

PUBLIC UTILITIES REGULATORY AUTHORITY

**PETITION OF THE OFFICE OF CONSUMER COUNSEL FOR INVESTIGATION
INTO FACILITATING THE USE OF THE MUNICIPAL GAIN
FOR BROADBAND INTERNET SERVICES**

DOCKET NO. 16-06-XX

**DIRECT TESTIMONY OF
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ON BEHALF OF THE
OFFICE OF CONSUMER COUNSEL**

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1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 **A.** My name is Andrew Afflerbach, Ph.D, P.E. I am the CEO and Director of Engineering
3 for CTC Technology and Energy, located in the Washington, D.C. metro area. Our
4 business address is 10613 Concord Street, Kensington, MD 20895.

5 **Q. PLEASE SUMMARIZE YOUR BUSINESS EXPERIENCE AND EDUCATION.**

6 **A.** As Director of Engineering of CTC Technology & Energy, I oversee all the engineering
7 work performed by my firm. My specialization is in planning, designing, and
8 implementing communications infrastructure and networks. My expertise includes
9 emerging fiber and wireless technologies and state-of-the-art networking applications.

10 Over the course of my 20-year career as an engineer, I have planned and overseen the
11 implementation of a wide variety of government and public safety networks including the
12 infrastructure of state and metropolitan area governments. I served as a senior advisor to
13 Crown Fibre Holdings, the public entity that is directing New Zealand's national fiber-to-
14 the-home project.

15 I have prepared extensive technical analyses for submission to the Federal
16 Communications Commission (FCC) and policymakers on national fiber expansion to
17 underserved schools and libraries, on due diligence for the IP transition of
18 telecommunications infrastructure, and on potential technical frameworks for wireless
19 network neutrality.

20 I have also authored or co-authored white papers on a range of issues that have a bearing
21 on network deployment, including "Gigabit Communities: Technical Strategies for

22 Facilitating Public or Private Broadband Construction in Your Community”¹ and “An
23 Engineering Analysis of Public Rights-of-Way Processes in the Context of Wireline
24 Network Design and Construction.”²

25 I am a licensed Professional Engineer in the Commonwealth of Virginia and the States of
26 Delaware, Maryland, and Illinois. I have a Ph.D. and a Master’s of Science degree in
27 Astronomy from the University of Wisconsin–Madison, and a Bachelor’s of Arts degree
28 in Physics from Swarthmore College.

29 **Q. PLEASE DESCRIBE THE SCOPE AND PURPOSE OF YOUR TESTIMONY.**

30 **A.** CTC Technology and Energy (CTC) was hired by the State of Connecticut to serve as an
31 independent broadband consultant to the Office of Consumer Counsel’s State Broadband
32 Office (SBO). The SBO was formed at least in part in response to unprecedented
33 demand by forty-six Connecticut communities representing over half the population of
34 the State seeking options for public-private partnerships to develop more robust
35 broadband connections around the State.³ Since its formation, the SBO has worked
36 alongside this growing number of communities and other key stakeholders to better
37 understand the broadband challenges that communities face and identify opportunities to
38 ameliorate those challenges.

¹ An independent analysis commissioned by Google. Available on CTC’s website:
<http://www.ctcnet.us/wp-content/uploads/2014/01/GigabitCommunities.pdf>

² An independent analysis commissioned by the National League of Cities, et al, which filed it in joint
comments to the U.S. Federal Communications Commission regarding access to public rights-of-way.
Available on CTC’s website: [http://www.ctcnet.us/wp-
content/uploads/2014/01/NationalLeagueOfCitiesStudy.pdf](http://www.ctcnet.us/wp-content/uploads/2014/01/NationalLeagueOfCitiesStudy.pdf)

³ Gregory Hladky, “46 Connecticut Cities and Towns Join Ultra-High-Speed Internet Project” Hartford
Courant (Dec. 19, 2014) available at: [http://www.courant.com/politics/capitol-watch/hc-46-
connecticut-cities-and-towns-join-ultrahighspeed-internet-project-20141219-story.html](http://www.courant.com/politics/capitol-watch/hc-46-connecticut-cities-and-towns-join-ultrahighspeed-internet-project-20141219-story.html).

39 Our firm has worked with the State to assess the status of broadband in Connecticut and
40 to present strategies by which Connecticut can advance its goal of becoming the first state
41 to have ubiquitous, affordable, gigabit-capable broadband connections statewide. The
42 first half of this testimony briefly outlines our review of broadband availability and
43 access in the State. We assess some of the challenges that limit the availability of
44 broadband in Connecticut, and discuss some of the cost-related barriers to greater access.
45 We also provide a few examples of programs neighboring states have developed to
46 improve their broadband infrastructure.

