

**VIRGINIA:**

**IN THE CIRCUIT COURT OF FAIRFAX COUNTY**

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FAIRFAX COUNTY WATER  
AUTHORITY,

Plaintiff/Counterclaim  
Defendant,

v.

CITY OF FALLS CHURCH,

Defendant/Counterclaimant/  
Third Party Plaintiff,

v.

COUNTY OF FAIRFAX, VIRGINIA,

and

BOARD OF SUPERVISORS OF  
FAIRFAX COUNTY, VIRGINIA,

Third Party Defendants.

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CL-2008-16114

**EXPERT REPORT OF**

**JOHN W. MAYO**

**June 16, 2009**

## EXPERT REPORT OF JOHN W. MAYO

### I. Introduction

1. My name is John W. Mayo. My business address is Georgetown University, McDonough School of Business, 37th and O Streets, N.W., Washington, D.C., 20057. I am a Professor of Economics, Business and Public Policy in the McDonough School of Business at Georgetown University. I am also the Executive Director of the Georgetown Center for Business and Public Policy. I previously have served as Dean of the McDonough School at Georgetown University.

2. I hold a Ph.D. in economics from Washington University in St. Louis (1982), with a principal field of concentration in industrial organization, which includes the analysis of antitrust and regulation. I also hold both a M.A. (Washington University in St. Louis, 1979) and a B.A. (Hendrix College, Conway, Arkansas, 1977) in economics. I have taught both undergraduate and graduate economics, business and public policy courses at Georgetown University, Washington University, the University of Tennessee and Virginia Tech.

3. I have authored numerous peer-reviewed articles, research monographs, and a number of specialized articles in industrial organization economics, which includes the topics of antitrust and regulation. These have appeared in academic journals such as the *RAND Journal of Economics*, *Journal of Law and Economics*, *Journal of Industrial Economics*, *International Journal of Industrial Organization*, *Review of Network Economics*, *Review of Industrial Organization*, *Journal of Regulatory Economics* and *Yale Journal on Regulation*. I have also written a comprehensive text entitled *Government and Business: The Economics of Antitrust and Regulation*. In addition, I have served as President of the Transportation and Public Utilities Group and am currently serving in various editorial capacities for the *Journal of Regulatory Economics* and *Information Economics and Policy*.

4. Additionally, I have been an economic advisor for, and consultant to, both public agencies and private companies, including the Antitrust Division of the United States Department of Justice, AT&T, Sprint, UPS and AmerenUE. A more detailed accounting of my education, publications and employment history is contained in Exhibit 1.

## **II. Assignment**

5. On December 8, 2008, Fairfax County Water Authority (“Fairfax Water”) brought suit against the City of Falls Church (“Falls Church” or the “City”) alleging, among other things, violations of the Virginia Antitrust Act.<sup>1</sup> Fairfax Water alleges that Falls Church has taken actions to prevent commercial developers in Fairfax County from electing to connect their development projects to public water service provided by Fairfax Water.<sup>2</sup> I have been asked by Fairfax Water to provide an independent economic analysis of whether the City has significant monopoly power in the relevant market and whether, from an economic standpoint, the City’s actions are consistent with those of a monopolist attempting to maintain its monopoly position. I have also been asked to provide a calculation of net revenues that would be lost by Fairfax Water should Falls Church succeed in preventing the Halstead developer from connecting to Fairfax Water.

6. To conduct my analysis, I have drawn upon my experience and training to apply standard microeconomic theory to the available evidence. This evidence includes documents produced by the parties-in-suit as well as relevant publicly-available information. A list of documents that I relied upon in forming my opinions appears in Exhibit 2. In addition, I have had conversations with Steven T. Edgemon, Deputy General Manager, Fairfax Water; Jamie Bain Hedges, Director, Planning and Engineering Division, Fairfax Water; David Guerra, engineer, Fairfax Water; Nick Houmis, P.E., Principal, Greeley and Hansen LLC; Matt Koirtyohann, P.E., Urban Engineering; and Brian Selfe, a principal of the corporate entities referred to as the “Halstead Developer.”

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<sup>1</sup> Complaint.

<sup>2</sup> First Amended Complaint. Based on a May 22, 2009 Order, Fairfax County and the Fairfax County Board of Supervisors have been added to the suit.

7. I am compensated by Fairfax Water at an hourly rate of \$700. My compensation does not depend in any way on the outcome of this case or the opinions I reach in this matter.

### **III. Summary of Conclusions**

8. In my opinion, and to a reasonable degree of professional certainty, Falls Church possesses monopoly power in the relevant market in this case and, from an economic standpoint, its actions are consistent with those of a utility attempting and succeeding in willfully maintaining and abusing its position as a monopolist. In addition, as a consequence of Falls Church's actions, a reasonable estimate of Fairfax Water's lost net revenues is in the range of \$1.9 million to \$6.0 million.

### **IV. Background**

#### **A. Parties in Suit**

##### **1. Fairfax Water**

9. The Plaintiff, Fairfax Water, is Virginia's largest water utility. It provides drinking water, sourced from the Potomac River and the Occoquan Reservoir, to almost 1.5 million residents in the Northern Virginia communities of Fairfax, Loudoun, Prince William and Alexandria.<sup>3</sup> Chartered by the Virginia State Corporation Commission in 1957 as a public, non-profit water utility, Fairfax Water was created by the Fairfax County Board of Supervisors to establish, operate, and maintain a comprehensive, county-wide water system through the acquisition of existing systems and the construction of new facilities.<sup>4</sup>

10. Fairfax Water distributes approximately 167 million gallons of water per day through more than 3,200 miles of water mains.<sup>5</sup> It serves over 232,000 accounts in Fairfax County.<sup>6</sup> The remaining, roughly 40 percent of total water sales are wholesale

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<sup>3</sup> Fairfax Water, <http://www.fcwa.org/> (viewed June 12, 2009).

<sup>4</sup> See, e.g., About Fairfax Water, [http://www.fcwa.org/about\\_us/index.htm](http://www.fcwa.org/about_us/index.htm) (viewed June 12, 2009); Fairfax Water History, [http://www.fairfaxwater.org/about\\_us/history.htm](http://www.fairfaxwater.org/about_us/history.htm) (viewed June 12, 2009).

<sup>5</sup> Fairfax Water Annual Report, 2008; Fairfax Water History, [http://www.fcwa.org/about\\_us/history.htm](http://www.fcwa.org/about_us/history.htm), About Fairfax Water, [http://www.fcwa.org/about\\_us/index.htm](http://www.fcwa.org/about_us/index.htm) (viewed June 12, 2009).

<sup>6</sup> Fairfax Water Annual Report, 2008.

to Loudoun and Prince William counties and the City of Alexandria.<sup>7</sup> Revenues in 2007 were \$134.4 million.<sup>8</sup>

11. Fairfax Water is governed by a ten-member Board, composed of Fairfax County citizens, appointed by the elected Board of Supervisors of Fairfax County.<sup>9</sup>

## **2. Fairfax County and the Fairfax County Board of Supervisors**

12. Fairfax County is a county in Northern Virginia with a population of greater than one million.<sup>10</sup> The powers of government are vested in an elected Board of Supervisors, whose responsibilities include establishing Fairfax County government policy, passing resolutions and ordinances, approving the budget, setting local tax rates, approving land use plans and making appointments to various positions.<sup>11</sup>

## **3. City of Falls Church**

13. Falls Church is a city in Virginia located between Fairfax County and Arlington County, with a population approximately of 11,000.<sup>12</sup> Although once a part of Fairfax County when it was a town, since becoming a city in 1948, Falls Church has been an independent political subdivision that is not part of Fairfax County.<sup>13</sup> The City's Charter authorizes it to operate a water works system both "within and without the city."<sup>14</sup> It does so, supplying drinking water sourced from the Washington Aqueduct, to approximately 35,000 commercial and residential water accounts in the City of Falls Church and Fairfax County.<sup>15</sup> Approximately 110,000 residents of Fairfax County

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<sup>7</sup> About Fairfax Water, [http://www.fcwa.org/about\\_us/index.htm](http://www.fcwa.org/about_us/index.htm) (viewed June 12, 2009).

<sup>8</sup> Fairfax Water Annual Report, 2008.

<sup>9</sup> About Fairfax Water, [http://www.fcwa.org/about\\_us/index.htm](http://www.fcwa.org/about_us/index.htm) (viewed April 28, 2009).

<sup>10</sup> About Fairfax County Government, <http://www.fairfaxcounty.gov/government/about/> (viewed May 27, 2009).

<sup>11</sup> About the Fairfax County Board of Supervisors, <http://www.fairfaxcounty.gov/government/board/about-the-board-of-supervisors.htm> (viewed May 27, 2009).

<sup>12</sup> U.S. Census Bureau, Falls Church City QuickFacts, <http://quickfacts.census.gov/qfd/states/51/51610.html> (viewed June 12, 2009).

<sup>13</sup> <http://www.fallschurchva.gov/Content/Government/default.aspx?cnlid=3> (viewed June 13, 2009)

<sup>14</sup> Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007).

<sup>15</sup> <http://www.fallschurchva.gov/Content/NewsMedia/2008AWQR.pdf> (viewed Jan. 28, 2009); Falls Church Water Utilities Customer Service, <http://www.fallschurchva.gov/Content/Government/Departments/AdminServ/CustomerServ.aspx?&cnlid=1080> (viewed June. 12, 2009).

receive their water service from Falls Church.<sup>16</sup> The City of Falls Church does not operate any water treatment facilities.<sup>17</sup>

## **B. Water Authority Background**

14. The Virginia Water and Waste Authorities Act provides a regulatory framework for a locality to create a water authority to provide public water service. Originally enacted as the Virginia Water and Sewer Authorities Act in 1950, the Act states:

[t]he governing body of a locality may by ordinance or resolution, or the governing bodies of two or more localities may by concurrent ordinances or resolutions or by agreement, create a water authority....<sup>18</sup>

The Act further provides for water authorities to operate “within, outside or partly within and partly outside one or more of the localities which created the authority....”<sup>19</sup>

15. At the time of the Act, Northern Virginia was served by many small water systems, many of which were privately owned. As of 1957, for example, there were 26 separate water suppliers serving Fairfax County.<sup>20</sup>

16. Not long after that, the area went through a period of consolidation of water providers.<sup>21</sup> The 1950s and 1960s were also a period of population expansion in Fairfax County, which increased the demands on the existing water providers.<sup>22</sup>

17. Because, at the time, the Act prohibited an authority from duplication of water services,<sup>23</sup> only one water provider could serve any newly-settled areas. As of the late

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<sup>16</sup> First Amended Complaint, at 4; City of Falls Church’s Answer to Plaintiff’s Amended Complaint, at 2.

<sup>17</sup> Falls Church Orthophosphate Water Treatment, <http://www.fallschurchva.gov/Content/Government/Departments/AdminServ/Treatment.aspx?cnlid=2251> (viewed June 12, 2009).

<sup>18</sup> Virginia Code § 15.2-5102, available at <http://law.justia.com/virginia/codes/toc1502000/15.2-5102.html>. See also 1950 Acts of Assembly, c. 577 as Virginia Water and Sewer Authorities Act.

<sup>19</sup> Virginia Code § 15.2-5114, available at <http://law.justia.com/virginia/codes/toc1502000/15.2-5114.html>. See also 1950 Acts of Assembly, c. 577 as Virginia Water and Sewer Authorities Act.

<sup>20</sup> Existing Water System September 1957 (Fairfax County Water Authority, Oct. 1975).

<sup>21</sup> Fairfax County Water Authority 1968 Annual Report.

<sup>22</sup> Population of Counties by Decennial Census: 1900 to 1990, <http://www.census.gov/population/cencounts/va190090.txt> (viewed May 8, 2009).

<sup>23</sup> 1950 Va. Acts ch. 577 § 6; Virginia Code § 15.2-1251 (1964). See also Fairfax County Water Authority 1968 Annual Report, at 14.

1950s, Fairfax Water and Falls Church City, in particular, were in a race to serve the previously-unserved areas of Fairfax County.<sup>24</sup>

### **C. 1959 Agreement**

18. In May 1959, Falls Church and Fairfax Water entered into a 30-year agreement that, among other things, gave each the sole right to service certain areas in Fairfax County.<sup>25</sup> The resulting Falls Church service area, as shown in the map<sup>26</sup> contained in the 1959 agreement, covered 33 square miles, 31 of which were in Fairfax County.<sup>27</sup> It excluded the Pimmet Hills subdivision and Fenwick Park.<sup>28</sup>

### **D. Post Agreement**

19. The 1959 agreement expired in 1989 and was not renewed.<sup>29</sup> Although the Virginia Water and Waste Authorities Act had been amended in 1968 to allow for the duplication of water services,<sup>30</sup> after 1989, Falls Church continued to serve 100 percent of water customers in the area that was allocated to the City in the 1959 agreement.<sup>31</sup>

20. Fairfax Water currently has water mains that lie close to water customers that are currently being served by Falls Church.<sup>32</sup> These so-called interface areas create a natural opportunity for competition between these water providers. In July 2005, Fairfax Water communicated to the City of Falls Church its intention to solicit customers in these areas, including new developments in Vienna, Tysons and Merrifield in Fairfax County.<sup>33</sup> Starting in 2006, Fairfax Water began identifying and contacting potential customers located in the areas traditionally served by Falls

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<sup>24</sup> FCWA minutes March 11, 1958 (FW-Historical-93 – 97).

<sup>25</sup> See Deposition Exhibit 228, at City Falls Church 3106-09. The parties also agreed to sell each other surplus water.

<sup>26</sup> Deposition Exhibit 32.

<sup>27</sup> Public Utilities Department, City of Falls Church, Jul. 1981, at 1.

<sup>28</sup> Deposition of F. Wyatt Shields, Apr. 3, 2009, at 131-133.

<sup>29</sup> Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007), at 4; Deposition of F. Wyatt Shields, Apr. 3, 2009, at 131-133; Amended Complaint, at 4; and City of Falls Church's Answer to Plaintiff's Amended Complaint, at 2.

<sup>30</sup> 1968 Va. Acts ch. 355, Virginia Code § 15.1-1251. See also Fairfax County Water Authority 1968 Annual Report, at 13.

<sup>31</sup> City of Falls Church's Responses to Fairfax Water's First Set of Interrogatories, at 3-4. Amended Complaint, at 4, and City of Falls Church's Answer to Plaintiff's Amended Complaint, at 2.

<sup>32</sup> Amended Complaint, Exhibit 1. Fairfax Water System Maps produced in response to the City's Second Set of Interrogatories (June 1, 2009).

<sup>33</sup> Deposition Exhibit 36.

Church.<sup>34</sup> Among the developments that may have been within a reasonable proximity to an existing Fairfax Water main were Pulte Homes MetroWest, Trammel Crow's Dunn Loring Development, the Towers Crescent development, and the Halstead Project.<sup>35</sup>

#### **E. Prior Falls Church v. Fairfax Water Suit**

21. In response to Fairfax Water's efforts to offer water service to customers in areas historically served by the City, Falls Church sued Fairfax Water in February 2007, claiming that Falls Church had been granted a federally mandated monopoly to provide water services to certain areas of Fairfax County.<sup>36</sup> In May 2007, the U.S. District Court for the Eastern District of Virginia found no merit in the City's claim of federal preemption and granted Fairfax Water's motion to dismiss the case.<sup>37</sup> The Court stated, "Virginia law permits Fairfax Water to provide service to customers anywhere in Fairfax County...."<sup>38</sup> The Court also stated:

Within the limits of Fairfax County . . . Fairfax Water is free to provide water service anywhere it can. This includes areas that, like Tysons Corner, Merrifield, and the area surrounding Vienna Metro Station, are located at "interface areas" where either Fairfax Water or the City is capable of providing water service.<sup>39</sup>

22. In April 2008, the Court of Appeals for the Fourth Circuit affirmed the District Court's ruling, upholding Fairfax Water's right to offer water service in the "interface

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<sup>34</sup> See, e.g., Letter from Jamie Hedges, FCWA, to Barbara Byron, Fairfax County Department of Zoning, Dec. 18, 2006)(FW-FOIA-1334-35); Letter from Jamie Hedges, FCWA, to Stephen Murphy, Pulte Homes, (Feb. 15, 2007) (FCWA-Morin-3449-51); Letter from Jamie Hedges, FCWA, to Chad Dubeau, Trammel Crow, (Feb. 15, 2007) (FCWA-Morin 3425-27); First Amended Complaint, Exhibit 1; and Deposition of Samantha Kearney, May 21, 2009, at 80-84.

<sup>35</sup> Ibid.

<sup>36</sup> Complaint, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007). Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007), at 2.

<sup>37</sup> Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007).

<sup>38</sup> Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007), at 8.

<sup>39</sup> Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007), at 8-9.

area” of Fairfax County – “[the] areas of overlapping authority...where water service might legitimately be provided by either Fairfax Water or Falls Church.”<sup>40</sup>

### **F. Current Suit**

23. In December 2008, Fairfax Water filed suit against Falls Church in Fairfax County Circuit Court.<sup>41</sup> The suit alleges, among other things, that the City has taken actions to prevent commercial developers in Fairfax County from connecting their development projects to public water service provided by Fairfax Water.<sup>42</sup> One of those developers, referred to as the Halstead Developer, proffered to the Board of Supervisors of Fairfax County, in or about October 2007, that water service to the property would “be provided by [Fairfax Water] unless [Fairfax Water] determines service from another provider is necessary or preferable.”<sup>43</sup> Fairfax Water alleges that Falls Church has, among other things, used its ownership of the currently unused water lines and easements on the property to prevent Halstead from switching to Fairfax Water as a water provider.<sup>44</sup>

## **V. Economic Framework and Analysis of Market Power Held by the City of Falls Church**

### **A. The Merits of Competition**

24. The current dispute between Fairfax Water and the City of Falls Church is best understood as occurring at two levels. First, and most immediate, there is a factual dispute regarding whether Falls Church has monopolized or attempted to monopolize a relevant market. As I will describe in more detail below, this issue is resolvable by a factual inquiry into whether Falls Church enjoys monopoly power in a relevant market and whether, from an economic standpoint, its actions are consistent with those of an entity that has willfully undertaken to maintain that monopoly power. The history between these parties, however, reveals a more fundamental philosophical divergence

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<sup>40</sup> *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 07-1527, slip op. at 2-3 (4<sup>th</sup> Cir. Apr. 4, 2008).

