ISPs will be allowed to charge extra to access the highest quality broadband service, potentially harming efforts to equitably provide high-quality broadband to all students.

Government Services

At federal, state, and local levels, governments rely on broadband access and capacity to serve the American people. According to the FCC (2010), the federal government spends billions of dollars each year on broadband connections for its office buildings and facilities throughout the country as well as provides billions of dollars in funding for programs that have a broadband communications component.²³ The same can be said for state governments like Vermont’s, wherein free and open broadband access allows government services to run and operate efficiently on a daily basis.

State and local governments serve their citizens by acting as a connection between the people and the federal government. They have the capacity to do so because of their ability to leverage the purchasing power of the federal government and coordination with federal grants that have a broadband connectivity requirement.²⁴ This power was granted to them with the passage of the E-Government Act of 2002, opening purchase options to a wide variety of information technology hardware, software and services.²⁵ As a result of these privileges, governments are provided access to lower prices for broadband communications services in their facilities in order to serve their citizens. With the weakening or elimination of net neutrality regulations, state governments like Vermont’s

¹⁹ Federal Communications Commission, *America’s Plan: Executive Summary* (Washington, DC: GPO, 2016) <https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf>.

²⁰ Telecommunications Act of 1996, Public Law 104-104, U.S. Statutes at Large 110 (1996): 56-161, <https://www.gpo.gov/fdsys/pkg/STATUTE-110/pdf/STATUTE-110-Pg56.pdf>.

²¹ Federal Communications Commission, *Report and Order of Remand, Declaratory Ruling and Order* (Washington, DC: GPO, 2015) https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf.

²² Federal Communications Commission, *The FCC Adopts Order to Give Broadband Consumer’s Increased Choice Over Their Personal Information* (Washington, DC: GPO, 2016) https://apps.fcc.gov/edocs_public/attachmatch/DOC-347927A1.pdf.

²³ Federal Communications Committee, *Connecting America: The National BroadBand Plan*, (Washington, DC: GPO, 2010), 281-297, <https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf>.

²⁴ Federal Communications Committee, *Connecting America: The National*, 284.

²⁵ Federal Communications Committee, *Connecting America: The National*, 284.

may have a more limited capacity to deploy broadband in their facilities and therefore be less able to efficiently serve their citizens. For example, it is well-known that broadband technology allows for less paperwork, thus shortening application processes and waiting times.²⁶ Repealing net neutrality regulations may downgrade these procedures to more lengthy and repetitive application processes, lessening the overall efficiency of these services' delivery. Complications such as this may prevent Vermont citizens, especially low income families, from receiving government-mandated benefits for which they are eligible.

Governor Phil Scott's recent executive order, "Internet Neutrality in State Procurement," addresses the FCC net neutrality repeal reiterating the importance of government services by ordering that all state agency contracts with ISPs should continue to include net neutrality protections. Specifically, he cites the everyday use of internet by Vermont State employees in serving citizens and conducting the business of the State, as well as the many important and often critical government services that are offered online to facilitate easy and efficient access by Vermonters as reasons for the release of the order.²⁷ Governor Scott specified that throttling or paid prioritization of internet services could limit Vermonters' ready access to these services and inhibit citizens, particularly those in need, from accessing important government services.²⁸

International Comparative Analysis of Net Neutrality

The term 'net neutrality,' defined as a network design principle, was first coined in 2007 by Tim Wu, a Columbia Law School professor. Around this time discussions of internet traffic management practices (ITMPS) came to international public prominence.²⁹ ITMPS are considered the most prominent technology regulatory issue in telecommunications of the past decade and play a large role in the concept of network neutrality.³⁰

As internet use increased over the past decade, the net neutrality debate reached wider international audiences. As such, multiple countries now have some form of regulation or law concerning internet traffic management. Net neutrality, however, is not easily defined. This is not only because the concept is not strictly or clearly articulated, but also because it spans over "vague concepts of fairness and civil liberty."³¹ The net neutrality debate centers around the potential consequences of network owners exercising additional control over the data traffic in their networks. Given this context, the meaning of 'control' is

²⁶ Federal Communications Committee, *Connecting America: The National*, 283.

²⁷ Vermont Governor Phil Scott, Internet Neutrality in State Procurement, Executive Order 2-18 (2017) <http://governor.vermont.gov/sites/scott/files/documents/EO%2002-18%20-%20Internet%20Neutrality%20in%20State%20Procurement%20-%20Final.pdf>.

²⁸ Vermont Governor Phil Scott, Executive Order 2-18, 1.

²⁹ John Harris Stevenson and Andrew Clement, "Regulatory Lessons for Internet Traffic Management from Japan, the European Union, and the United States: Towards Equity, Neutrality, and Transparency" *Global Media Journal* 3, no. 1 (2010): 9-29, <https://search.proquest.com/docview/888154761?accountid=14679>.

³⁰ Stevenson and Clement, "Regulatory Lessons . . . Internet Traffic Management," 10.