47 The second half of this testimony analyzes the structural and regulatory advantages that
48 Connecticut enjoys relative to other states, as well as ways to capitalize on those
49 competitive advantages. In particular, Connecticut goes further than any state of which
50 we are aware in reserving space on their poles and in their conduits for municipal use
51 through what is known as the Municipal Gain Statute (General Statutes § 16-233). The
52 Municipal Gain Statute is a potentially significant regulatory advantage, but for a variety
53 of reasons, it is can be better utilized in the State. Clarification of some aspects of the
54 Municipal Gain Statute could facilitate broader use of the Municipal Gain, for the benefit
55 of the State's businesses, residents, and institutions.

56 **Q. HOW WOULD YOU CHARACTERIZE THE IMPORTANCE OF ADVANCED**
57 **BROADBAND ON A GLOBAL SCALE?**

58 **A.** Advanced broadband capabilities are at the core of many technological advances. As a
59 result, the common perception of robust broadband capabilities has shifted from a luxury
60 to an essential utility. Today, the average single-family home no longer has one or two

61 connected devices but six or seven;⁴ companies are increasingly relying on bandwidth-
62 rich applications to conduct business; and most industries have already been disrupted by
63 technological innovations—and those that have not are ripe for disruption. This does not
64 even account for the trillions of dollars that high-technology industries are predicted to
65 add to the global economy in the next ten years.⁵ As a result, economic competitiveness,
66 both now and especially in the future, is heavily dependent on access to robust,
67 affordable, high-speed Internet connections.

68 The United States, once the world leader in broadband connectivity to the Internet, has
69 fallen behind other countries on multiple measures of success, including some of its
70 important competitors. According to Akamai’s most recent State of the Internet report,⁶
71 the ten countries with the fastest average connection speeds, measured in Megabits per
72 second (Mbps), have averages that range from 20.5 Mbps (South Korea) to 14.5 Mbps
73 (Czech Republic). In terms of average peak connection speeds, Singapore is by far the
74 highest with an average peak speed of 135 Mbps. The United States ranks 16th globally in
75 average connection speeds with an average connection speed of 12.6 Mbps, and 21st in
76 average peak connection speeds with an average of 57.3 Mbps.

⁴ See “2015 Broadband Progress Report and Notice of Inquiry on Immediate Action to Accelerate Deployment” GN Docket No. 14-126, FCC, ¶ 29 (released Feb. 4, 2015) available at: https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-10A1_Rcd.pdf; Verizon, “Sharing Speed with Multiple Connected Devices” at 1 (last visited Mar. 8, 2016) available at: <http://www.verizon.com/cs/groups/public/documents/adacct/bandwith-and-multiple-device.pdf>

⁵ James Manyika, et al., “Disruptive Technologies: Advances That Will Transform Life, Business, and the Global Economy” McKinsey and Company (May 2013) available at: <http://www.mckinsey.com/business-functions/business-technology/our-insights/disruptive-technologies>.

⁶ “Akamai’s State of the Internet, Q3 2015 Report,” (last visited Mar. 2, 2015) available at: <https://www.akamai.com/us/en/multimedia/documents/report/q3-2015-soti-connectivity-final.pdf>.

77 Q. HOW DOES CONNECTICUT COMPARE TO OTHER STATES BOTH ON A
78 NATIONAL LEVEL AND COMPARED TO ITS NEIGHBORING STATES?

79 A. At the national level, eight out of ten states with the highest average connection and peak
80 connection speeds are located in the Northeastern and Mid-Atlantic states. Those states
81 include Delaware, Washington, D.C., Maryland, Massachusetts, New Jersey, New York,
82 Rhode Island, and Virginia. However, in the fourth quarter of 2015, Connecticut was in
83 twelfth place for its peak connection speeds (68.6 Mbps), and was in 13th place for its
84 average connection speeds (15.9 Mbps).⁷ Its growth rates in these categories from 4th
85 quarter 2014 were 18 percent and 27 percent, respectively, which is roughly in the middle
86 of the growth rate of U.S. states.⁸

87 In the past year, two of Connecticut's neighboring states—Massachusetts and New
88 York—announced initiatives to expand access to robust connections around the state. In
89 Massachusetts, Governor Charlie Baker endorsed a \$50 million initiative started by his
90 predecessor, Governor Deval Patrick, to expand broadband in Western Massachusetts,
91 the most underserved area in the state. Massachusetts ranks fourth in average
92 connections speeds and third in peak connection speeds; but according to the Governor's
93 office, 45 towns in Western Massachusetts must rely on DSL or dial up. As a result, the
94 funds will be directed towards those towns, in an effort to encourage municipal and
95 private sector investment in the region.

⁷ Discussion with David Belsen, Akamai Senior Director, Industry & Data Intelligence, March 1, 2016.