<sup>41</sup> Complaint. *See also* Amended Complaint.

<sup>42</sup> Amended Complaint.

<sup>43</sup> Amended Complaint; Deposition Exhibit 157, at Urban-00014052; Deposition Exhibit 20, at 32.

<sup>44</sup> Amended Complaint.

in their views toward the merits of competition. While Fairfax Water has recognized the potential benefits of competition in the provision of water supply,<sup>45</sup> Falls Church has to this point consistently argued against competition, preferring to seek protection from competition, first through appeals to federal courts and more recently through the state courts.<sup>46</sup>

25. Regarding the philosophical differences between the parties, a rich body of both economic theory and evidence indicates that marketplace competition acts to create a wide array of benefits to society that are generally unavailable through monopoly supply. It is widely acknowledged that competition between providers for the patronage of customers acts to reduce prices, to the benefit of consumers. Similarly, competition drives firms to enhance the quality of their product offerings. And competition between parties drives firms to seek innovative ways to better satisfy customers either through new product offerings or improvements that enhance consumers' buying experiences.

26. While the benefits of competition are generally well established, the benefits of competition in the context of water supply may be less obvious. This is largely because of the lack of history of widespread competition in water supply. Like other services that have historically been provided by public utilities, the supply of water is characterized by large fixed and sunk costs. This cost characteristic creates the potential for a "natural monopoly" in which a single provider is the least cost provider of total market output. This cost characteristic (or the presumption that such costs prevailed) led twentieth century policy officials to grant franchise monopolies in a

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<sup>45</sup> See, e.g., Deposition of Charles M. Murray, May 29, 2009, at 15-16. I also note the remarks of Fairfax County Board Chairman, Gerald E. Connolly who reacted to the City's original attempt to block Fairfax Water from competing for customers by saying, "I didn't know competition was illegal in the United States." Deposition Exhibit 162. In addition, I understand that Fairfax Water has the legal authority, with Fairfax County's concurrence, to require residents of Fairfax County to interconnect with Fairfax Water. Virginia Code § 15.2-5137, available at <http://law.justia.com/virginia/codes/toc1502000/15.2-5137.html>; see also Virginia Code § 15.2-2111, available at <http://law.justia.com/virginia/codes/toc1502000/15.2-2111.html>. To date, however, Fairfax Water has chosen to compete for consumers rather than to impose such interconnections.

<sup>46</sup> Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007). *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 07-1527, slip op. at 2-3 (4<sup>th</sup> Cir. Apr. 4, 2008).

variety of industries including telecommunications, cable TV, electricity, and water. Even in these industries, however, the benefits of competition have emerged over time. In the telecommunications industry, competition in the provision of, first, customer premises equipment, then long-distance services, and, most recently, local exchange telephone service, have led to pronounced consumer benefits. Those benefits include reduced prices, greater choices, and the rapid-fire introduction of new and innovative services as multiple providers scramble to secure consumers' business. Similarly, despite the high fixed-cost nature of the cable television and electric utility industry, several studies have shown that competition from "overbuilders" has led to lower costs and consumer prices.<sup>47</sup> And despite the high fixed costs of broadband Internet access, the consumer benefits attributable to the competition that has emerged between the telcos and cable firms are readily apparent as these firms race to roll out higher broadband speeds at attractive prices.

27. While competition within the supply of water has been less pronounced to date, I am unaware of any evidence indicating that the benefits of competition will not convey to this industry. Indeed, several economics papers have discussed the potential and actual benefits of water competition.<sup>48</sup> Among those is a 2008 study by Wallsten and Kosec that investigated the potential benefits of benchmark competition, in which the presence of multiple water systems allowed customers and regulators to compare

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<sup>47</sup> See, e.g., William M. Emmons III and Robin A. Prager, "The Effects of Market Structure and Ownership on Prices and Service Offerings in the U.S. Cable Television Industry," The RAND Journal of Economics, Vol. 28, 1997, pp. 732-750; General Accounting Office ("GAO"), Issues Related to Competition and Subscriber Rates in the Cable Television Industry, GAO-04-8, October 2003; T. Randolph Beard, Richard P. Saba, Carter Hill and George S. Ford, "Fragmented Duopoly: A Conceptual and Empirical Investigation," Journal of Business, Vol. 78, 2005, pp. 2377-2396. See also Randy A. Nelson and Walter Primeaux, Jr., "The Effects of Competition on Transmission Distribution Costs in the Municipal Electric Industry," Land Economics, Vol. 54, 1988, pp. 338-346 for a study of the effects of competition in the transmission and distribution stage of the electric utility industry.

<sup>48</sup> Scott Wallsten and Katrina Kosec, "The Effects of Ownership and Benchmark Competition: An Empirical Analysis of U.S. Water Systems," International Journal of Industrial Organization, Vol. 26, 2008, pp. 186-205; Reto Foellmi and Urs Meister, "Product-Market Competition in the Water Industry: Voluntary Non-discriminatory Pricing," Journal of Industry, Competition and Trade, Vol. 5, 2005, pp. 115-135; John W. Sawkins, "Yardstick Competition in the English and Welsh Water Industry," Utilities Policy, Vol. 5, 1995, pp. 27-36.

the price and quality of multiple providers.<sup>49</sup> They demonstrated that increased benchmark competition has improved operating performance among water systems.

28. The benefits of competition accrue broadly to consumers. It is important to note, however, that because consumers typically vary in their propensities to switch suppliers in the face of price and/or quality variations, the specific driver of those benefits occurs through suppliers competing for consumers “at the margin.” That is, some consumers are “at the margin,” standing ready to switch providers in the event of unattractive pricing or quality. Other, infra-marginal, consumers have reduced propensities to switch suppliers. The essence of competition between suppliers is for consumers who are “at the margin.” Importantly, while the focus of suppliers’ competitive energies is on customers who are “at the margin,” the benefits of that competition inure to both marginal and infra-marginal consumers. Specifically, as prices are driven down and quality driven up to maintain marginal consumers, in the absence of price and/or quality discrimination, these benefits accrue to infra-marginal consumers as well. Given the way that competitive rivalries are played out, the benefits of competition are driven to a large degree by competition for marginal customers. And, conversely, where the benefits of competition at the margin are denied, it is not only the marginal consumers that suffer, but the wider population of consumers.

29. The benefits of water competition in Fairfax County could appear in the form of greater consumer choice, lower prices, better service, more innovation, or all of the above. And while the absence of historical competition in the area makes quantifying the exact prospective benefits difficult, comparisons of water rates across the Washington DC area indicate potential benefits to introducing competition. For example, separate analyses of water bills for representative customers created by Falls Church and Fairfax Water show that residents of the Washington, DC metropolitan area pay vastly different water rates. According to an April 2006 Falls Church analysis, quarterly water bills varied by about \$70 across Northern Virginia for similar amounts

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<sup>49</sup> Scott Wallsten and Katrina Kosec, “The Effects of Ownership and Benchmark Competition: An Empirical Analysis of U.S. Water Systems,” International Journal of Industrial Organization, Vol. 26, 2008, pp. 186-205.

of water consumption.<sup>50</sup> According to that analysis, Falls Church rates were among the three highest of the twelve regions studied.<sup>51</sup> Fairfax Water's rates appear to be among the two lowest of the twelve, with quarterly bills roughly \$39 to \$69 less than those of Falls Church.<sup>52</sup>

30. An analysis of various water rates around the Washington, DC area available on Fairfax Water's web site shows similar results. As of December 2008, customers around the region paid very different amounts for water. And in particular, a representative Falls Church customer paid over \$38 per quarter in commodity fees more than a representative Fairfax Water customer.<sup>53</sup>

31. These rate differences have not gone unnoticed by Fairfax consumers of Falls Church's water. For example, consumers have complained that "the City is 'fleecing' us" and that "[t]he rates seem way out of whack with Fairfax City and County rates."<sup>54</sup> Other consumers have expressed interest in switching to Fairfax Water because of the City's high prices.<sup>55</sup> And still others have disapprovingly noted their status as "captive customers."<sup>56</sup> Despite these complaints, pronounced commodity price differences remain between Falls Church and Fairfax Water.<sup>57</sup>

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<sup>50</sup> Deposition Exhibit 57, at 2. *See also* Deposition Exhibits 72, 99 and 164.

<sup>51</sup> Deposition Exhibit 57, at 2; Deposition Exhibit 72, at City-FOIA2 001625-26.

<sup>52</sup> The Falls Church analysis appears to include only recurring charges such as commodity charges, peak use charges and monthly fixed charges. It excludes new customer charges and other ancillary charges. As of 2006, recurring charges appear to have made up approximately 84 percent of Falls Church annual water related revenue. The most important revenue charge among the non-recurring charges is the availability fee which, as of 2006, made up approximately 10 percent of Falls Church water related revenue. According to Falls Church, as of 2006, the availability charge for 5/8" meters was \$2,750, which was \$750 less than the availability fee charged by Fairfax Water. Deposition Exhibit 72, at City-FOIA2 001634 and 001643.

<sup>53</sup> Deposition Exhibit 164.

<sup>54</sup> Customer Complaint to Linda Smyth, (Aug. 30 2005) FCWA-Morin-3463.

<sup>55</sup> Letter from E. Joyce to FCWA, (Feb. 27, 2007) FCWA-Morin-3529.

<sup>56</sup> Falls Church News-Press - Letters to the Editor: April 16 - 22, 2009, *available at* <http://www.fcnp.com/archives/4353-letters-to-the-editor-april-16-22-2009.html>. *See also* Deposition of Samantha Kearney, May 21, 2009, at 134-141. Falls Church customers have also complained about water pressure. Deposition of William R. Kirkpatrick, May 19, 2009, at 166-168.

<sup>57</sup> CITY – FOIA2 000674. *See also* Deposition Exhibit 164.

32. These price differences may stem from either differences in the cost of providing water services or from different pricing practices.<sup>58</sup> Regardless of their source, however, these differences create the potential for competition between the suppliers to benefit consumers.

### **B. The Political Economy of Water Supply**

33. In capitalist economies, the discipline on firms to adopt attractive pricing and high quality services most often falls on the shoulders of market competition. In some industries, however, rather than relying on the *direct* (or primary) disciplinary power of marketplace competition, society has chosen to instead rely on the *indirect* (or secondary) governance mechanisms. In this situation, consumer-citizens elect public officials who, in turn, either regulate or assign responsibility to a commission or regulatory authority to regulate the pricing, terms and conditions of suppliers to those consumers. If this path is chosen, consumers retain disciplinary power over the firm, albeit indirectly, through their duly elected public policy officials. That is, by participating in the election of public officials, consumer/citizens indirectly may be provided assurances that they will receive the benefits of attractive prices and high quality services.

34. It is my understanding that approximately 110,000 customers, fully 92 percent of all Falls Church customers, reside outside the political jurisdiction of the City of Falls Church.<sup>59</sup> Unfortunately, the result is that these consumer-citizens have been denied both direct and indirect governance mechanisms in the consumption of public water. That is, these citizen-consumers to this point have been unable to directly discipline Falls Church by changing providers, nor can they discipline Falls Church indirectly by electing city officials who will safeguard their interests as water consumers. These citizens simply cannot count on public officials in the City of Falls

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<sup>58</sup> Some of the cost reasons that may drive lower commodity charges are provided in Deposition Exhibit 43, including *inter alia* economies of scale stemming from its “large wholesale customer base,” its ownership and operation of upstream sources of supply, and its “relatively lean staff”. Prices practices, discussed at length in “Expert Report of Christopher P.N. Woodcock,” June 2009, may also give rise to elevated water rates for Falls Church.

<sup>59</sup> Deposition of City of Falls Church, June 10, 2009, at 369; Deposition of F. Wyatt Shields, April 3, 2009, at 19.

Church to act in their interest as they have no right to vote in Falls Church elections. This disconnect, together with the higher water rates charged by Falls Church, understandably frustrates Fairfax County consumers of Falls Church water. Indeed, as one citizen recently wrote to the Mayor of Falls Church:

I am a resident of Fairfax County. I purchase water at rates, which are too high, from the City.... I urge you to reduce the rates, which your City utility charges. Utilities are monopolies, but governments regulate monopolies. Your monopoly is in need of regulation.<sup>60</sup>

35. With traditional indirect governance mechanisms weakened for disciplining Falls Church, these consumers must rely on a *tertiary* governance mechanism. Specifically, county residents that are currently Falls Church water customers may seek, through their Fairfax County elected officials (and their appointees) to have their interests as consumers represented. Indeed, it is my understanding that Fairfax County has initiated proceedings through its Consumer Protection Commission to conduct a study into the rates paid by Fairfax County residents to the various municipal water utilities serving Fairfax County.<sup>61</sup> Additionally, the County has undertaken efforts to make its citizen consumers aware of the potential availability of Fairfax Water as an alternative to Falls Church for water supply.

### **C. Economic Framework For Assessing Monopolization Claims**

36. The economic analysis of antitrust issues occurs in complement with legal guidelines and precedents. Under the standard established by the Supreme Court in the *U.S. v. Grinnell* case, “[t]he offense of monopoly under § 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historical accident.”<sup>62</sup> It is my understanding that in Virginia cases, establishing monopolization

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<sup>60</sup> Letter from T. McCready (Mar. 2, 2007), CityFallsChurch-00065.

<sup>61</sup> See, e.g., Letter from Anthony Griffin to Consumer Protection Commission, November 10, 2008, and letter from John T. Fee to Charles M. Murray, December 16, 2008.

<sup>62</sup> *United States v. Grinnell Corp.*, 384 U.S. 563, 570-71 (1966). See also Phillip Areeda, Louis Kaplow and Aaron Edlin, Antitrust Analysis: Problems, Text, and Cases, Sixth Edition, Aspen Publishers, 2004,

claims also requires these elements. According to Section 59.1-9.6 of the Virginia Code and the “Antitrust and Monopolies Report of the Virginia Advisory Legislative Council”:

This provision, [i.e., Section 59.1-9.6] together with the immediately preceding companion provision, closely follows the traditional formulations, including the federal provision in § 2 of the Sherman Act, 15 U.S.C. § 2. As such, the drafters intend to provide the benefits of flexibility and the wealth of federal precedent on which to draw.<sup>63</sup>

Applying economic analysis within the confines of these standards, I turn first to the issue of market definition, then follow this with an examination of whether Falls Church has monopoly power and whether, from an economic standpoint, its actions are consistent with seeking to willfully maintain that power.

### **1. Market Definition**

37. To determine the relevant market within the context of an antitrust proceeding, the typical first step is to engage in a market definition exercise. Specifically, a market consists of a geographic area and a set of products within which price is determined. Consequently, a hypothetical monopolist over a relevant market could control prices within that market. This, then, creates the following logical experiment that economists employ to determine the extent of the relevant market.<sup>64</sup> Begin with a proposed small geographic and product market and ask the following question: Could a hypothetical monopolist over the relevant market profitably raise price by a small, but significant and non-transitory amount? Because such a monopolist could engage in such a price increase, if the answer to the question is “yes”, then the proposed market constitutes a relevant market for purposes of a subsequent market power analysis.

38. The answer to the question may, however, be “no” as a result of the ability of consumers to substitute either geographically or to other products. If this

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which states “The two-element *Grinnell* definition of ‘monopolization’ has become the touchstone of all modern monopolization cases.” (p. 393). *See also* Virginia Code § 59.1-9.17.

<sup>63</sup> Antitrust and Monopolies Report of the Virginia Advisory Legislative Council to the Governor and the General Assembly of Virginia, House Document No. 20, 1974, at 4.

<sup>64</sup> The approach is described in detail in the Horizontal Merger Guidelines, U.S. Department of Justice and the Federal Trade Commission, Issued: April 2, 1992 Revised: April 8, 1997. *Available at:* [http://www.usdoj.gov/atr/public/guidelines/horiz\\_book/hmg1.html](http://www.usdoj.gov/atr/public/guidelines/horiz_book/hmg1.html).

substitutability is sufficiently strong, then the hypothetical monopolist will not find it profitable to raise prices. If that is the case, the proposed relevant market must be expanded (either in a geographic or product dimension, depending on the dimension of consumer substitutability) and the market definition exercise performed again. The market definition exercise is repeated until the degree of substitutability in product and geographic space is sufficiently limited that the answer to the question: “Could a hypothetical monopolist over the proposed set of products and geographic area profitably raise price by a small but significant and non-transitory amount?” is “yes.”

**a. Relevant Product Market**

39. In order to establish the relevant product market, I start with the narrow product definition; in this case, public drinking water.<sup>65</sup> With this proposed relevant market, we ask “Could a hypothetical monopolist of public drinking water raise price by a small but significant and non-transitory amount without losing so many customers switching away from publicly provided water that the price increase would prove unprofitable?” If significant substitutability exists the product market must be expanded. In the case at hand, however, the options are very limited.

40. The most likely candidate for including in the same product market as public drinking water would likely be self-supplied well water. However, I am unaware of any evidence indicating that actual price changes of water in the area have caused Fairfax residents to substitute between public water consumption and use of self-supplied water.<sup>66</sup> Moreover, for consumers within Fairfax County in the area in dispute, well water is not a viable substitute because the county code requires a property owner to be connected to a public (or private) water system if one is “available” — within 300 feet for residential dwellings and 500 feet for other structures.<sup>67</sup>

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<sup>65</sup> By “public drinking water” I mean municipally provided potable water.

<sup>66</sup> Conversation with Steve Edgemon, Deputy General Manager, Fairfax Water Authority, June 5, 2009. The inability of residents to substitute away from public drinking water is corroborated by data collected by the United States Geological Survey, which indicates that, as of 2000, only 5 percent of households in Fairfax County use self-supplied water. See, <http://water.usgs.gov/watuse/data/2000/index.html>.

<sup>67</sup> Fairfax County Code §§ 65-6-6, 65-6-8(a), at <http://www.municode.com/Resources/gateway.asp?pid=10051&sid=46>.