³¹ Martin Cave and Pietro Crocinoni, "Does Europe Need Network Neutrality Rules?" *International Journal of Communication* 1, no. 1, (2007): 669-679, <http://ijoc.org/index.php/ijoc/article/viewFile/157/80>.

often ambiguous.³² Thus, every country varies in their definition of net neutrality and the scope of governance varies considerably. In some cases, state control of access to content is most important. In other cases, the opposite is true—regulations are established to protect the individual's right of access to content and to protect privacy.³³

Outside of the United States, discussions on net neutrality are considered to be debates about different methods of internet traffic management. As discussions of applying strict net neutrality principles to internet traffic management are relatively recent in places like the European Union, Japan, Chile, and the Netherlands, there does not appear to be an equivalent concern about unequal access to internet services at this time.

European Union

In Europe, the net neutrality debate is even more recent than in the United States. In 2009, the EU crafted a legal framework on electronic communications networks and services that put forth a set of directives. This framework was designed to deal with market power issues like traffic management practices. These directives illustrate the EU's official policy objective on net neutrality as a part of recent electronic communications regulations.³⁴ They do not take on a strict legal nature like in the United States. Its role as an overarching policy makes it comprehensive and robust in form but is implemented imperfectly in practice.

Specifically, the EU's Internet Governance Principles all share consistent views on transparency and internet blocking, similar to that of former FCC regulations. For example, new duties and powers for the national regulators were introduced to enforce consumer transparency, as well as a potential tool called the minimum Quality of Service (QoS) to be used at the discretion of national regulators. Beyond this distinction, however, there are significant differences between the definitions of net neutrality across the EU's framework. Thus, no strict nondiscrimination rule yet exists.³⁵ Due to its recentness the EU's current electronic communications regime has some shortfalls. Its evolution, however, has slowly become a legal principle with the force of law.³⁶

³² Jan Kramer, Lukas Wiewiorra, and Christof Weinhardt, "Net neutrality: A progress report," *Telecommunications Policy* 37, no. 1, (2013): 794-813, <http://e-tcs.org/wp-content/uploads/2016/03/Net-neutrality-A-progress-report.pdf>.

³³ Stevenson and Clement, "Regulatory Lessons . . . Internet Traffic Management," 12.

³⁴ Darren Read, "Net Neutrality and the EU Electronic Communications Regulatory Framework," *International Journal of Law and Information Technology* 20, no. 1, (2012): 48-72, <http://doi.org/10.1093/ijlit/eas001>.

³⁵ Pietro Crocioni, "Net Neutrality in Europe: Desperately Seeking a Market Failure" *UK Telecommunications Policy* 35, no. 1, (2011): 1-11, https://ac.els-cdn.com/S0308596110001461/1-s2.0-S0308596110001461-main.pdf?tid=4192b8e0-f76e-449a-86f5-595be191b7bc&acdnat=1522872459_202b23ea5608a42407391ba12810dff.

³⁶ Read, "Net Neutrality and the EU," 49.

Japan

Japan has seen a significant increase in internet use over the past decade. It has one of the fastest commercially available internet speeds in the world, as well as some of the lowest prices for bandwidth.³⁷ As Japan maintains an ISP environment that is relatively more competitive than North America's, the Japanese government has received public concerns about ISP traffic management practices. In response, the government pushed its telecommunications industry and internet service providers to create a set of guidelines for traffic management issues. In accordance with Japanese laws and government policies, the guidelines deemed traffic manipulation, blocking, restricting bandwidth, and cancelling access inappropriate in some scenarios and appropriate in others.³⁸ ISPs were also required to provide relevant contractual information to content providers, other ISPs, and internet users. In many places, Japan's guidelines are explicitly stated and include clear prioritized responses to traffic management issues on its networks. In other words, similar to the European Union, the explicit meanings of guideline terms are allowed to vary on a case-by-case basis depending on the ISP.

Chile & the Netherlands

Chile adopted a net neutrality law in 2011 and the Netherlands did so in 2012, both were considered the first implementations of explicitly net neutrality-based laws in the world.³⁹ The final versions of the laws are similar to the United States' former net neutrality regulations. The regulations state that ISPs cannot arbitrarily block, interfere, discriminate, hinder or restrict the use of the Internet; however, the laws do not appear to prevent occurrences that could lead to a tiered system of network access.⁴⁰

Conclusion

The repeal of net neutrality is anticipated to increase the price of accessing high quality broadband services. Under deregulated ISP network rules, multiple facets of society including healthcare, economics, education, and government services are expected to see a variety of impacts in states such as Vermont.

As the official order to repeal net neutrality is recent, information regarding the impacts of repeal is based mostly on expert opinions and predictions. Only the economic impacts have been subject to a formal analytical process through mathematical models. Therefore, there is limited certainty of the information reviewed in this report and causality has not yet been accurately established. Even on an international scale, we found that sufficient research regarding the effects of strict ISP regulation is not yet available. Other nations are still in the preliminary stages of developing net neutrality policies and have yet to detect substantial regulatory issues.

³⁷ Stevenson and Clement, "Regulatory Lessons . . . Internet Traffic Management," 13.

³⁸ Stevenson and Clement, "Regulatory Lessons . . . Internet Traffic Management," 14.

³⁹ Kramer, Wierwiorra, and Weinhardt, "Net neutrality: A progress report," 806.

⁴⁰ Kramer, Wierwiorra, and Weinhardt, "Net neutrality: A progress report," 806.

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