⁸ *Id.*

96 In New York, the Governor Andrew Cuomo launched a \$500 million broadband
97 initiative. The goal is to make access to high-speed Internet possible for every resident of
98 New York by 2018. The program is making funding contingent on matching funding
99 from the broadband providers, which will have the effect of leveraging the State's funds
100 to increase broadband investment in the New York by a total of \$1 billion. The providers
101 must commit to make Internet speeds of at least 100 Mbps available, except in limited
102 cases in regions that are particularly remote, where providers will be permitted to offer 25
103 Mbps speeds.

104 **Q. ARE THERE ANY NOTABLE DEFICIENCIES IN THE AVAILABILITY OF**
105 **AFFORDABLE HIGH-SPEED BROADBAND IN CONNECTICUT?**

106 **A.** Like Massachusetts and New York, much of Connecticut is reasonably well served by
107 current providers, but key pockets within the State are unable to access high-speed
108 Internet at affordable prices. Our March 2016 report, "A Brief Overview of Broadband
109 Deficiencies in Connecticut" discussed examples of challenges that business and
110 institutions face obtaining the needed quality of broadband.⁹ In our site visits to the state,
111 we documented cases where businesses only have access to lower speed DSL, and we
112 understand that this is a common situation in some commercial areas, and in areas outside
113 metropolitan areas and towns.

114 Affordability is another problem that we observed in our January report. In some areas,
115 even urban areas, it was possible to get fiber-to-the-premises, but the installation costs

⁹ The Report was originally released in January 2016. In February, Akamai notified the State of Connecticut that some of the data upon which the January report relied, which appeared in Akamai's third quarter 2015 report, was incorrect. This revised version of the report therefore reflects Akamai's revision of its data in its November 2015 report.

116 could reach into the hundreds of thousands of dollars. For example, Scotts' Jamaican
117 Bakery received a quote from Comcast stating that a fiber installation to the premises
118 would cost over \$600,000. That quote was later reduced to around \$250,000, a price still
119 completely out of reach for a small business. Monthly payments were not insignificant
120 either. Several businesses reported, and our tests confirmed, that they were purchasing
121 low speed Internet connections with high latency and jitter, service not even capable of
122 voice over IP or video applications, but these companies were still paying hundreds of
123 dollars a month for service.

124 Issues with broadband availability and cost are compounded by the lack of competitive
125 providers in the State. In Connecticut, Internet service is provided statewide by Frontier
126 Communications over copper DSL lines and dial-up telephone lines. In urban and
127 suburban areas and in towns across Connecticut, cable broadband also exists, usually
128 provided by Comcast—but these services are frequently limited to residential areas. In
129 the southwestern corner of the state, there is a small area with Verizon fiber-to-the-
130 premises (FTTP) services. By contrast, in the District of Columbia and suburban
131 Maryland, there are three competing facilities-based broadband providers—Comcast,
132 RCN, and Verizon—and Verizon offers FTTP service to most of the District. These
133 market forces cause providers to offer more competitive services at lower prices.

134 **Q. WHAT REGULATORY TOOLS EXIST IN CONNECTICUT TO FACILITATE**
135 **GREATER AVAILABILITY OF AFFORDABLE HIGH-SPEED BROADBAND?**

136 **A.** A key advantage that Connecticut has compared to other states is its Municipal Gain
137 Statute, which reserves “one gain on each public utility pole [and] in each underground

138 communications duct system” for “any purpose” “without payment.” This is a
139 potentially major advantage for municipalities looking to investors and new market
140 entrants to enhance their access to broadband assets through public-private partnerships
141 or, where necessary, direct builds, especially when coupled with the benefits of a single
142 pole administrator (SPA) to oversee the make-ready and attachment process. Access to
143 poles and conduits is the single biggest challenge to new broadband deployment. Thus,
144 having regulations that not only allow access, but also streamline the attachment process,
145 is hugely attractive to entities looking for new broadband deployment opportunities.

146 **Q. HOW IS THE MUNICIPAL GAIN STATUTE CURRENTLY BEING UTILIZED?**

147 **A.** Reflecting the significant interest in advanced communications networks in Connecticut,
148 discussions pertaining to new broadband projects are ongoing among some municipalities
149 and potential investors and providers. At the same time, however, the Municipal Gain
150 Statute has been curiously underutilized given the demonstrated municipal and private-
151 sector interest in such projects.¹⁰ Based on CTC and the SBO’s conversations with
152 localities, the problem is the result of a combination of factors. Communities are
153 interested in additional fiber optic deployment—to serve government and educational
154 needs or to provide advanced services to residents and businesses. However, some
155 communities have found it difficult in practice to get access to the infrastructure. These
156 communities have cited prohibitive make-ready costs and delays, as well as actions taken
157 by incumbent carriers to impede access to poles and conduit. There is also evidence that

¹⁰ “Gigabit Coalition Receives 11 Secret Responses” Hartford Business Journal (Jan. 23, 2015)
available at: <http://www.hartfordbusiness.com/article/20150123/NEWS01/150129958/gigabit-coalition-receives-11-secret-responses>.