41. Consequently, I conclude that the relevant product market in this case is the provision of public drinking water.<sup>68</sup>

### **b. Relevant Geographic Market**

42. Turning to the geographic market, the supply of public water to Fairfax County water consumers has traditionally been provided by a single provider, the identity of which depended on the consumer's location. However, there are certain areas within Fairfax County in which Fairfax Water has existing water lines that run nearby or along, that is, "interface" with, water service lines provided by Falls Church.<sup>69</sup> These "interface areas" create a natural opportunity for competition between these providers for the patronage of water consumers. While previous court rulings have stated that Fairfax Water is permitted "to provide service to customers anywhere in Fairfax County,"<sup>70</sup> the extant build-out of water lines by Fairfax Water and Falls Church are likely to significantly limit the geographic scope of competition. This suggests that a natural focus for the geographic market be the interface areas: that is, those areas of Fairfax County previously within the City's exclusive service area that are within reasonable proximity to an existing Fairfax Water main. This focus is congruent with the perspective that a relevant geographic market be an "area of effective competition ... in which the seller operates, and to which the purchaser can practicably turn for supplies."<sup>71</sup>

43. Considering the interface areas, the market definition exercise dictates that we ask "could a hypothetical monopolist of public drinking water in the interface areas raise price by a small but significant and non-transitory amount without losing so many customers switching away from publicly provided water that the price increase would prove unprofitable?" If the answer to this question is "yes," then interface areas constitute a relevant geographic market. Evidence of substitution, however, may

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<sup>68</sup> I note also that the City has agreed that this is the relevant product market. *See* Deposition of City of Falls Church, June 11, 2009, at 477.

<sup>69</sup> *See, e.g.*, Fairfax Water System Maps produced in response to the City's Second Set of Interrogatories (6/1/2009); Amended Complaint Ex. 1 (area map).

<sup>70</sup> Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007), at 8.

<sup>71</sup> *Tampa Electric Co. v. Nashville Coal Co.*, 365 U.S. 320, 327 (1961).

generate a “no,” thereby necessitating a different geographic market. Evidence pointing toward such substitution would include:

- (1) evidence that buyers have shifted or have considered shifting purchases between different geographic locations in response to relative changes in price or other competitive variables;
- (2) evidence that sellers base business decisions on the prospect of buyer substitution between geographic locations in response to relative changes in price or other competitive variables;
- (3) the influence of downstream competition faced by buyers in their output markets; and
- (4) the timing and costs of switching suppliers.<sup>72</sup>

44. I am unaware of any evidence of such substitution between consumers residing in and outside the interface areas. Consumption of publicly provided water is a local activity, with consumption occurring within homes and commercial buildings. Consumers do not typically exhibit any tendencies toward shifting their consumption geographically.<sup>73</sup> As for sellers’ propensities to base decisions “on the prospect of buyer substitution between geographic locations,” a 1999 report prepared, in part, on the consequences of a prospective price increase by Falls Church indicated that:

[t]he ‘high technology’ industries that are concentrating [in Fairfax County] are not intensive users of water (relative to other prices necessary for production, such as highly skilled labor). In such an environment, increases in water prices are unlikely to have much impact on business location decisions.<sup>74</sup>

In the absence of evidence of geographic substitutability, I conclude that the interface areas constitute the relevant geographic market for purposes of conducting a market power analysis.<sup>75</sup>

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<sup>72</sup> Horizontal Merger Guidelines, U.S. Department of Justice and the Federal Trade Commission, Issued April 2, 1992, Revised April 8, 1997. Available at: [http://www.usdoj.gov/atr/public/guidelines/horiz\\_book/hmg1.html](http://www.usdoj.gov/atr/public/guidelines/horiz_book/hmg1.html).

<sup>73</sup> Interview with Mr. Steve Edgemon, June 5, 2009.

<sup>74</sup> Deposition Ex. 138, at CITY-FOIA2-002149.

<sup>75</sup> While the subsequent analysis of monopoly power is based on a geographic market of interface areas, the principal conclusions I reach are robust to reasonable alternatives in the breadth of this relevant geographic market. Specifically, I take the geographic breadth of the interface areas to be congruent with the area

## 2. Assessment of Monopoly Power

45. Monopoly (or market) power is the ability of a producer to raise prices above the competitive level without losing so many sales so rapidly that the price increase is unprofitable and must be rescinded.<sup>76</sup> Alternatively stated, monopoly power is the ability to control prices or exclude competition.<sup>77</sup> While virtually all firms possess some modest control over price, it is the possession of a significant degree of monopoly power that creates concerns regarding potential breakdowns in the working of competition.

46. The study of monopoly power in antitrust cases has focused economists' attention on three principal determinants of the extent of monopoly power held by a single, dominant firm.<sup>78</sup> In particular, these include (1) the market share held by the dominant firm; (2) the market demand elasticity; and (3) the elasticity of supply of fringe firms. In the paragraphs that follow, I explain each.

### a. Market Share

47. The first determinant of a firm's monopoly power is its market share. The greater the control or market share a firm has in the market, the greater is its monopoly power, holding other factors constant. In the case at hand, Falls Church has acknowledged that:

[d]espite the expiration of the 1959 Agreement in 1989, the City has continued to serve the same geographic market for public

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within which "the purchaser can practicably turn for supplies" (*Tampa Electric Co. v. Nashville Coal Co.*, 365 U.S. 320, 327 (1961)). The exact breadth of that geographic area then turns upon the areas within which purchasers "can practically turn for supplies." As such, it will be centered on the exact location of Fairfax Water's water mains, but will vary on a number of factors including the geography, infrastructure of the surrounding terrain, as well as the prevailing and anticipated price differences between Falls Church and Fairfax. The market power conclusions I reach are independent of this specification, making further such precision unnecessary.

<sup>76</sup> William M. Landes and R. A. Posner, "Market Power in Antitrust Case," *Harvard Law Review*, 1981, Vol. 94, No. 5, pp. 937 - 996.

<sup>77</sup> See, e.g., *United States v. E. I. Du Pont de Nemours & Co.*, 351 U.S. 377 (1956).

<sup>78</sup> William M. Landes and R. A. Posner, "Market Power in Antitrust Case," *Harvard Law Review*, Vol. 94, No. 5, 1981, pp. 937 - 996. See also Thomas R. Saving, "Concentration Ratios and the Degree of Monopoly," *International Economic Review*, Vol. 11, 1970, pp. 139-146.

water service that it served under the expired agreement. The City currently holds 100% of that market.<sup>79</sup>

Thus, Falls Church has a monopoly, and with its complete control over the market, its overwhelming market share points unequivocally toward the possession of monopoly power.<sup>80</sup> As the Falls Church Director of Public Utilities acknowledged in April 1990, the amount of surplus revenues generated by retail water rates, when the utility “is unregulated and a monopoly, ... can be whatever the traffic and the conscience of the utility administration will bear.”<sup>81</sup>

### **b. Market Elasticity of Demand**

48. A second indicator of monopoly power is the market elasticity, which refers to the sensitivity of the quantity of a product demanded by consumers to changes in the market price of that product.<sup>82</sup> The reason that economists look at market elasticity is that it is theoretically possible that even if a market is highly concentrated and potential competitors are deterred by barriers to entry, the ability of the dominant firm to raise prices may be limited if customers are highly sensitive to price changes. In the case of water demand however, previous analyses suggest that water demand is quite inelastic; that is, consumers’ usage rates of water are not sensitive to changes in prices. Fairfax

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<sup>79</sup> First Amended Complaint and City of Falls Church’s Answer to Plaintiff’s Amended Complaint. *See also* City of Falls Church’s Responses to Fairfax Water’s First Set of Interrogatories, at 3, in which Falls Church stated, “The City is not aware of any water customer located in Fairfax County within the City’s historical service area who is not presently a water customer of the City.” *See also* Deposition of F. Wyatt Shields, Apr. 3, 2009, at 136; Deposition of City of Falls Church, June 10, 2009, at 96-99.

<sup>80</sup> In situations in which the entity is price-regulated by an outside party, it is possible that the relationship between market share and monopoly power can be confounded. That is, sufficiently constraining regulation of an entity’s price may lead it to have a high market share even though the entity has no control over price. In the present case, however, this issue is not present, as the body establishing price is the supplier, namely the City of Falls Church. As noted in a 1999 report created for the City:

The City has wide latitude in setting water prices. As a municipally owned utility, the City’s water system is not regulated by the Virginia State Corporation Commission (VSCC). In particular, it is not required to define ‘rate base’ or to price capital in any prescribed way. Nor must it gain VSCC approval in setting water prices....

John B. Crihfield and Suzanne Piotrowski, “The Falls Church Water System: An Analysis of Capital Costs, Transfers, Water Prices, and System Value,” March 1999.

<sup>81</sup> Deposition Exhibit 140 at City-FOIA2-3176.

<sup>82</sup> The precise definition of the market demand elasticity is the percentage change in the quantity demanded in the market divided by the percentage change in the price. The greater is this number (in absolute value), the higher is the elasticity of market demand. A higher market elasticity of demand indicates that consumers are more willing and able to substitute away from the good in question, while lower market elasticities indicate that consumers’ demand is relatively unresponsive to price changes.

Water does not incorporate *any* assumed market demand elasticity into its business operations.<sup>83</sup> Similarly, Falls Church has no “studies and/or analyses concerning customer sensitivity to the price of public water.”<sup>84</sup> The absence of any focus by either of these two water providers on a market demand response to changes in price indicate that the assumed market demand elasticity in the market area approaches zero.<sup>85</sup> The low market price elasticity of water demand contributes to the monopoly power of Falls Church.

### c. Elasticity of Supply of Fringe Firms

49. The elasticity of supply of fringe firms measures the responsiveness of either *de novo* entrants or non-dominant fringe firms to expand output in the face of a price increase by the dominant firm.<sup>86</sup> The greater the supply response by these non-dominant firms, the higher is the elasticity of supply and, *ceteris paribus*, the lower is the monopoly power of the dominant firm. Conversely, the lower is the ability of fringe firms to expand output in the face of a price increase, the lower is the elasticity of supply and the greater is the dominant firm’s monopoly power; again, all else equal.

50. While precise measurement of the elasticity of supply is typically not possible, it is, nonetheless, possible to examine the underlying determinants of this elasticity. In particular, the higher are barriers to entry and expansion in a market, the lower is the elasticity of supply. Barriers to entry, in turn, arise when the cost of production which must be borne by a potential entrant are higher than the costs that must be incurred by firms (here, the dominant firm) that are already in the market. Examples can include

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<sup>83</sup> Interview with Mr. Steve Edgemon, June 5, 2009.

<sup>84</sup> City of Falls Church’s Responses to Fairfax Water’s First Request for Production of Documents, at 4.

<sup>85</sup> This comports with the economic literature on water demand, which consistently reflects very low market price elasticities. See P. Carver and J. Boland, “Short- and Long-Run Effects of Price of Municipal Water Use,” Water Resources Research, Vol. 16, 1980, No. 4, 609-616. Using data on water production covering the 1969 to 1974 period from the 13 Washington DC area utilities, they found short-run demand elasticities on the order of -0.10. A 2003 meta-analysis of almost 300 studies of the price elasticity of water demand reported an average elasticity of -0.41 and a median elasticity of -0.35. J. Dalhuisen, R. Florax, H. de Groot and P. Nijkamp, “Price and Income Elasticities of Residential Water Demand: A Meta-Analysis,” Land Economics, Vol. 79 (2), 2003, 292-308. See also Sheila Olmstead, W. Michael Hanemann and Robert N. Stavins, “Water Demand under Alternative Price Structures,” NBER Working Paper No. 13573, Nov. 2007.

<sup>86</sup> Technically, the elasticity of supply of fringe firms is the percentage change in the output (or supply) of fringe firms in response to a percentage change in the price charged by the dominant firm.

large fixed and sunk costs, product differentiation advantages, patents and government regulation.

51. In the case of the provision of water services, barriers to entry are substantial and appear in the form of large fixed and sunk costs as well as regulatory barriers. Water provision is well known to be a capital intensive industry with incumbent firms investing large sums in capital assets, such as water lines, water tanks, treatment plants and pumping stations.<sup>87</sup> Water provision in Fairfax County is no exception. According to its 2008 Annual Report, for example, Fairfax Water's capital assets, net of accumulated depreciation, amounted to almost \$1.4 billion as of December 31, 2007.<sup>88</sup> That is more than ten times Fairfax Water's 2007 operating revenues.<sup>89</sup> While Falls Church does not own treatment facilities, it still has capital assets that are greater than twice its operating revenues.<sup>90</sup>

52. In the case of entry into the interface areas of Fairfax County currently served by Falls Church, both economic and legal barriers eliminate the potential for the entry and expansion of new entrants. Most generally, the high fixed and sunk costs of providing water supply infrastructure create prohibitive economic barriers to entry for all potential entrants but Fairfax Water. Additionally, any firm seeking to supply public water to the interface areas must gain the necessary legal and regulatory approvals (such as from the Virginia Department of Health), again posing significant barriers for potential new entrants except Fairfax Water.

53. As will be described in the next section, the potential entry and expansion of the one potential entrant, Fairfax Water, into the interface area has, so far, been strategically blocked by the City's exclusionary practices which have heightened barriers to entry. Granted, even Fairfax Water would always be hard-pressed to offer service to all water consumers in the interface area because of significant switching

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<sup>87</sup> See, e.g., Roger Noll, Mary M. Shirley and Simon Cowan, "Reforming Urban Water Systems in Developing Countries," *Economic Policy Reform: The Second Stage*, 1999, available at <http://www.stanford.edu/~armin/hb145/water.pdf>.

<sup>88</sup> Fairfax Water Annual Report, 2008, at 24.

<sup>89</sup> Fairfax Water Annual Report, 2008, at 25.

<sup>90</sup> City of Falls Church, 2007 Annual Water Report, at 9-10.

costs that existing Falls Church customers would incur if they wanted to switch providers.<sup>91</sup> However, these existing barriers to entry have been exacerbated by the exclusionary actions of the incumbent provider, Falls Church. For example, the City has undertaken a variety of willful actions designed to make it more difficult for Fairfax Water to enter and successfully compete in this market. Consequently, barriers to entry and expansion into the interface areas of Fairfax County have been very high, with a correspondingly low elasticity of supply. These high barriers to entry and low elasticity of supply contribute significantly to the monopoly power held by Falls Church.

In considering the combined influence of Falls Church's extreme market share, the low market demand elasticity for public water and the low elasticity of fringe firm supply, I conclude that Falls Church holds significant monopoly power in the relevant market. Each of the market power determinants considered individually, and the set considered collectively, all point toward Fall Church's significant monopoly power.

### **3. Willful Maintenance and Abuse**

54. The final step in establishing monopolization is showing "willful acquisition or maintenance of that power."<sup>92</sup> Economic principles; that is, the science and discipline of economics, inform the understanding of, and provide insights into, the economic foundations and consequences of potentially exclusionary conduct. Economic scrutiny thus assists the fact finder in determining whether a firm's conduct amounts to willful acquisition and maintenance of monopoly power. In the present case, from an economic standpoint, Falls Church's actions are consistent with attempted, and successful, maintenance of monopoly in the face of potential entry. Indeed, the City has conceded that it has willfully taken actions to defend its monopoly position.<sup>93</sup>

55. The City has consistently taken positions that are anti-competitive, both in the general sense of "being opposed to competition" and in specific actions it has taken to

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<sup>91</sup> The current Fairfax Water availability fee charged to new single family residential customers is \$3,950. See <http://www.fcwa.org/rates/Rate%20Schedule%202009.pdf> (viewed May 27, 2009).

<sup>92</sup> *United States v. Grinnell Corp.*, 384 U.S. 563, 570-71 (1966). American Bar Association, Market Power Handbook, 2005.

<sup>93</sup> Deposition of Robert J. Etris, April. 2, 2009, at 101-104.

prevent or exclude the emergence of competition. The anti-competitive positions began with attempts to deter the emergence of competition through the courts. After failing in those efforts, the City undertook a number of acts that, from an economic standpoint, were rationally designed to maintain its current monopoly over the supply of public water in the interface areas. These include: (1) repeated representations to developers regarding an exclusive right to serve customers located in the interface area despite the expiration of such exclusivity rights; (2) unnecessarily inflicting costs on parties seeking to switch providers; (3) imposing the threat of costly litigation on parties that may switch water providers; (4) seeking to delay Fairfax's infrastructure development that would enable competition; and (5) using a disproportionately aggressive defense of its monopoly position with Halstead as a signal to discourage other potential parties from switching. Individually, and collectively, these actions, from an economic standpoint, are fully consistent with those of a monopolist seeking to exclude competition in order to preserve its monopoly.

**a. The City's Initial Response to the Prospect of Competition:  
Attempt to Block Entry**

56. In typical markets, entry and the possibility of entry are most often met with a heightened sense of vulnerability by incumbents with the consequence of reduced prices, accelerated productivity, improved quality of service, and pressure to find better ways to attract and retain customers.<sup>94</sup> So, in 2005 when Fairfax Water announced its intention to make itself available to serve new developments in the interface areas, the expected result was that Falls Church would respond by seeking ways to better satisfy these customers. Instead, Falls Church filed suit against Fairfax Water in federal district court with the goal to block Fairfax's Water's entry, seeking a declaration that Congress had granted it an exclusive water distribution franchise in territories that

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<sup>94</sup> See, e.g., Stephen J. Nickell, "Competition and Corporate Performance," Journal of Political Economy, Vol. 104, 1996, pp. 724-746; Loreto Lira, Rosario Rivero and Rodrigo Vergara, "Entry and Prices: Evidence from the Supermarket Sector," Review of Industrial Organization, Vol. 31, 2007, pp. 237-260; and, Philippe Gagnepain and Pedro Pereira, "Entry, Costs Reduction, and Competition in the Portuguese Mobile Telephony Industry," International Journal of Industrial Organization, Vol. 25, 2007, pp. 461-481.

included the interface areas.<sup>95</sup> The City’s stated purpose for the lawsuit was “[t]o preserve our traditional service territory.”<sup>96</sup>

57. In May 2007 the Court ruled that “Virginia law permits Fairfax Water to provide service to customers anywhere in Fairfax County.”<sup>97</sup> It specifically noted that Fairfax Water was legally entitled to provide service in the interface areas.<sup>98</sup> The Court also addressed Falls Church’s claim that Congress intended to preempt competition, stating:

There is simply no basis to conclude that Congress expressly preempted the ability of one local political subdivision in Virginia, like Fairfax Water, to supply drinking water to residents in Fairfax County, or that Congress intended to occupy the field of local water supply.<sup>99</sup>

The Court concluded that “Nothing [in the federal statutes that Falls Church has pointed to] entitles the city... to an exclusive territory.”<sup>100</sup> Falls Church pressed its case through an unsuccessful appeal, but, in the meantime, continued to tell others that it still had an “exclusive” service area in Fairfax County.<sup>101</sup> The City’s “core” public relations message also was “This is about preserving our water service area.”<sup>102</sup>

58. From an economic standpoint, Falls Church has consistently, willfully and explicitly sought to protect its monopoly position. As described by the Federal Trade Commission in a recent report:

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<sup>95</sup> Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007), at 2. See also Deposition of Philip L. Chabot, May 12, 2009, at 38.

<sup>96</sup> Deposition of F. Wyatt Shields, Apr. 3, 2009, at 143-144; Deposition of City of Falls Church, June 10, 2009, at 124; Deposition Exhibits 160, 230.

<sup>97</sup> Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007), at 8.

<sup>98</sup> Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007), at 8-9.

<sup>99</sup> Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007), at 10.

<sup>100</sup> Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007), at 14.

<sup>101</sup> Deposition Exhibit 21 (claiming “exclusive right to provide water service”), and Deposition Exhibit 25 (claiming “exclusive right to provide water service”).

<sup>102</sup> Deposition Exhibit 230. See also Deposition Exhibit 160 (“‘We are taking action to defend our system and preserve our water service area,’ said Mayor Robin S. Gardner.”).

One of the most effective ways for parties to acquire or maintain market power is through the abuse of government processes. The cost to the party engaging in such abuse typically is minimal, while the anticompetitive effects resulting from such abuse are often significant and durable.<sup>103</sup>

Such actions, have been characterized as “cheap exclusion” in the sense that the costs undertaken for such exclusion are typically lower than outright exclusionary market conduct (*e.g.*, predatory pricing) and are likely to be borne disproportionately by the targets of the exclusionary conduct.<sup>104</sup>

59. In the case at hand, in the face of potential entry into the interface areas, Falls Church has sought to use the litigation process to erect barriers to entry and exclude competition.<sup>105</sup> To the extent that Falls Church was entitled to advocate its claim to a legal monopoly in court, I do not rely upon the fact that Falls Church filed litigation against Fairfax Water in reaching my conclusions. These rights notwithstanding, I do find Falls Church’s public statements concerning its ultimate objectives to protect and preserve its exclusive service area telling. And, as shown, below, the City’s conduct, even after losing its federal lawsuit, was fully consistent, from an economic standpoint, of a monopolist continuing its efforts to preserve and maintain its monopoly.

**b. Representing an Exclusive Right to Serve Customers  
Located in the Interface Area When None Existed**

60. Falls Church has undertaken other actions that, from an economic standpoint, are fully consistent with those of a monopolist seeking to maintain its monopoly position. Once Fairfax Water began to hold itself out as providing service in the interface areas, the City saw it as a competitor and a financial threat.<sup>106</sup> Despite the expiration of its 1959 agreement with Fairfax Water regarding service territories and

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<sup>103</sup> “Enforcement Perspectives on the Noerr-Pennington Doctrine” FTC Staff Report, 2006, p. 3.

<sup>104</sup> See Susan Creighton, D. Bruce Hoffman, Thomas G. Krattenmaker and Ernest A. Nagata, “Cheap Exclusion,” *Antitrust Law Journal*, Vol. 72, 2005, pp. 975-1000.

<sup>105</sup> Strategic behavior designed to exclude rivals is discussed at length in Janusz A. Ordover and Garth Saloner “Predation, Monopolization, and Antitrust,” in *Handbook of Industrial Organization*, Vol. 1, North Holland, pp. 537-596. For a specific discussion of anticompetitive uses of the political and legal process, see pp. 573-577.

<sup>106</sup> Deposition of Rodney A. Collins, Apr. 1, 2009, at 41; Deposition of Robert J. Etris, Apr. 2, 2009, at 98-99.

boundaries, the City continued to tell developers in the interface areas that these sites were “in our service area and ...service should be provided by the City.”<sup>107</sup>

61. These representations have continued even in the wake of court rulings that have specifically dealt with, and rejected, the City’s claims to a legal monopoly provision within the interface areas. After the federal District Court had ruled in May 2007 that “Virginia law permits Fairfax Water to provide service to customers anywhere in Fairfax County,”<sup>108</sup> the City continued to represent to others that it maintained an exclusive territory and right to serve. For example, in October of 2007 the City represented to the Virginia Department of Transportation (VDOT) that in its view “both federal and state law provides [the City] the exclusive right to provide water service in this area.”<sup>109</sup>

62. The specific flashpoint has been the Halstead development, which involves a developer seeking to erect four buildings. To carry out this planned development, however, the construction requires the movement (at the developer’s expense) of Falls Church water lines. The developer submitted a proffer to Fairfax County indicating that “Water service to the ... Property shall be provided by [Fairfax Water], unless [Fairfax Water] determines service from another provider is necessary or preferable.”<sup>110</sup> Thus, the developer has chosen to secure water from a party other than the traditional monopoly provider.

63. Rather than seeking to serve the Halstead development through better pricing and improved service, Falls Church has simply continued to insist that it retains an exclusive right to serve customers located in the interface areas. For example, in March

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<sup>107</sup> Deposition of Rodney A. Collins, Apr. 1, 2009, at 62, referring to a development at Lee Highway and Nutley. Similar statements were made regarding developments at Dunn Loring (Deposition of Rodney A. Collins, Apr. 1, 2009, at 29); Merrifield (Deposition of Rodney A. Collins, Apr. 1, 2009, at 55), Tysons Corner (Deposition of Rodney A. Collins, Apr. 1, 2009, at 72), and Halstead (Deposition of Rodney A. Collins, Apr. 1, 2009, at 77-78). Ironically, these representations occurred by the same person who has acknowledged that it was open competition between Falls Church and Fairfax water when it came to development projects such as Merrifield and Hallstead. *See* Deposition of Rodney A. Collins, Apr. 1, 2009, at 193.

<sup>108</sup> Memorandum Opinion, *City of Falls Church, Virginia v. Fairfax County Water Authority*, No. 1:07cv174 (E.D. Va. 2007), at 8.

<sup>109</sup> Deposition Exhibit 21.

<sup>110</sup> Deposition Exhibit 157, at Urban-00014052.

2008, after the District Court had made clear in its ruling that neither Virginia nor federal law served as a basis for Falls Church's exclusive-right-to-serve claim, the City sent a letter to the Halstead developer indicating "this property is in the City of Falls Church water utility service area" and "the City believes it has the exclusive right to provide water service to this property."<sup>111</sup>

64. In July 2008 the City again represented an exclusive right to provide water to Halstead when it stated that "The plans [for the Halstead project] must show the buildings connected only to the City of Falls Church water system."<sup>112</sup> The letter also incorporated and attached the City's previous letter from March.

65. In meetings and conversations with the developer, after the Court of Appeals ruling that unequivocally supported Fairfax Water's right to compete for customers in the interface areas, the City continued to represent that it had the exclusive right to provide water service in the interface areas. Mr. Chabot, who represented Falls Church as an outside attorney in the dispute with Fairfax Water from 2005 until late 2008, has acknowledged telling Halstead's representatives at meetings in both the fall and spring of 2008 that the City had an exclusive right to serve the property.<sup>113</sup> As described by Jerry Emrich, an attorney formerly representing the Halstead project, the City's position that it had an exclusive right to serve customers located in the interface areas was unchanged even after the Court of Appeals decision.<sup>114</sup> Indeed, Mr. Emrich repeatedly asked the City's attorney how the City could maintain its claim to an exclusive service area after the City had lost the federal case. The City's lawyer claimed it was based on a "state" law theory that he hadn't raised in the previous lawsuit. Despite repeated inquiries, however, the City's attorney refused to tell the developer's counsel the basis for his claims.<sup>115</sup>

66. Of note is that, almost a year after the Court of Appeals decision, F. Wyatt Shields, City Manager of the City of Falls Church, admitted that no instructions had

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<sup>111</sup> Deposition Exhibit 25. *See also* Deposition of Philip L. Chabot, Jr., May 12, 2009, at 53-55.

<sup>112</sup> Deposition Exhibit 29.

<sup>113</sup> Deposition of Philip L. Chabot, Jr., May 12, 2009, at 20-22 and 78.

<sup>114</sup> Deposition of Jerry K. Emrich, May 11, 2009, at 17-18.

<sup>115</sup> Deposition of Jerry K. Emrich, May 11, 2009, at 18-20.

been given to employees of the City to stop telling people that the City has an exclusive service area in Fairfax County.<sup>116</sup>

67. From an economic standpoint, representations to consumers of an exclusive right to serve when no such rights exist are exclusionary. They frustrate competition by misleading or intimidating customers about their supply alternatives and by raising the costs to rivals who must engage in costly efforts to convince consumers that no such exclusionary right exists.<sup>117</sup> From an economic standpoint, the City's representations of an exclusive service area were fully consistent with an effort to exclude competition in furtherance of monopoly power.

**c. Unnecessarily Inflicting Costs on Parties Seeking to Switch Providers**

68. In well-functioning markets, the threat of competition most typically creates pressure for competitors to reduce prices, improve the quality of service and find ways to better satisfy customer needs. In this case, however, the City has met the competitive threat of Fairfax Water either by seeking to impose significant costs on consumers for switching to its would-be competitor or by outright blocking the customer from switching. The City's response, from an economic standpoint, is consistent with an effort to entrench its position as the monopoly provider.<sup>118</sup>

69. The imposition of such switching costs is recognized in the economics literature as a vehicle that may be used to deter entry. As a recent survey indicated "[A]n incumbent firm may protect a monopoly position against entry by writing exclusionary contracts, or by artificially creating real switching costs ...."<sup>119</sup> The City has sought to

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<sup>116</sup> Deposition of F. Wyatt Shields, April 3, 2009, at 167-168; Deposition of City of Falls Church, June 10, 2009, at 158.

<sup>117</sup> The potential for an incumbent to harm competition through a strategy of raising rivals' costs is dealt with in detail in the antitrust economics literature. *See, e.g.*, Thomas G. Krattenmaker and Steven C. Salop, "Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power over Price," Yale Law Journal, Vol. 96, 1986; Steven C. Salop and David T. Scheffman, "Raising Rivals' Costs," The American Economic Review, Vol. 73, 1983, pp. 267-271.

<sup>118</sup> This conclusion is consistent with the views of Brian Selfe, who has been integrally involved in the Halstead project. As he indicated, "Falls Church has been behaving as a monopolistic entity. It has not treated Halstead in a way that a normal customer might expect to be treated. Instead it has been behaving like a dictator." Interview with Brian Selfe, June 16, 2009.

<sup>119</sup> Joseph Farrell and Paul Klemperer, "Coordination and Lock-In: Competition with Switching Costs and Network Effects," Handbook of Industrial Organization, Vol. 3, North Holland, 2007, p. 2004. *See also*

inflict such switching costs on consumers who may seek to change water suppliers. A principal case in point is illustrated by the City's reaction to the prospect that it might lose the business associated with the Halstead development. Specifically, because City water lines are directly beneath significant parts of the Halstead project, conditioning the movement of these lines on using the City for its water supply was tantamount to the imposition of redesign, delay, administrative and legal costs on the developer.<sup>120</sup> Indeed, in the face of the City's March 2008 and July 2008 letters, the developer could not proceed with the project as planned.<sup>121</sup> As expressed at a meeting in 2008, Halstead felt that the City was holding it "hostage."<sup>122</sup> And in a Fall 2008 meeting, the City continued with an explicit *quid pro quo*, wherein the City would permit the movement of its water lines provided that the Halstead property was connected to the City.<sup>123</sup>

70. After the City initially rejected Halstead's proposal to relocate the City's water lines so that Halstead could receive water from Fairfax Water, Halstead developed an alternative plan to circumvent the impasse.<sup>124</sup> This alternative plan proposed that the project would be constructed in such a way that it could connect to *either* the City or Fairfax Water. Halstead was responsible for all the expenses to develop this alternative and to provide these connections to either supplier.

71. Though agreed to by Fairfax Water, the alternative plan did not satisfy Falls Church. In July 2008, the City rejected these plans and refused to permit the Halstead developer to move the existing Falls Church water lines, stating, "Unless the plans show the buildings connected only to the City of Falls Church water system, the

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Paul Klemperer "The Competitiveness of Markets with Switching Costs," RAND Journal of Economics, Vol. 18, 1987, pp. 138-150; and Joel S. Demski, David E.M. Sappington and Pablo T. Spiller, "Managing Supplier Switching," RAND Journal of Economics, Vol. 18, 1987, pp. 77- 97, which discusses the potential for entry and consumers switching suppliers to limit the monopoly rents earned by an incumbent.

<sup>120</sup> See, e.g., Deposition Exhibit 75, in which Halstead's counsel points to "substantial damages, going beyond the delay damages already incurred" by the Halstead developer as a consequence of the City's refusal to allow relocation of its easements. These costs were corroborated in my interviews with Matt Koirtzmann, of Urban Engineering, and Brian Selfe, a principal of the Halstead Developer.

<sup>121</sup> Deposition of Jerry K. Emrich, May 11, 2009, at 12; Deposition Exhibit 251 ("The City of Falls Church would like to be the water service provider for this development and thus has declined to permit the vacation of the easement. The issue of water service has postponed approval of the site plan indefinitely.")

<sup>122</sup> Deposition of Philip L. Chabot, Jr., May 12, 2009, at 63.

<sup>123</sup> Deposition Exhibit 75.

<sup>124</sup> Deposition of Jerry K. Emrich, May 11, 2009, at 20-23.

relocation of the existing water line is not acceptable.”<sup>125</sup> The City stated: “The plans must show the buildings connected only to the City of Falls Church water system.”<sup>126</sup> At the time that the City imposed this “Halstead condition” it was aware that Halstead had proffered to connect the property to Fairfax Water.<sup>127</sup> And in his deposition, Mr. Etris, Director of Public Utilities for Falls Church, acknowledged that this action was taken *specifically to maintain its position as the exclusive water service provider* even after losing its lawsuit.<sup>128</sup> According to Mr. Emrich, Falls Church offered no utility-related reasons that the relocation could not be done.<sup>129</sup> Nonetheless, the City refused to accommodate the developer’s request, continuing instead to insist that Halstead connect *only* to the City’s water system.<sup>130</sup>

72. Falls Church has continued to maintain its refusal to permit the Halstead plan to proceed through today.<sup>131</sup> This refusal has imposed considerable costs on the project merely because the Halstead developer plans to use a water provider other than Falls Church for its water supply.<sup>132</sup>

73. One result is that the Halstead developer modified its plans again. In order to avoid Falls Church water lines, the Halstead developer submitted amended plans in March 2009 to construct only two buildings (Buildings 3 and 4) of the four originally-planned buildings.<sup>133</sup> The developer’s site plan submission showed that it relocated Buildings 3 and 4 in the hope of avoiding the need to relocate existing City water lines. The site plan deleted Building 2 which (like Building 1) could not be constructed without relocating the City’s existing lines.<sup>134</sup> The revised site plan, however, showed the underground garage located very close to the City’s existing water easements, with

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<sup>125</sup> Deposition Exhibit 29.

<sup>126</sup> Deposition Exhibit 29.

<sup>127</sup> Deposition of Robert J. Etris, Apr. 2, 2009, at 119.

<sup>128</sup> Deposition of Robert J. Etris, Apr. 2, 2009, at 104.

<sup>129</sup> Deposition of Jerry K. Emrich, May 11, 2009, at 25-26. Conversation with Brian Selfe, June 16, 2009.

<sup>130</sup> See Deposition of Robert J. Etris, Apr. 2, 2009, at 122-124.

<sup>131</sup> Deposition of Robert J. Etris, Apr. 2, 2009, at 104, and 126-127; Deposition of City of Falls Church, June 11, 2009, at 469-470. Conversation with Brian Selfe, June 16, 2009.

<sup>132</sup> Deposition Exhibit 75. These costs were corroborated in conversations with Matt Koirtyohann and Brian Selfe, both associated with the Halstead project.

<sup>133</sup> Deposition Exhibit 75 and Site Plan #24817-SP-01, approved by Fairfax Water on March 10, 2009. The revised site plan makes note of “future” buildings 1 and 2 that will be “in conformance with the approved proffers and approved FDP/CDP.”

<sup>134</sup> Deposition Exhibit 49; Deposition of Robert J. Etris, Apr. 2, 2009, at 271-274.

the necessity for the developer to incur additional shoring and sheeting costs that, but for Falls Church's refusal to permit movement of its water easements, would not have been required.<sup>135</sup> I understand that the Halstead Developer has not submitted this revised site plan to Fairfax County.<sup>136</sup>

74. Most recently, the Halstead developer has been driven to yet another effort to circumvent the intransigence of Falls Church on the issue of permitting a relocation of the water easements on the Halstead site. Specifically, Halstead has now undertaken additional cost and effort to develop and submit a Proffered Condition Amendment ("PCA") to Fairfax County, stating that "the issue of obtaining water service has postponed approval of the site plan indefinitely."<sup>137</sup> The PCA, if granted, will enable Halstead to withdraw its original commitment to connect to Fairfax Water and to connect to whichever water provider it chooses. Unless the City changes its position on the Halstead Condition, however, this means that the developer will be forced to connect to the City's system as a condition of constructing the project.

75. I conclude that, from an economic standpoint, the City's actions have imposed significant switching costs on customers and that this conduct is consistent with the behavior of a monopolist seeking to maintain its monopoly position in the market. Imposing such costs is exclusionary and not competition on its merits.