158 it is not entirely clear to communities what processes and procedures are involved in
159 order to request access to and utilize the Municipal Gain.

160 **Q. HOW IS THE CURRENT MAKE-READY PROCESS LIMITING USE OF THE**
161 **MUNICIPAL GAIN?**

162 **A.** Our conversations with municipal leaders and other would-be attachers indicate that
163 getting attachments on the poles may be difficult in practice. Where make-ready is
164 necessary, it must be tasked to the various utilities and performed by each utility,
165 requiring, for example, four truck rolls in an instance where the power company, the
166 phone company, the cable company and a competitive provider must move their
167 attachments. In some instances there is not sufficient space on a pole, and the pole must
168 be replaced. Furthermore, all of these costs are often imposed on new attachers. This is
169 true even if a pole was already out of compliance with code in advance of the new
170 attachment. Some of these problems could be mitigated through a more streamlined
171 attachment process and flexible engineering practices.

172 **Q. WHAT EVIDENCE HAVE YOU OBSERVED TO CONCLUDE THAT SOME**
173 **CARRIERS MAY BE ATTEMPTING TO IMPEDE ACCESS TO THE**
174 **MUNICIPAL GAIN?**

175 **A.** We have observed some practices that explicitly discourage use of the Municipal Gain.
176 We do not know how widespread these practices are, but they could well be extensive.
177 For example, the template pole attachment agreement provided by Frontier
178 Communications to the Town of Somers on January 16, 2016, restricts municipal use of
179 the Municipal Gain by limiting use to “signal wires” for “internal purposes” and by

180 requiring that the service offered be a “private telecommunications service.” Essentially,
181 this provision limits municipal use to a private non-broadband network used only by the
182 municipality for municipal purposes, contrary to the language and purpose of the 2013
183 amendment to Section 16-233, which allows municipalities to use the Municipal Gain
184 “for any purpose.”

185 **Q. IN WHAT SCENARIOS WOULD GREATER CLARITY REGARDING THE**
186 **IMPLEMENTATION OF THE MUNICIPAL GAIN STATUTE BE**
187 **BENEFICIAL?**

188 **A.** Communities have expressed a desire for more detailed guidance on the nature and scope
189 of their rights under the Municipal Gain Statute and on what they must do to claim
190 these rights. For example, some communities do not feel properly equipped to take
191 advantage of their right to the Municipal Gain because they do not believe that the
192 application process is well-defined and transparent, or they are unclear about how to
193 resolve concerns about whether their requests for access to the Municipal Gain are being
194 delayed or unlawfully conditioned. While a dispute resolution process for such claims
195 may exist, it is not easily located in past DPUC/PURA’s Orders or other Working Group
196 products.

197 Specific, clear, and accessible guidance detailing the operation of the Municipal Gain
198 Statute is essential to the efficient use of the statute. Many ancillary issues may come to
199 light while creating procedural guidelines, and PURA is in the best position to evaluate
200 the various policy outcomes and make the best possible policy decision. An area fraught
201 with policy implications is the make-ready process. For example, in cases where a new

202 pole is required to accommodate the municipal attachment, it is unclear how costs should
203 be allocated among the municipality, the existing attachers, and the pole owner. A rule
204 that requires the newest attacher to pay the full replacement costs in every circumstance
205 would create the incentive for pole owners to wait until there is a new attacher instead of
206 replacing poles as the need arises. This rule would also generate a “free rider” problem,
207 where all the attachers benefit from a new pole, but only one party is responsible for the
208 costs.

209 In areas with underground utilities, the Municipal Gain consists of conduit space for the
210 municipality. There needs to be more clarity on the amount of space provided to the
211 municipality and the procedures for access and maintenance.

212 **Q. WHAT WOULD THE OVERALL IMPACT BE OF IMPROVING THE**
213 **OPERATION OF THE MUNICIPAL GAIN STATUTE?**

214 **A.** The existence of the Municipal Gain Statute already sets Connecticut apart from other
215 states, many of which lack clear statutes regulating access to poles and conduits. Once
216 there is more clarity surrounding the operation and enforcement procedures of the
217 Municipal Gain Statute, we feel confident that the statute will be utilized frequently as
218 the attachment process will be more efficient and understandable. Smooth operation of
219 the Municipal Gain Statute promises to attract new investments and will likely result in
220 the expansion of existing broadband projects as well as new projects around the State.