**d. Imposing the Threat of Costly Litigation on Parties that May Switch Providers**

76. From the time Fairfax Water attempted to begin to provide water service in the interface areas, the City's actions have chilled competition by raising the prospect that customers that sought to switch providers would become either the direct target of litigation or embroiled in litigation between the alternative suppliers. Several instances illustrate the point. For example, in its March 2008 letter to the Halstead developer, the City indicated that the developer should be aware of particular Virginia criminal code provisions that related to the destruction or damage of facilities used to provide water

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<sup>135</sup> Conversation with Matt Koirtyohann, June 15, 2009; Conversation with Jamie Hedges, June 5, 2009.

<sup>136</sup> Conversation with Matt Koirtyohann, June 15, 2009; Conversation with Brian Selfe, June 16, 2009.

<sup>137</sup> Deposition Exhibit 251.

services.<sup>138</sup> Mr. Emrich, attorney for Halstead at that time, testified that “My understanding was the city was threatening criminal prosecution if my clients touched their physical facilities that were connected to the property at that time.”<sup>139</sup> And Mr. Chabot, the City’s outside attorney handling this project, has testified that the purpose of the “strong statement” was that “the city wanted to call to the attention of the developer that it had concerns with respect to the manner in which this development was proceeding.”<sup>140</sup>

77. Similarly, the City’s representatives have indicated to at least four developers that they may become embroiled in litigation if they seek to be served by Fairfax Water.<sup>141</sup> In the case of the Tysons development, Falls Church representatives indicated that “if they are leaning toward connecting to FW, they should contact our attorney, Roy Thorpe.”<sup>142</sup> The City’s stated reason for this was “to be clear that they would not be involved in litigation.”<sup>143</sup>

78. Mr. Emrich summarized the chilling effect of litigation threats on developers’ plans:

99 and 9/10 percent of the developers say no, we are not going to – we don’t want to get involved in litigation. If we get involved in litigation, then everything is put on hold until it’s resolved. Very expensive. Very time-consuming.<sup>144</sup>

79. I am aware that Mr. Shields offers a more innocuous explanation for why the City represented to developers the possibility of being embroiled in litigation. He suggests that rather than a measure designed to discourage competition, it was done

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<sup>138</sup> Deposition Exhibit 25.

<sup>139</sup> Deposition of Jerry K. Emrich, May 11, 2009 at 11.

<sup>140</sup> Deposition of Philip L. Chabot, Jr., May, 12, 2009, at 57-58.

<sup>141</sup> Deposition of City of Falls Church, June 10, 2009, at 174-187.

<sup>142</sup> Deposition Exhibit 16.

<sup>143</sup> Deposition of Robert J. Etris, April 2, 2009, p. 253-254. Similarly, in choosing Falls Church as its water provider, Trammell Crow, the developer of the Dunn Loring Metro site “indicated that Falls Church is strongly of the opinion that Trammell Crow does not have any choice in water utilities,” and further stated on several occasions that Trammell Crow “did not want to be embroiled in a conflict between the city and the county.” Deposition Exhibit 174.

<sup>144</sup> Deposition of Jerry K. Emrich, May 11, 2009 at 29.

“essentially as a courtesy.”<sup>145</sup> Mr. Shields has explained “It has never been the City’s intention in ... dealing with any of our customers to impede their ability to progress with their plans, to develop as they wish to do...”<sup>146</sup> This explanation is completely at odds, however, with the acknowledged actions of Falls Church in the Halstead project, in which the City explicitly took actions to impede the developer’s ability to progress with its plans,<sup>147</sup> even over the developer’s vigorous protest<sup>148</sup>. Moreover, regardless of what the City claims its motive was in telling developers about its litigation position, the economic consequence was to heighten the anticipated financial burden faced by any developer that might consider switching to Fairfax Water.

80. I conclude that the City’s threats of litigation made to customers that have considered switching water providers imposed additional switching costs, the natural effect of which would tend to preserve the City’s monopoly position. These actions, from an economic standpoint, are consistent with behavior designed to maintain Falls Church’s existing monopoly over customers in the interface areas.

**e. Seeking to Delay Fairfax Water’s Infrastructure Development that Would Enable Competition**

81. In response to what the City has seen as a “future invasion”<sup>149</sup> by Fairfax Water, the City has also sought to forestall infrastructure investments by Fairfax Water. When Fairfax Water proposed to extend one of its water mains, Falls Church recognized that the “sooner the [Fairfax Water] water lines are installed the more opportunity the developer of the Merrifield Town Center will have to connect to [Fairfax Water].”<sup>150</sup> The City’s reaction was to seek to block the emergence of competition. Specifically, the City represented to the Virginia Department of Transportation (“VDOT”) that:

These water mains extend into *our service area* and provide no public purpose. [Fairfax Water] does not currently have water

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<sup>145</sup> Deposition of City of Falls Church, June 10, 2009, at 176.

<sup>146</sup> Deposition of City of Falls Church, June 10, 2009, at 183.

<sup>147</sup> See, e.g., Deposition Exhibit 29.

<sup>148</sup> See, e.g., Depositions Exhibit 75.

<sup>149</sup> Deposition Exhibit 22.

<sup>150</sup> Deposition Exhibit 17.

mains in these locations. We request VDOT not allow the construction of the above.<sup>151</sup>

The City's letter also raised the specter of litigation against VDOT if it permitted the water line extension. And as acknowledged by Mr. Chabot, the reason for the City's attempt to block the infrastructure investment by Fairfax Water was that it could enable it to provide water service in the City's historic service territory.<sup>152</sup>

82. From an economic standpoint, the City's attempt to forestall the infrastructure development of Fairfax Water is consistent with the actions of a monopolist seeking to block the emergence of competition in the market.

**f. Using an Aggressive and Visible Defense of its Monopoly Position with Halstead to Discourage other Potential Parties from Switching**

83. The strident defense of its monopoly over the water supply to the Halstead project stands on its own as an indication of the City's intent to monopolize water supply in the interface areas. The act of outright denial of permission to move its water lines might, though, seem disproportionate to the threat posed by the loss of a single development. This development project, however, stood "at the margin" of competition.<sup>153</sup> Falls Church was aware that Fairfax Water was capable of providing service to other projects and saw the development of upgraded Fairfax water lines to be setting the stage for a "future invasion."<sup>154</sup> Thus, the action taken by the City to impose the so-called Halstead condition is best understood as a signal to other "infra-marginal" customers of its intent to fight the emergence of competition and consumer switching very aggressively.<sup>155</sup>

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<sup>151</sup> CITY – FOIA2 000696 (emphasis added). I understand that Falls Church may have the legal right to petition VDOT. I do not contest this right, but rather highlight the City's action to illustrate the consistent pattern of its efforts to block competition. In addition, this is an example of the City's use of misstatements concerning its allegedly exclusive service area, and the threat of litigation – actions that are consistent, from an economic standpoint, of exclusionary conduct.

<sup>152</sup> Deposition of Philip L. Chabot, Jr., May 12, 2009, at 103.

<sup>153</sup> Recall the discussion in Section V. (A.) above.

<sup>154</sup> Deposition Exhibit 22.

<sup>155</sup> The role of signaling to develop a reputation for aggressively dealing with competitors is well-established in the economics literature. *See, e.g.*, Paul Milgrom and John Roberts, "Predation, Reputation

84. For such a signaling strategy to be effective, it was necessary that other developers be made aware of the City's actions on the Halstead project. Consistent with this, when the City became aware of the possibility that another developer might switch water providers, the City called the developer with the message about "what is going on with the Halstead development that we were making sure they were not changing water supply."<sup>156</sup>

85. I understand that the development community is aware of this issue. As Brian Selfe indicated to me, "Unless and until this issue is resolved, no developer in a position to decide between Falls Church and Fairfax Water will even consider a proffer to Fairfax Water. It would simply put you in a position that is untenable."<sup>157</sup>

86. I conclude that the City's refusal to permit Halstead to relocate its water lines is consistent with a desire to send a signal to other similarly-situated developers with the goal of discouraging consumers from switching water providers. Such signaling is consistent with an attempt by Falls Church to maintain its monopoly position.

**g. The City's Actions Are Not Warranted by a Pro-Competitive Business Rationale**

87. While the imposition of the Halstead condition is damning on its face, a question arises whether the imposition of this condition may have been motivated by a legitimate desire to promote efficiency. If, for instance, water authorities routinely refuse to move water lines when approached by developers to promote the efficiency of their water supply systems, then it is at least possible that the efficiency gains may more than offset the anticompetitive harm inflicted by the condition. I am, however, unaware that the City offers *any* efficiency defense for its refusal to permit the developer to move its water lines.<sup>158</sup> When specifically asked about whether the City

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and Entry Deterrence," *Journal of Economic Theory*, Vol. 27, 1982, pp. 280-312 and David M. Kreps and Robert Wilson, "Reputation and Imperfect Information," *Journal of Economic Theory*, Vol. 27, 253-279.

<sup>156</sup> Deposition Exhibit 26.

<sup>157</sup> Interview with Brian Selfe, June 16, 2009.

<sup>158</sup> I understand that the City mentioned no engineering-related challenges associated with the Halstead line movement. Rather, the City made the movement of the water lines a strict *quid pro quo*: if Halstead wanted to get approval for the water line movement, it must agree to use Fall Church for its water service. Interview with Brian Selfe, June 16, 2009.

had ever refused to permit a developer to relocate water lines, the answer was “I don’t have any instances where the City said no”<sup>159</sup> and conceded that the action was “unprecedented.”<sup>160</sup> And when asked whether the utility might actually prefer developers to install new lines at their own expense, Mr. Etris has testified that when developers move and install new lines “you end up with something better than what you started with in many cases.”<sup>161</sup> Similarly, Brian Selfe, a principal of the Halstead Developer, has indicated that large development projects very frequently encounter the need to relocate either wet or dry utilities and that approval of such relocation is “common practice.”

88. Thus, the standard, efficiency, rationale appears to dictate approval of such water line replacement, especially as the costs are borne by the developer rather than the water supplier. Mr. Etris went so far as to acknowledge that the *only* reason for the refusal to permit the movement of its water line in this case was that the City did not want to lose a customer.<sup>162</sup> Similarly, Mr. Collins, Public Utilities Engineer for Falls Church, and author of the July 15, 2008 letter disapproving Halstead’s site plan for relocating the City’s water lines, readily acknowledged that the objection was not really about moving the water line but rather that approval of Halstead’s plan to relocate the water line would permit Fairfax to take a customer.<sup>163</sup>

89. Successful, pro-competitive behavior in the marketplace involves satisfying customers with better service, lower prices and/or higher quality. In this case, however, Falls Church has sought to maintain its market (monopoly) position by taking actions that explicitly harm the customer.

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<sup>159</sup> Deposition of Robert J. Etris, Apr. 2, 2009, at 130. *See also* Deposition of Rodney A. Collins, Apr. 1, 2009, at 89-90. *See also* the testimony of Wyatt Shields, who stated on behalf of the City that he is unaware of any instances apart from Halstead where the City has failed to approve the movement of a water line or water line easement when asked to do so by a developer. Deposition of City of Falls Church Corporate Designees, Wyatt Shields and John Tuohy, June 10, 2009, at 212.

<sup>160</sup> Deposition of Robert J. Etris, Apr. 2, 2009, at 135.

<sup>161</sup> Deposition of Robert J. Etris, Apr. 2, 2009, at 131; *see also* Deposition of Rodney A. Collins, Apr. 1, 2009, at 281.

<sup>162</sup> Deposition of Robert J. Etris, Apr. 2, 2009, at 132.

<sup>163</sup> Deposition of Rodney A. Collins, Apr. 1, 2009, at 9, 259; City-FOIA2-01-2.

#### **h. Falls Church's Actions Qualify as "Exclusionary" Under Virtually All Leading Definitions of this Term**

90. In a recent article on "Exclusion and the Sherman Act," a noted antitrust scholar indicates that both Section 1 and Section 2 of the Sherman Act prohibit anticompetitive exclusion from markets.<sup>164</sup> He goes on to describe several leading definitions of such exclusionary conduct. For example, exclusionary conduct may be defined as acts that:

(1) are reasonably capable of creating, enlarging or prolonging monopoly power by impairing the opportunities of rivals: and (2) that either (2a) do not benefit consumers at all, or (2b) are unnecessary for the particular consumer benefits that the acts produce, or (2c) produce harms disproportionate to the resulting benefits.<sup>165</sup>

Exclusionary conduct has also been defined as "conduct, other than competition on the merits or restraints reasonably 'necessary' to competition on the merits, that reasonably appear capable of making a significant contribution to creating or maintaining monopoly power."<sup>166</sup> Another leading antitrust scholar defines exclusionary conduct as "conduct that is capable of excluding an equally efficient rival."<sup>167</sup> Yet another approach is "conduct whose profitability depends on the exclusion of rivals."<sup>168</sup> And finally conduct that "unreasonably raises rivals' costs" can also constitute exclusionary conduct.<sup>169</sup> Each of these definitions provides a slightly different lens through which one might assess whether Falls Church's conduct constituted "willful acquisition and maintenance" of its monopoly position.

91. While nuanced differences may emerge from considering exclusion with one or another of these definitions, my assessment, from an economic standpoint, is that Falls

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<sup>164</sup> Hebert Hovenkamp, "Exclusion and the Sherman Act," University of Chicago Law Review, 2005, pp. 147-164.

<sup>165</sup> Id, citing Phillip E. Areeda and Hebert Hovenkamp, "Antitrust Law: An Analysis of Antitrust Principles and Their Applications," Aspen, Second Edition, 2002.

<sup>166</sup> Id, quoting Phillip E. Areeda and Donald F Turner, Antitrust Law, ¶ 626g(3) at 83, Little, Brown, 1978.

<sup>167</sup> Id, citing Richard A. Posner, Antitrust Law, Chicago, Second Edition, 2001, pp. 194-195.

<sup>168</sup> Id, citing Brief for the United States and the Federal Trade Commission as Amici Curiae Supporting Petitioner, *Verizon Communications Inc., v Law Offices of Curtis V. Trinko, LLP*, No 02-682, \*15-25 (S Ct filed May 23, 2003).

<sup>169</sup> Id, citing Thomas G. Krattenmaker and Steven C. Salop, "Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power over Price," Yale Law Journal, Vol. 96, 1986, and Steven C. Salop and David T. Scheffman "Raising Rivals' Costs," American Economic Review, Vol. 73, 1983, pp. 267-270.

Church's behavior qualifies as exclusionary under *all* the leading definitions. For example, there seems to be little doubt that Falls Church's actions were "reasonably capable of creating, enlarging or prolonging monopoly power by impairing the opportunities of rivals" and that these actions did not benefit consumers. Similarly, it is difficult to read Falls Church's conduct as "competition on the merits or restraints reasonably 'necessary' to competition on the merits." And given that Falls Church officials have acknowledged that Fairfax Water's rates are lower than the City's because of larger economies of scale,<sup>170</sup> the City's conduct is consistent with actions to exclude a more efficient rival.<sup>171</sup> Falls Church's actions are also certainly exclusionary under the standard that their profitability depends on exclusion of rivals. Most notably, Falls Church has, economically speaking, perversely refused to permit its water lines at the Halstead project to be relocated, and thereby upgraded, even at the developer's expense. Falls Church has thus inflicted costs on both customers and its prospective rival, which have served to reinforce its monopoly position in the market.

92. In sum, both the numerous exclusionary actions and the robustness of these actions to alternative definitional filters provide considerable confidence in the conclusion that Falls Church's conduct is consistent from an economic standpoint with the actions of a monopolist attempting to preserve its monopoly position.

## **VI. Consumer Harm and Damages to Fairfax Water**

93. Both consumers in Fairfax County and competition have been harmed as a consequence of the City's actions.

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<sup>170</sup> Deposition of Robert J. Etris, Apr. 2, 2009, at 195-98, 284; *see also* Deposition Exhibit 43 at City-FOIA2-1017 (listing additional reasons for Fairfax Water's lower rates).

<sup>171</sup> While Fairfax Water commodity rates are generally lower than those of Falls Church, Falls Church has implemented lower fees for new customers, indicating that it is "appropriate" to set such tap fees *below* the cost of service in "competitive situations." *See* Deposition of Robert J. Etris, Apr. 2, 2009, at 317. Indeed, the City has not raised its availability charge since 1996, despite being advised in 2006 by its rate consultant that the fee was below cost. Deposition of City at 551-52; Deposition Exhibit 57 at City-FOIA2-003029; Deposition Exhibit 72, at City-FOIA2-1621. Sufficiently low, below-cost pricing, however, may be yet another vehicle by which a firm may seek to monopolize a market. *See, e.g.* Janusz Ordovery and Garth Saloner, "Predation, Monopolization and Antitrust," Handbook of Industrial Organization, Vol. 1, North Holland, 1989, pp. 538-596; and Patrick Bolton, Joseph F. Brodley and Michael H. Riordan, "Predatory Pricing: Strategic Theory and Legal Policy," Georgetown Law Journal, Vol. 88, 2000, pp. 2239-2330.

94. Generally speaking, Falls Church's actions have restricted consumer choice in the face of higher commodity prices by Falls Church relative to Fairfax Water. In particular, the City's actions have harmed marginal customers (developers and the customers they represent), are preventing at least one would-be Fairfax Water customer from hooking up to Fairfax Water, and appear to be discouraging other potential customers from attempting to hook up. In addition, although not the direct focus of the case, infra-marginal, or core customers are also likely to suffer as a consequence of Falls Church's actions. While these core customers are less likely to switch water suppliers because of actions that occur "at the margin," they are nonetheless worthy of protection. This point has recently been underscored by the D.C. Court of Appeals when it noted that "core customers can be a proper subject of antitrust concern."<sup>172</sup>

95. Furthermore, the City's actions have caused the Halstead developer to incur considerable expenses that, but for Falls Church's monopolistic actions, would have been unnecessary.<sup>173</sup> For one thing, the City's actions caused a delay and redesign of the project,<sup>174</sup> only for the developer to state most recently to Fairfax County that the City's actions have brought the entire project to a halt.<sup>175</sup> But for the City's anticompetitive behavior, the Halstead development would have been able to proceed with the development as planned. Based on the Halstead developer's January 2008 plans, the development was to consist of four buildings and was to include between 840 and 1000 residential units, 150 hotel rooms and up to 91,000 square feet of residential space.<sup>176</sup> As I understand it, the development was scheduled to be completed in two phases, with construction of the first phase – buildings 2, 3 and 4 on the January 2008 plans – scheduled to begin in November 2008, and the second phase – building 1 on the January 2008 plans – scheduled to begin several months later.<sup>177</sup>

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<sup>172</sup> *Federal Trade Commission v. Whole Foods Market, Inc., et al.*, No. 07cv01021, (D.C. Cir. 2008), at 15.

<sup>173</sup> Interview with Matt Koirtyohann, June 15, 2009.

<sup>174</sup> Deposition Exhibit 75.

<sup>175</sup> Deposition Exhibit 251; Conversation with Brian Selfe, June 16, 2009.

<sup>176</sup> Deposition Exhibit 30; Deposition Exhibit 157, at Urban-00014010; Conversation with Jamie Bain Hedges, June 5, 2009; Conversation with Brian Selfe, June 16, 2009.

<sup>177</sup> See February 7, 2008 email from Matt Koirtyohann to Justin Sparrow and attached "Site Plan Schedule"; Urban-00001473 - 74. See also Deposition Exhibit 75 ("[p]hase I [of the project] is expected to take approximately three years to complete.") See also Deposition Exhibit 30.

96. Because the location of the Halstead project overlapped areas in which Falls Church had water lines<sup>178</sup> – and because Falls Church owned easements in connection with those lines – the Halstead developer needed permission from Falls Church to relocate the water lines in order to build the project as planned. Although such relocations are ordinarily routine, the City has refused to permit its water lines to be moved.<sup>179</sup>

97. One consequence of the City’s actions was that Halstead developer proposed an alternative design, which is intended to avoid Falls Church’s easements.<sup>180</sup> As per the alternative design, submitted to Fairfax Water in February 2009, the Halstead project is proposed to move forward with just two of the original four buildings.<sup>181</sup> The design also modifies the two remaining buildings, resulting in reductions in the number of residential units and hotel rooms.

98. Falls Church’s actions also led the Halstead developers to submit, on or around May 29, 2009, a PCA, requesting a change in the proffer to allow the developer to select either Fairfax Water or Falls Church as water supplier “as determined in the sole discretion of [the developer].”<sup>182</sup> According to the developer, the original proffer, as it related to selecting Fairfax Water as the water provider, “has become problematic because “[t]he City of Falls Church would like to be the water service provider for the development and thus has declined to permit the vacation of [its] easement.”<sup>183</sup>

99. Based on Falls Church not permitting its water lines to be moved, and considering the Halstead developer’s February 2009 plans and recently-submitted PCA, it appears that either the project will not go forward, will go forward with no buildings connected to Fairfax Water (if the PCA is granted), or will go forward with only

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<sup>178</sup> See, e.g., Deposition Exhibit 49.

<sup>179</sup> See, e.g., Deposition of City of Falls Church June 11, 2009, at 469-470; Deposition Exhibit 30; Conversation with Brian Selfe, June 16, 2009.

<sup>180</sup> Deposition Exhibit 75.

<sup>181</sup> Deposition Exhibit 75 and Site Plan #24817-SP-01, approved by Fairfax Water on March 10, 2009. The revised site plan makes note of “future” buildings 1 and 2 that will be “in conformance with the approved proffers and approved FDP/CDP.” Based on conversations with Steven T. Edgemon, and considering the location of Falls Church’s water pipes, it is unclear how those buildings can be built in conformance with the original proffer, unless the City permits its water lines to be moved. See *Deposition* Exhibit 49.

<sup>182</sup> Deposition Exhibit 251 (pp. 12 -13 of facsimile).

<sup>183</sup> Deposition Exhibit 251 (p. 12 of facsimile).

buildings 3 and 4 connected to Fairfax Water. Because, in October 2007, the Halstead developer originally proffered to use Fairfax Water,<sup>184</sup> Fairfax Water now faces the loss of revenues as a consequence of Falls Church's exclusionary actions.

100. The extent of the lost net revenues (lost revenues less the foregone associated costs) to Fairfax Water will depend upon several factors, including what actually occurs in the future with the Halstead project and whether the Halstead project ultimately hooks up to Fairfax Water or the City. To capture the different outcomes, I have considered two scenarios in my calculation of harm to Fairfax Water.

101. As a first scenario, I have assumed that due to the City's actions, Fairfax Water may never serve the Halstead project. This may occur if, prior to the conclusion of legal proceedings, for example, the Halstead project is terminated or Fairfax County accepts the recently-submitted PCA. If that occurs, Fairfax Water would lose revenues due to not being able to provide water to the four buildings. As a second scenario, I have assumed that due to the City's actions, the Halstead development is completed as per the modified two-building design which circumvents the need for Falls Church's approval to move its water lines. If that occurs, Fairfax Water would lose revenues due to not being able to provide water to the two buildings – Buildings 1 and 2 – that will not be built. In both scenarios, I have ignored the impact that Falls Church's actions may have had on the change in design between January 2008 and March 2009 of Buildings 3 and 4. That is, I have assumed that the reduction in the number of residential units and the number of hotel rooms was not caused by the City's actions.<sup>185</sup>

102. The results of my lost revenues calculation are summarized in Exhibit 3. Using a 30-year time horizon and other assumptions specified in Exhibits 3 through 10, Fairfax Water's cumulative lost net revenues are projected to be \$11.4 million for the first (*i.e.*, four-building) scenario and \$5.7 million for the second (*i.e.*, two-building) scenario.

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<sup>184</sup> Deposition Exhibit 157.

<sup>185</sup> Based on my conversations with Jamie Bain Hedges (June 5, 2009) and Brian Selfe (June 16, 2009), I understand that some modification of Building 4 of the Halstead project was made necessary by the City's refusal to permit its water pipes to be moved. *See, e.g.*, December 12, 2008 email from John Nammack to Peter Crawford.

103. Because these are damages related to future sales, it is appropriate to make an adjustment to reflect their monetary value today. In economics and finance, this is typically done by applying an annual discount rate to the future cash flows (in this case, net revenues) being considered. The magnitude of the discount rate typically reflects two things: the time-value of money and the riskiness of the projected cash flows. The higher the time-value of money and the greater the risk, the higher the discount rate should be. As shown in Exhibit 3, I have computed the discounted lost net revenues using two discount rates – 4 percent and 13 percent. The 4 percent discount rate is approximately the current yield on long term U.S. government bonds.<sup>186</sup> It is also the discount rate used by Fairfax Water for its strategic financial planning.<sup>187</sup> The 13 percent discount rate reflects risks associated with building construction and real estate industries.<sup>188</sup> Based on these discount rates, the present value associated with Fairfax Water’s lost net revenues fall between \$1.9 million to \$6.0 million.<sup>189</sup> I have not included any damages that may have been precipitated by Falls Church’s actions beyond those associated with the Halstead development.

## **VII. Conclusion**

104. In my opinion, and to a reasonable degree of professional certainty, Falls Church possesses monopoly power in the relevant market in this case and, from an economic standpoint, its actions are consistent with those of a utility attempting and succeeding in willfully maintaining and abusing its position as a monopolist. In addition, as a consequence of Falls Church’s actions, a reasonable estimate of Fairfax Water’s lost net revenues is in the range of \$1.9 million to \$6.0 million.

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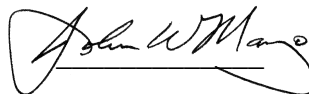
<sup>186</sup> The May 2009 yield on U.S. 10-year treasury bonds was 3.2 percent. From Federal Reserve Board, H. 15 Release.

<sup>187</sup> Interview with Steven Edgemon.

<sup>188</sup> According to Ibbotson Cost of Capital, *2009 Yearbook*, Morningstar, Inc., 2009, as of March 2009, companies from Standard Industrial Classification (“SIC”) code 15 – Building Construction, General Contractors and Operative Builders – had a median weighted average cost of capital of 14.76 percent. Companies from SIC code 65 – Real Estate – had a median weighted average cost of capital of 11.8 percent.

<sup>189</sup> Exhibit 3.

105. I understand that discovery is ongoing in this matter. I reserve the right to make appropriate adjustments to my analysis if additional, significant facts come to light.

A handwritten signature in black ink that reads "John W. Mayo". The signature is written in a cursive style with a horizontal line underneath the name.

John W. Mayo

# EXHIBIT 1

## VITA

### JOHN W. MAYO

#### **CURRENT POSITION:**

Professor of Economics, Business and Public Policy, and  
Executive Director, Georgetown Center for Business and Public Policy  
Georgetown University  
McDonough School of Business  
Old North Building  
37th and O Streets, N.W.  
Washington, D.C. 20057

#### **EDUCATION:**

Honorary Doctorate in Economics, 2007, University of Basel, Basel, Switzerland

Ph.D., Economics, 1982, Washington University in St. Louis

Dissertation: "Diversification and Performance in the U.S. Energy Industry"

M.A., Economics, 1979, Washington University in St. Louis

B.A., Economics, 1977, Hendrix College, Conway, Arkansas

#### **FIELDS OF SPECIALIZATION:**

Industrial Organization  
Regulatory and Antitrust Policy  
Applied Microeconomics  
Econometrics

#### **PREVIOUS POSITIONS:**

2002-2004 – Dean, McDonough School of Business, Georgetown University

1999-2001 – Senior Associate Dean, McDonough School of Business, Georgetown University.

1997-1998 (Academic year) – Visiting Professor of Economics, Business and Public Policy, Georgetown University School of Business, Washington, D.C.

July 1994 – July 1998 – The University of Tennessee, Knoxville, TN.  
Professor of Economics, Department of Economics.

July 1989 - June 1994 – The University of Tennessee, Knoxville, TN.  
Research Associate Professor, Center for Business and Economic Research, and  
Associate Professor of Economics, Department of Economics.

September 1981 - June 1989 -- The University of Tennessee, Knoxville, TN.  
Research Assistant Professor, Center for Business and Economic Research, and  
Assistant Professor of Economics, Department of Economics, September 1981-  
June 1988.

June 1984 - June 1985 -- U.S. Senate, Small Business Committee.  
Chief Economist, Democratic Staff.

August 1982 - December 1982 – VPI, Blacksburg, VA.  
Visiting Assistant Professor of Economics, Blacksburg, Virginia.

1980 - 1981 – Washington University, Center for the Study of American Business  
Dissertation Fellow

1979 – International Institute for Applied Systems Analysis (IIASA) Laxenburg, Austria.  
Energy Research Fellow

1979-1980 -- Washington University, Graduate School of Business Administration  
Research Assistant.

1978 -- Washington University, Institute for Urban and Regional Studies.  
Research Assistant

### **HONORS, AWARDS, AND GRANTS:**

Undergraduate: Mosley Economics Prize (#1 graduating economics major), Alpha Chi  
(scholastic), Blue Key Honor Society, Senior Honors Seminar.

Graduate: University Fellowship, Washington University (1977-78); National Academy  
of Sciences Young Research Fellow, Laxenburg, Austria (1979); President, Washington  
University Economics Graduate Student Association (1979-81); Dissertation Fellowship,  
Center for the Study of American Business, Washington University (1980-81).

Post-Graduate: 2006 recipient of the Public Utility Research Center Distinguished  
Service Award; Zaeslin Fellow of Law and Economics, University, of Basel, Basel,  
Switzerland (2000 - present); William B. Stokely Scholar, College of Business  
Administration, The University of Tennessee (1993-1995); South Central Bell Research  
Grant (1988); Research Affiliate, Center of Excellence for New Venture Analysis, The  
University of Tennessee (1985); Summer Faculty Research Fellowships, College of  
Business Administration, The University of Tennessee (1983-1985).

## **COURSES TAUGHT:**

Undergraduate: Principles of Microeconomics, Current Economic Problems, Government and Business, Intermediate Microeconomics, Energy Economics

Graduate: Managerial Economics (MBA), Managing in a Regulated Economy (MBA), Economics (Executive MBA), The Economics of Strategy (MBA), Business and Public Policy (MBA); Competition and Competition Policy (MBA); Regulation and Deregulation in the American Economy (MBA), Understanding International Business (MBA), Industrial Organization and Public Policy (Ph.D.), The Economics of Antitrust and Regulation (Ph.D.)

## **PUBLICATIONS:**

### **A. JOURNAL ARTICLES**

“Endogenous Regulatory Constraints and the Emergence of Hybrid Regulation” (with Larry Blank), Review of Industrial Organization, forthcoming.

“Warm Glow and Charitable Giving: Why the Wealthy Do Not Give More to Charity” (with Catherine H. Tinsley), Journal of Economic Psychology, Vol. 30, June 2009, pp. 490-499.

“Common Costs and Cross-Subsidies: Misestimation Versus Misallocation” (with Mark L. Burton and David L. Kaserman), Contemporary Economic Policy, April 2009, pp. 193-199.

“It’s No Time to Regulate Wireless Telephony,” The Economists’ Voice, Vol. 5 : Iss. 1, pp, 1-4, 2008.

“Understanding Participation in Social Programs: Why Don’t Households Pick up the Lifeline?” (with Mark Burton and Jeffrey T. Macher), The B.E. Journal of Economic Analysis & Policy, Volume7, Issue 1 (Topics), 2007.

“A Graphical Approach to the Stiglerian Theory of Regulation,” (with T. Randolph Beard and David L. Kaserman), Journal of Economic Education, Vol. 38, Iss. 4; Fall 2007, pp. 447-451.

“Antitrust Economics Meets Antitrust Psychology: A View From the Firms” (with Mirjam Schiffer), International Journal of the Economics of Business, Vol. 13, July 2006, pp.281-306.

“Regulatory Opportunism and Investment Behavior: Evidence from the U.S. Electric Utility Industry,” (with Thomas P. Lyon) RAND Journal of Economics, Vol. 36, Fall 2005, pp. 628-644.

Reprinted in *The Political Economy of Regulation*, Thomas P. Lyon, Edward Elgar, Northampton, MA, 2007.

“On the Impotence of Imputation” (with T. Randolph Beard and David L. Kaserman), Telecommunications Policy, Volume 27, Issues 8-9, September-October 2003, pp. 585-595.

“A Graphical Exposition of the Economic Theory of Regulation” (with T. Randolph Beard and David L. Kaserman), Economic Inquiry, Volume 41, October 2003, pp. 592-606.

“Regulation, Competition, and the Optimal Recovery of Stranded Costs,” (with T. Randolph Beard and David L. Kaserman) International Journal of Industrial Organization, Volume 21, June 2003, pp. 831-848.

“The Supreme Court Weighs in on Local Exchange Competition: The Meta-Message,” (with David L. Kaserman) Review of Network Economics Volume 1, September 2002, pp. 119 – 131.

“Regulation, Vertical Integration and Sabotage” (with T. Randolph Beard and David L. Kaserman), Journal of Industrial Economics, Volume 49, September 2001, pp. 319-334.

“Efficient Telecommunications Policies for the ‘New Economy’: The Compelling Case for Access Charge Reform” (with David L. Kaserman), International Journal of Development Planning Literature, (Special Issue edited by William J. Baumol and Victor A. Becker), Volume 1, April 2001.

"Regulatory Policies Toward Local Exchange Companies Under Emerging Competition: Guardrails or Speedbumps on the Information Highway," (with David L. Kaserman) Information Economics and Policy, Volume 11, December 1999, pp. 367-388.

“Open Entry and Local Telephone Rates: The Economics of IntraLATA Toll Competition,” (with David L. Kaserman, Larry R. Blank, and Simran Kahai) Review of Industrial Organization, Vol. 14, June 1999, pp. 303-319.

“Modeling Entry and Barriers to Entry: A Test of Alternative Specifications,” (with Mark L. Burton and David L. Kaserman), Antitrust Bulletin, Summer 1999, pp. 387-420.

"Targeted and Untargeted Subsidy Schemes: Evidence from Post-Divestiture Efforts to Promote Universal Telephone Service," (with Ross Eriksson and David L. Kaserman) Journal of Law and Economics, Vol. 41, October 1998, pp. 477-502.

“Dominant Firm Pricing with Competitive Entry and Regulation: The Case of IntraLATA Toll,” (with Larry Blank and David L. Kaserman) Journal of Regulatory Economics, Vol. 14, July 1998, pp. 35-54.

"The Role of Resale Entry in Promoting Local Exchange Competition," (with David L. Kaserman) Telecommunications Policy, Vol. 22, No. 4/5, 1998.

"Telecommunications Policy and the Persistence of Local Exchange Monopoly," (with David L. Kaserman), Business Economics, Vol. 33, April 1998, pp. 14-19.

"An Efficient Avoided Cost Pricing Rule for Resale of Local Exchange Telephone Service," (with David L. Kaserman) Journal of Regulatory Economics, Volume 11, January 1997, pp. 91-107.

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Reprinted in Public Utilities Law Anthology, Allison P. Zabriskie, editor, Vol. 17, Part 2 (July-December, 1994), pp. 899-929.

"Demand and Pricing of Telephone Services: Evidence and Welfare Implications" (with Carlos Martins-Filho), RAND Journal of Economics, Volume 24, Autumn 1993, pp. 399-417.

"Two Views of Applied Welfare Analysis: The Case of Local Telephone Service Pricing -- A Comment and Extension" (with David L. Kaserman and David M. Mandy), Southern Economic Journal, Volume 59, April 1993, pp. 822-827.

"The Political Economy of Deregulation: The Case of Intrastate Long Distance" (with David L. Kaserman and Patricia L. Pacey), Journal of Regulatory Economics, Volume 5, March 1993, pp. 49-64.

Reprinted in The Foundations of Regulatory Economics, Robert E. Ekelund, Jr. (Ed.), Edward Elgar Publishing, Northampton, MA.

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"The Measurement of Vertical Economies and the Efficient Structure of the Electric Utility Industry" (with David L. Kaserman), Journal of Industrial Economics, Volume 39, Number 5, September 1991, pp. 483-502.

"Regulation, Market Structure and Hospital Costs: Reply and Extension" (with Deborah A. McFarland), Southern Economic Journal, Volume 58, Number 2, October 1991, pp. 535-538.

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"Competition for 800 Service: An Economic Evaluation" (with David L. Kaserman), Telecommunications Policy, October 1991, pp. 395-408.

"Regulation, Advertising and Economic Welfare" (with David L. Kaserman), Journal of Business, Volume 64, Number 2, April 1991, pp. 255-267.

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"Cross-Subsidization in Telecommunications: Beyond the Universal Service Fairy Tale" (with David L. Kaserman and Joseph E. Flynn), Journal of Regulatory Economics, Volume 2, Number 3, September 1990, pp. 231-250.

"Barriers to Trade and the Import Vulnerability of U.S. Manufacturing Industries" (with Don P. Clark and David L. Kaserman), Journal of Industrial Economics, Volume 38, Number 4, June 1990, pp. 433-448.

"Firm Entry and Exit: Causality Tests and Economic Base Linkages" (with Joseph E. Flynn), Journal of Regional Science, Volume 29, Number 4, November 1989, pp. 645-662.

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"The Effects of Regulation on R&D: Theory and Evidence" (with Joseph E. Flynn), Journal of Business, Volume 61, Number 3, July 1988, pp. 321-336.

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"Market Based Regulation of a Quasi-Monopolist: A Policy Proposal for Telecommunications" (with David L. Kaserman), Policy Studies Journal, Volume 15, Number 3, March 1987, pp. 395-414.

"The Ghosts of Deregulated Telecommunications: An Essay by Exorcists" (with David L. Kaserman), Journal of Policy Analysis and Management, Volume 6, Number 1, Fall 1986, pp. 84-92.

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"Multiproduct Monopoly, Regulation and Firm Costs," Southern Economic Journal, Volume 51, Number 1, July 1984, pp. 208-218.

"The Technological Determinants of the U.S. Energy Industry Structure," The Review of Economics and Statistics, Volume 66, February 1984, pp. 51-58.

## **B. BOOKS, MONOGRAPHS, AND OTHER PUBLICATIONS**

Universal Service: Can We Do More with Less?" in New Directions in Communications Policy, Randolph J. May, Editor, Carolina Academic Press, forthcoming.

"The Economic Facts and FAQs of National Video Franchising: Reflections on the House of Representatives Debate," Policy Matters 06-16, AEI-Brookings Joint Center, June 2006.

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An Economic Report to the Governor of the State of Tennessee, Center for Business and Economic Research and the Tennessee State Planning Office, Annual Contributor, 1981-1994.

"An Economic Analysis of a Monitored Retrievable Storage Site for Tennessee" (with W. F. Fox, L. T. Hansen, and K. E. Quindry), Final Report and Appendices, December 17, 1985.

"Directly Served Industries and the Regional Economy" (with Charles Campbell), Contract Completion Report, the Center for Business and Economic Research, The University of Tennessee, October 1984.

#### **CONGRESSIONAL AND REGULATORY TESTIMONIES:**

U.S. Senate (Commerce, Science and Transportation Committee; Energy and Natural Resources Committee, Subcommittee on Water and Power); Federal Communications Commission; U.S. International Trade Commission; Tennessee State Legislature (Senate Finance, Ways and Means Committee; Special Joint Legislative Committee on Business

Taxation; and, Senate State and Local Government Committee); Maryland State Legislature (Environmental Works Committee); Pennsylvania Public Utility Commission; Michigan Public Service Commission; Missouri Public Service Commission; Illinois Commerce Commission; West Virginia Public Utility Commission; Wyoming Public Utility Commission; Washington Utilities and Transportation Commission; Utah Public Service Commission; Wisconsin Public Service Commission; California Public Utilities Commission; Florida Public Service Commission; Delaware Public Service Commission; Montana Public Service Commission; Maryland Public Service Commission; Massachusetts Department of Public Utilities; Georgia Public Service Commission; Colorado Public Utilities Commission; North Carolina Public Utilities Commission; Missouri Public Service Commission; Texas Public Utility Commission; Arkansas Public Service Commission; Connecticut Department of Public Utility Control; Kansas State Corporation Commission; and New Jersey Board of Public Utility Commissioners.

**INVITED SEMINARS AND SELECTED CONFERENCE PRESENTATIONS:**

Columbia University, University of Chicago, London Business School, University of Paris (Dauphine IX), Vanderbilt University, Washington University in St. Louis, University of Michigan, Ohio State University, University of Minnesota, University of Florida, University of Texas, Rutgers University, American University, University of Missouri, Kansas University, University of Utah, University of Basel (Switzerland), University of Freiburg (Germany), University of Central Florida, American Enterprise Institute, Federal Communications Commission, Telecommunications Policy Research Conference (TPRC), National Conference of State Legislatures, U.S. Advisory Commission on Intergovernmental Relations, Southwestern Bell Corporation

**SELECTED CONSULTING:**

U.S. Department of Justice, Antitrust Division; U.S. Federal Trade Commission; AT&T; Sprint; MCI Telecommunications; Verizon; Optus Communications (Australia); United Parcel Service; Tennessee Valley Authority; Antitrust Division, Office of the Attorney General, State of Tennessee; U.S. Senator Howard Baker, Jr., U.S. Senate Majority Leader; Oak Ridge National Laboratory; AmerenUE; Arkansas Consumer Research; Division of Energy Conservation and Rate Advocacy, Office of the Arkansas Attorney General; U.S. Department of Energy

**PROFESSIONAL PRESENTATIONS:**

American Economic Association Annual Conference, Western Economic Association Annual Conference, Southern Economic Association Annual Conference, European Association for Research in Industrial Economics Annual Conference, Center for Research in Regulated Industries Eastern Annual Conference, Center for Research in Regulated Industries Western Annual Conference, Southeastern Economic Analysis Conference

## **WORKING PAPERS:**

“Can you Hear Me Now? Exit Voice and Loyalty Under Increasing Competition” (with Jeffrey T. Macher), January 2009.

“Exploring the Information Asymmetry Gap: Evidence from FDA Regulation,” (with Jeffrey T. Macher and Jackson A. Nickerson), revised, January 2009.

“Estimating Monopoly Power in Regulated Markets: The Case of Local Exchange Telephone Service,” (with Simran Kahai and David L. Kaserman), February 2006.

“The Influence of Firms on Government” (with Mirjam Schiffer), revised September 2008.

## **EDITORIAL REVIEWER:**

National Science Foundation, Brookings Institution, Federal Trade Commission, The MIT Press, American Economic Review, Quarterly Journal of Economics, Journal of Law and Economics, Economic Journal, Journal of Business, RAND Journal of Economics, Journal of Regulatory Economics, Review of Economics and Statistics, Economic Inquiry, Journal of Industrial Economics, Journal of Economics & Management Strategy, Journal of Law, Economics and Organization, Review of Industrial Organization, Scandinavian Journal of Economics, Eastern Economic Journal, Southern Economic Journal, Contemporary Economic Policy, Economic Development and Cultural Change, Industrial Relations, Growth and Change, Review of Regional Studies, Journal of Economics and Business, Quarterly Review of Economics and Business, Journal of Policy Analysis and Management, Quarterly Journal of Business and Economics, Regional Science and Urban Economics, Financial Review, Journal of Money, Credit, and Banking, Social Science Quarterly, Telecommunications Systems, Public Finance Quarterly, Japan and the World Economy, Energy Economics

## **EDITORIAL, CORPORATE BOARDS AND OVERSIGHT BODIES**

Associate Editor, Information Economics and Policy, 2007-present.

Editorial Board, Journal of Regulatory Economics, 1999-present.

Board of Academic Advisors, The Free State Foundation, 2008 – present.

President, Transportation and Public Utilities Group, 2005-2006.

Editorial Board, Review of Industrial Organization, 2002-2003.

Board of Directors, Vice President, National Safety Council, October 2002- 2006.

Research Advisory Committee, National Regulatory Research Institute (Ohio State University), 1993-1997.

**PROFESSIONAL MEMBERSHIPS AND COMMITTEES:**

American Economic Association

Western Economic Association

Southern Economic Association

American Law and Economics Association

International Telecommunications Society

European Association for Research in Industrial Economics

**EXHIBIT 2  
DOCUMENTS RELIED UPON**

| Bates Ranges         |   |                   |
|----------------------|---|-------------------|
| CDM-597              | - | CDM-620           |
| CDM-1463             |   |                   |
| CFC-00059            |   |                   |
| CFC-00064            |   |                   |
| CFC-00548            |   |                   |
| CFC-00818            |   |                   |
| CityFallsChurch00065 |   |                   |
| City-FOIA00061       |   |                   |
| CITY-FOIA2 000696    |   |                   |
| CITY-FOIA2-000369    | - | CITY-FOIA2-000372 |
| CITY-FOIA2-000375    | - | CITY-FOIA2-000377 |
| City-FOIA2-362       |   | City-FOIA2-364    |
| City-FOIA2-2137      | - | City-FOIA2-2155   |
| City-FOIA2-2199      | - | City-FOIA2-2201   |
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| City-FOIA2-2850      |   |                   |
| City-FOIA2-3200      |   | City-FOIA2-3213   |
| City-FOIA-99         |   |                   |
| DSF-Halstead-27      |   |                   |
| FCWA-969             | - | FCWA-970          |
| FCWA-Morin-54        | - | FCWA-Morin-55     |
| FCWA-Morin-95        | - | FCWA-Morin-96     |
| FCWA-Morin-128       | - | FCWA-Morin-133    |
| FCWA-Morin-134       |   |                   |
| FCWA-Morin-367       | - | FCWA-Morin-384    |
| FCWA-Morin-789       |   |                   |
| FCWA-Morin-826       | - | FCWA-Morin-828    |
| FCWA-Morin-831       |   |                   |
| FCWA-Morin-833       | - | FCWA-Morin-835    |
| FCWA-Morin-836       |   |                   |
| FCWA-Morin-841       | - | FCWA-Morin-844    |
| FCWA-Morin-872       | - | FCWA-Morin-875    |
| FCWA-Morin-876       | - | FCWA-Morin-880    |
| FCWA-Morin-918       |   |                   |
| FCWA-Morin-981       | - | FCWA-Morin-990    |
| FCWA-Morin-993       | - | FCWA-Morin-996    |
| FCWA-Morin-1072      |   |                   |
| FCWA-Morin-1073      | - | FCWA-Morin-1074   |
| FCWA-Morin-1101      |   |                   |
| FCWA-Morin-1264      | - | FCWA-Morin-1265   |
| FCWA-Morin-1285      | - | FCWA-Morin-1286   |
| FCWA-Morin-1558      | - | FCWA-Morin-1559   |
| FCWA-Morin-3028      | - | FCWA-Morin-3034   |
| FCWA-Morin-3425      |   | FCWA-Morin 3427   |
| FCWA-Morin-3425      | - | FCWA-Morin-3427   |
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| FCWA-Morin-3449      | - | FCWA-Morin-3451   |
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| FCWA-Morin-3463      |   |                   |
| FCWA-Morin-3527      |   |                   |
| FCWA-Morin-3529      |   |                   |
| FW-FOIA-314          | - | FW-FOIA-315       |
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| FW-FOIA-1334         | - | FW-FOIA-1335      |
| FW-FOIA-4915         |   |                   |

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| FW-Hist-93           | - | FW-Hist-97     |
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| FW-Hist-249          | - | FW-Hist-250    |
| FW-Hist-251          | - | FW-Hist-254    |
| FW-Hist-255          | - | FW-Hist-260    |
| FW-Hist-261          | - | FW-Hist-264    |
| FW-Hist-343          | - | FW-Hist-346    |
| FW-Hist-4749         | - | FW-Hist-4750   |
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| FW-Hist-5017         | - | FW-Hist-5019   |
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| FW-Hist-5108         | - | FW-Hist-5110   |
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| Urban-0001473        | - | Urban-0001474  |
| Urban-00001778       | - | Urban-00001780 |
| Urban-00009273       | - | Urban-00009274 |
| Urban-00010023       | - | Urban-00010065 |
| Urban-00010279       | - | Urban-00010281 |
| Urban-00011453       | - | Urban-00011456 |
| Urban-00012683       |   |                |
| Urban-00013944       |   |                |
| Urban-00014327       |   |                |
| Urban-00041531       |   |                |
| Urban-00041621       |   |                |
| Urban-00042119       | - | Urban-00042121 |
| Urban-00042122       |   |                |
| Urban-11582          | - | Urban-11583    |
| Urban-11587          | - | Urban-11588    |
| Urban-12055          | - | Urban-12057    |

**Depositions and Exhibits**

Deposition Exhibits 1-251  
 Deposition of City of Falls Church, June 10, 2009  
 Deposition of City of Falls Church, June 11, 2009  
 Deposition of F. Wyatt Shields, Apr. 3, 2009  
 Deposition of Jerry K. Emrich, May 11, 2009  
 Deposition of John H. Tuohy, April 22, 2009  
 Deposition of Paul Cumiskey, April 20, 2009  
 Deposition of Philip L. Chabot, Jr., May 12, 2009  
 Deposition of Robert J. Etris, Apr. 2, 2009  
 Deposition of Rodney A. Collins, Apr. 1, 2009  
 Deposition of Samantha Kearney, May 21, 2009  
 Deposition of Son Nguyen, May 7, 2009  
 Deposition of William R. Kirkpatrick, May 19, 2009

**Books and Articles:**

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 Hebert Hovenkamp, "Exclusion and the Sherman Act," University of Chicago Law Review, 2005, pp. 147-164  
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 Joseph Farrell and Paul Klemperer "Coordination and Lock-In: Competition with Switching Costs and Network Effects," Handbook of Industrial Organization, Vol. 3, North Holland, 2007, p. 2004  
 Loreto Lira, Rosario Rivero and Rodrigo Vergara "Entry and Prices: Evidence from the Supermarket Sector," Review of Industrial Organization, Vol. 31, 2007, pp. 237-260

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Philippe Gagnepain and Pedro Pereira "Entry, Costs Reduction, and Competition in the Portuguese Mobile Telephony Industry," International Journal of Industrial Organization, Vol. 25, 2007, pp. 461-481

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Roger Noll, Mary M. Shirley and Simon Cowan, "Reforming Urban Water Systems in Developing Countries," Economic Policy Reform: The Second Stage, 1999, <http://www.stanford.edu/~armin/hb145/water.pdf>

Scott Wallsten and Katrina Kosec, "The Effects of Ownership and Benchmark Competition: An Empirical Analysis of U.S. Water Systems," International Journal of Industrial Organization, Vol. 26, 2008, pp. 186-205

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Stephen J. Nickell, "Competition and Corporate Performance," Journal of Political Economy, Vol. 104, 1996, pp. 724-746

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Susan Creighton, D. Bruce Hoffman, Thomas G. Krattenmaker and Ernest A. Nagata, "Cheap Exclusion," Antitrust Law Journal, Vol. 72, 2005, pp. 975-1000

T. Randolph Beard, Richard P. Saba, Carter Hill and George S. Ford, "Fragmented Duopoly: A Conceptual and Empirical Investigation," Journal of Business, Vol. 78, 2005, pp. 2377-2396

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Thomas R. Saving, "Concentration Ratios and the Degree of Monopoly," International Economic Review, Vol. 11, 1970, pp. 139-146

Water Utility Management, Manual of Water Supply Practices M5, Second Edition, AWWA, 2005

William M. Emmons III and Robin A. Prager, "The Effects of Market Structure and Ownership on Prices and Service Offerings in the U.S. Cable Television Industry," The RAND Journal of Economics, Vol. 28, 1997, pp. 732-750

William M. Landes and R. A. Posner, "Market Power in Antitrust Case," Harvard Law Review, Vol. 94, No. 5, 1981, pp. 937-996

#### **Case Pleadings:**

City of Falls Church's Answer to Plaintiff's Amended Complaint, Apr. 17, 2009

City of Falls Church's Memorandum in Support of its Demurrer to Fairfax County Water Authority's First Amended Complaint, Feb. 13, 2009

City of Falls Church's Objections and Responses to Fairfax Water's First Request for Admissions, Jan. 9, 2009

City of Falls Church's Objections to Fairfax Water's First Request for Production of Documents, Jan. 9, 2009

City of Falls Church's Objections to Fairfax Water's First Set of Interrogatories, Jan. 9, 2009

City of Falls Church's Reply Memorandum in Further Support of its Demurrer to Fairfax County Water Authority's First Amended Complaint, Feb. 27, 2009

City of Falls Church's Responses to Fairfax Water's First Request for Production of Documents

City of Falls Church's Responses to Fairfax Water's First Set of Interrogatories, Mar. 10, 2009

City of Falls Church's Responses to Fairfax Water's Limited Interrogatories, Feb. 2, 2009

City of Falls Church's Responses to Fairfax Water's Limited Request for Production of Documents, Feb. 2, 2009

City of Falls Church's Responses to Fairfax Water's Third Request for Production of Documents, Apr. 17, 2009

Complaint

Defendant's Motion to Dismiss, Plea in Bar, and Demurrer, Jan. 5, 2009

Demurrer, Feb. 6, 2009

Fairfax County Water Authority's Brief in Opposition to the City of Falls Church's Demurrer to the First Amended Complaint, Feb. 24, 2009

Fairfax County Water Authority's Responses to City of Falls Church's Second Set of Interrogatories

Fairfax Water System Maps produced in response to the City's Second Set of Interrogatories, Jun. 1, 2009

Fairfax Water's First Request for Production of Documents

Fairfax Water's First Set of Interrogatories

Fairfax Water's Responses to City of Falls Church's First Set of Interrogatories, Apr. 3, 2009

First Amended Complaint, with Exhibits, Jan. 9, 2009

Motion to Nonsuit Count III of First Amended Complaint, Feb. 20, 2009

Opinion on City's Demurrer, Mar. 13, 2009

Order, May 22, 2009

Transcript of Hearing Re: Demurrer, Mar. 6, 2009

#### **Expert Reports:**

Expert Report of Christopher P.N. Woodcock, June 2009

#### **Other:**

1946 Virginia Acts of Assembly ch. 378, March 28, 1946

1950 Virginia Acts of Assembly ch. 323, April 4, 1950

1950 Virginia Acts of Assembly ch. 577, 1950

1968 Virginia Acts of Assembly ch. 355, April 2, 1968

2006 Falls Church Annual Expenditure and Five-Year Capital Improvements Program

2007 Falls Church Annual Expenditure and Five-Year Capital Improvements Program

2008 Falls Church Annual Expenditure and Five-Year Capital Improvements Program

2009 Falls Church Annual Expenditure and Five-Year Capital Improvements Program

About Fairfax County Government, <http://www.fairfaxcounty.gov/government/about/> (viewed May 27, 2009)

About Fairfax Water, [http://www.fcwa.org/about\\_us/index.htm](http://www.fcwa.org/about_us/index.htm) (viewed Jun. 12, 2009)

About the Fairfax County Board of Supervisors, <http://www.fairfaxcounty.gov/government/board/about-the-board-of-supervisors.htm> (viewed May 27, 2009)

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CDM Final Report, Water and Sewer Utility Rate Study and Competitive Analysis, March 28, 2001

City of Falls Church FY2010 Budget and Capital Improvements Plan

City of Falls Church Proposed FY2010 Budget Annual Expenditures and Revenues and Five-Year Capital Improvements Plan

*City of Falls Church v. Fairfax Water Authority*, No. 07-1527, slip op. (4th Cir. Apr. 4, 2008)

City of Falls Church, 2007 Annual Water Report

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City of Falls Church, Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 1986-87

City of Falls Church, Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 1992-94

City of Falls Church, Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 1998-2008

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Exhibits to Brief in Opposition to Plaintiff's Motion for Preliminary Injunction, Apr. 16, 2007  
Hearing on Motions, *City of Falls Church, Virginia v. Fairfax County Water Authority*, Apr. 20, 2007

Memorandum of Points and Authorities in Support of Plaintiff's Motion for a Preliminary Injunction, Mar. 27, 2007  
Reply Affidavit of Frank W. Radigan in Support of Plaintiff's Motion for a Preliminary Injunction, Apr. 19, 2007  
Professional Real Estate Investors, Inc., et al., v. Columbia Pictures Industries, Inc., et al, 508 U.S. 49, 113 S.Ct. 1920 (1993)  
Covad Communications Company and Dieca Communications, Inc., v. Bell Atlantic Corporation, et al., 398 F.3d 666, 365 U.S. App. D.C. 78 (2005)  
United States of America v. American Telephone and Telegraph Company; Western Electric Company, Inc.; and Bell Telephone Laboratories, Inc., 524 F.Supp.  
1336 (D.C. 1981)  
12VAC5-590-690, Capacity of Waterworks, <http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+12VAC5-590-690>  
2008 v9 2 (2).xls

Deposition of Charles M. Murray, May 29, 2009

### EXHIBIT 3

#### DAMAGES SUMMARY

#### FAIRFAX WATER LOST NET REVENUES FROM HALSTEAD PROJECT

|                                  | 4 - Building Scenario | 2 - Building Scenario |
|----------------------------------|-----------------------|-----------------------|
| [1] Lost Tap Fees                | \$2,757,350           | \$1,471,380           |
| [2] Lost Commodity Revenue       | \$8,626,283           | \$4,212,159           |
| [3] Total Lost Revenue           | \$11,383,633          | \$5,683,539           |
| [4] Variable Production Costs    | \$1,852,972           | \$906,740             |
| <u>Net Revenue</u>               |                       |                       |
| [5] Total                        | \$9,530,661           | \$4,776,799           |
| [6] Present Value - 4% Discount  | \$6,001,961           | \$3,029,468           |
| [7] Present Value - 13% Discount | \$3,736,380           | \$1,915,770           |

#### Notes & Sources:

- [1] From Exhibit 6 and Exhibit 8.
- [2] From Exhibit 7 and Exhibit 9.
- [3] = [1] + [2].
- [4] From Exhibit 4.
- [5] = [3] - [4].
- [6] From Exhibit 4.
- [7] From Exhibit 5.

**EXHIBIT 4**

**PRESENT VALUE OF LOST NET REVENUES FOR FAIRFAX WATER - 4% DISCOUNT RATE  
4- & 2-BUILDING SCENARIO**

| Year         | PV Factor | 4-Building Scenario |                    |                    |                        |                    |                    |                        | 2-Building Scenario |                    |                    |                        |                  |                    |                        |
|--------------|-----------|---------------------|--------------------|--------------------|------------------------|--------------------|--------------------|------------------------|---------------------|--------------------|--------------------|------------------------|------------------|--------------------|------------------------|
|              |           | Tap Fees            | Commodity Revenue  | Annual Consumption | Cost per 1,000 Gallons | Incremental Cost   | Lost Net Revenue   | PV of Lost Net Revenue | Tap Fees            | Commodity Revenue  | Annual Consumption | Cost per 1,000 Gallons | Incremental Cost | Lost Net Revenue   | PV of Lost Net Revenue |
| [A]          | [B]       | [C]                 | [D]                | [E]                | [F]                    | [G]                | [H]                | [I]                    | [J]                 | [K]                | [L]                | [M]                    | [N]              | [O]                | [P]                    |
| 2008         | 1.050     | \$1,884,380         | \$0                | 0                  | \$0                    | \$0                | \$1,884,380        | \$1,978,402            | \$598,410           | \$0                | 0                  | \$0                    | \$0              | \$598,410          | \$628,268              |
| 2009         | 0.994     | \$872,970           | \$0                | 0                  | \$0.40                 | \$0                | \$872,970          | \$867,360              | \$872,970           | \$0                | 0                  | \$0.40                 | \$0              | \$872,970          | \$867,360              |
| 2010         | 0.971     | \$0                 | \$0                | 0                  | \$0.42                 | \$0                | \$0                | \$0                    | \$0                 | \$0                | 0                  | \$0.42                 | \$0              | \$0                | \$0                    |
| 2011         | 0.934     | \$0                 | \$0                | 0                  | \$0.44                 | \$0                | \$0                | \$0                    | \$0                 | \$0                | 0                  | \$0.44                 | \$0              | \$0                | \$0                    |
| 2012         | 0.898     | \$96,379            | \$96,379           | 44,577             | \$0.46                 | \$20,518           | \$75,861           | \$68,102               | \$29,372            | \$29,372           | 13,636             | \$0.46                 | \$6,276          | \$23,096           | \$20,734               |
| 2013         | 0.863     | \$137,803           | \$137,803          | 60,837             | \$0.48                 | \$29,403           | \$108,400          | \$93,571               | \$67,489            | \$67,489           | 29,895             | \$0.48                 | \$14,448         | \$53,041           | \$45,785               |
| 2014         | 0.830     | \$144,618           | \$144,618          | 60,837             | \$0.51                 | \$30,873           | \$113,746          | \$94,409               | \$70,834            | \$70,834           | 29,895             | \$0.51                 | \$15,171         | \$55,663           | \$46,201               |
| 2015         | 0.798     | \$151,773           | \$151,773          | 60,837             | \$0.53                 | \$32,416           | \$119,357          | \$95,256               | \$74,345            | \$74,345           | 29,895             | \$0.53                 | \$15,929         | \$58,416           | \$46,621               |
| 2016         | 0.767     | \$159,285           | \$159,285          | 60,837             | \$0.56                 | \$34,037           | \$125,247          | \$96,103               | \$78,032            | \$78,032           | 29,895             | \$0.56                 | \$16,726         | \$61,306           | \$47,040               |
| 2017         | 0.738     | \$167,170           | \$167,170          | 60,837             | \$0.59                 | \$35,739           | \$131,431          | \$96,969               | \$81,902            | \$81,902           | 29,895             | \$0.59                 | \$17,562         | \$64,340           | \$47,469               |
| 2018         | 0.709     | \$175,448           | \$175,448          | 60,837             | \$0.62                 | \$37,526           | \$137,922          | \$97,844               | \$85,965            | \$85,965           | 29,895             | \$0.62                 | \$18,440         | \$67,524           | \$47,903               |
| 2019         | 0.682     | \$184,138           | \$184,138          | 60,837             | \$0.65                 | \$39,402           | \$144,736          | \$98,729               | \$90,230            | \$90,230           | 29,895             | \$0.65                 | \$19,362         | \$70,868           | \$48,341               |
| 2020         | 0.656     | \$193,262           | \$193,262          | 60,837             | \$0.68                 | \$41,372           | \$151,889          | \$99,612               | \$94,708            | \$94,708           | 29,895             | \$0.68                 | \$20,330         | \$74,378           | \$48,779               |
| 2021         | 0.631     | \$202,839           | \$202,839          | 60,837             | \$0.71                 | \$43,441           | \$159,398          | \$100,516              | \$99,409            | \$99,409           | 29,895             | \$0.71                 | \$21,347         | \$78,062           | \$49,226               |
| 2022         | 0.606     | \$212,894           | \$212,894          | 60,837             | \$0.75                 | \$45,613           | \$167,281          | \$101,430              | \$104,345           | \$104,345          | 29,895             | \$0.75                 | \$22,414         | \$81,931           | \$49,678               |
| 2023         | 0.583     | \$223,450           | \$223,450          | 60,837             | \$0.79                 | \$47,894           | \$175,556          | \$102,353              | \$109,527           | \$109,527          | 29,895             | \$0.79                 | \$23,535         | \$85,992           | \$50,135               |
| 2024         | 0.561     | \$234,532           | \$234,532          | 60,837             | \$0.83                 | \$50,289           | \$184,243          | \$103,276              | \$114,967           | \$114,967          | 29,895             | \$0.83                 | \$24,712         | \$90,255           | \$50,592               |
| 2025         | 0.539     | \$246,166           | \$246,166          | 60,837             | \$0.87                 | \$52,803           | \$193,363          | \$104,219              | \$120,678           | \$120,678          | 29,895             | \$0.87                 | \$25,947         | \$94,731           | \$51,058               |
| 2026         | 0.518     | \$258,380           | \$258,380          | 60,837             | \$0.91                 | \$55,443           | \$202,937          | \$105,172              | \$126,674           | \$126,674          | 29,895             | \$0.91                 | \$27,245         | \$99,430           | \$51,529               |
| 2027         | 0.498     | \$271,203           | \$271,203          | 60,837             | \$0.96                 | \$58,215           | \$212,987          | \$106,135              | \$132,969           | \$132,969          | 29,895             | \$0.96                 | \$28,607         | \$104,363          | \$52,006               |
| 2028         | 0.479     | \$284,665           | \$284,665          | 60,837             | \$1.00                 | \$61,126           | \$223,539          | \$107,097              | \$139,579           | \$139,579          | 29,895             | \$1.00                 | \$30,037         | \$109,541          | \$52,481               |
| 2029         | 0.461     | \$298,798           | \$298,798          | 60,837             | \$1.05                 | \$64,182           | \$234,615          | \$108,081              | \$146,518           | \$146,518          | 29,895             | \$1.05                 | \$31,539         | \$114,978          | \$52,968               |
| 2030         | 0.443     | \$313,636           | \$313,636          | 60,837             | \$1.11                 | \$67,391           | \$246,244          | \$109,075              | \$153,803           | \$153,803          | 29,895             | \$1.11                 | \$33,116         | \$120,687          | \$53,459               |
| 2031         | 0.426     | \$329,213           | \$329,213          | 60,837             | \$1.16                 | \$70,761           | \$258,452          | \$110,080              | \$161,451           | \$161,451          | 29,895             | \$1.16                 | \$34,772         | \$126,679          | \$53,955               |
| 2032         | 0.409     | \$345,568           | \$345,568          | 60,837             | \$1.22                 | \$74,299           | \$271,269          | \$111,083              | \$169,481           | \$169,481          | 29,895             | \$1.22                 | \$36,510         | \$132,971          | \$54,451               |
| 2033         | 0.394     | \$362,738           | \$362,738          | 60,837             | \$1.28                 | \$78,014           | \$284,724          | \$112,108              | \$177,912           | \$177,912          | 29,895             | \$1.28                 | \$38,336         | \$139,576          | \$54,957               |
| 2034         | 0.379     | \$380,764           | \$380,764          | 60,837             | \$1.35                 | \$81,915           | \$298,849          | \$113,144              | \$186,763           | \$186,763          | 29,895             | \$1.35                 | \$40,253         | \$146,511          | \$55,469               |
| 2035         | 0.364     | \$399,690           | \$399,690          | 60,837             | \$1.41                 | \$86,010           | \$313,679          | \$114,191              | \$196,056           | \$196,056          | 29,895             | \$1.41                 | \$42,265         | \$153,791          | \$55,986               |
| 2036         | 0.350     | \$419,559           | \$419,559          | 60,837             | \$1.48                 | \$90,311           | \$329,248          | \$115,236              | \$205,813           | \$205,813          | 29,895             | \$1.48                 | \$44,379         | \$161,435          | \$56,502               |
| 2037         | 0.337     | \$440,420           | \$440,420          | 60,837             | \$1.56                 | \$94,826           | \$345,593          | \$116,305              | \$216,057           | \$216,057          | 29,895             | \$1.56                 | \$46,598         | \$169,459          | \$57,029               |
| 2038         | 0.324     | \$462,321           | \$462,321          | 60,837             | \$1.64                 | \$99,568           | \$362,753          | \$117,385              | \$226,812           | \$226,812          | 29,895             | \$1.64                 | \$48,927         | \$177,884          | \$57,562               |
| 2039         | 0.311     | \$485,315           | \$485,315          | 60,837             | \$1.72                 | \$104,546          | \$380,769          | \$118,475              | \$238,104           | \$238,104          | 29,895             | \$1.72                 | \$51,374         | \$186,730          | \$58,101               |
| 2040         | 0.299     | \$509,457           | \$509,457          | 60,837             | \$1.80                 | \$109,774          | \$399,683          | \$119,564              | \$249,959           | \$249,959          | 29,895             | \$1.80                 | \$53,942         | \$196,017          | \$58,638               |
| 2041         | 0.288     | \$534,802           | \$534,802          | 60,837             | \$1.89                 | \$115,262          | \$419,540          | \$120,678              | \$262,406           | \$262,406          | 29,895             | \$1.89                 | \$56,640         | \$205,767          | \$59,187               |
| <b>Total</b> |           | <b>\$2,757,350</b>  | <b>\$8,626,283</b> | <b>\$1,808,843</b> |                        | <b>\$1,852,972</b> | <b>\$9,530,661</b> | <b>\$6,001,961</b>     | <b>\$1,471,380</b>  | <b>\$4,212,159</b> | <b>\$880,592</b>   |                        | <b>\$906,740</b> | <b>\$4,776,799</b> | <b>\$3,029,468</b>     |

Notes & Sources

Assumes that construction on buildings 2, 3 and 4 would have begun November 2008 and that water usage would have begun in January 2012. Assumes that construction on building 1 would have begun November 2009 and water usage would have begun in January 2013. Deposition Exhibit 75; Urban-00001473 - 74; e-mail with attachment from Matt Koirtjohann (February 7, 2008); and conversation with Brian Selfe.

[A] Assumes mid-year cash flows for 2010 through 2041.

[B] 2009 through 2040 =  $1 / (1 + 4\%)^{\#}$  (# of days between date in [A] and October 1, 2009 / divided by 365 days). Based on 4% discount rate. See Mayo Report. 2008 based on 6% discount rate. I understand that 6% can be used at the discretion of the court as the prejudgement rate of interest. Code of Virginia, Section 6.1-330.54.

[C] From Exhibit 6. Tap Fees assumed to be paid when construction begins.

[D] From Exhibit 7, [J].

[E] From Exhibit 7, [D].

[F] From Exhibit 10. Annual growth rate is 5%.

[G] = [E] \* [F].

[H] = [C] + [D] - [G].

[I] = [B] \* [H].

[J] From Exhibit 8. Tap Fees assumed to be paid when construction begins.

[K] From Exhibit 9, [J].

[L] From Exhibit 9, [D].

[M] From Exhibit 10. Annual growth rate is 5%.

[N] = [L] \* [M].

[O] = [J] + [K] - [N].

[P] = [B] \* [O].

**EXHIBIT 5**

**PRESENT VALUE OF LOST NET REVENUES FOR FAIRFAX WATER - 13% DISCOUNT RATE  
4- & 2-BUILDING SCENARIO**

| Year         | PV Factor | 4-Building Scenario |                    |                    |                        |                    |                    |                        | 2-Building Scenario |                    |                    |                        |                  |                    |                        |
|--------------|-----------|---------------------|--------------------|--------------------|------------------------|--------------------|--------------------|------------------------|---------------------|--------------------|--------------------|------------------------|------------------|--------------------|------------------------|
|              |           | Tap Fees            | Commodity Revenue  | Annual Consumption | Cost per 1,000 Gallons | Incremental Cost   | Lost Net Revenue   | PV of Lost Net Revenue | Tap Fees            | Commodity Revenue  | Annual Consumption | Cost per 1,000 Gallons | Incremental Cost | Lost Net Revenue   | PV of Lost Net Revenue |
| [A]          | [B]       | [C]                 | [D]                | [E]                | [F]                    | [G]                | [H]                | [I]                    | [J]                 | [K]                | [L]                | [M]                    | [N]              | [O]                | [P]                    |
| 2008         | 1.050     | \$1,884,380         | \$0                | 0                  | \$0                    | \$0                | \$1,884,380        | \$1,978,402            | \$598,410           | \$0                | 0                  | \$0                    | \$0              | \$598,410          | \$628,268              |
| 2009         | 0.980     | \$872,970           | \$0                | 0                  | \$0.40                 | \$0                | \$872,970          | \$855,607              | \$872,970           | \$0                | 0                  | \$0.40                 | \$0              | \$872,970          | \$855,607              |
| 2010         | 0.913     |                     | \$0                | 0                  | \$0.42                 | \$0                | \$0                | \$0                    |                     | \$0                | 0                  | \$0.42                 | \$0              | \$0                | \$0                    |
| 2011         | 0.808     |                     | \$0                | 0                  | \$0.44                 | \$0                | \$0                | \$0                    |                     | \$0                | 0                  | \$0.44                 | \$0              | \$0                | \$0                    |
| 2012         | 0.714     |                     | \$96,379           | 44,577             | \$0.46                 | \$20,518           | \$75,861           | \$54,202               |                     | \$29,372           | 13,636             | \$0.46                 | \$6,276          | \$23,096           | \$16,502               |
| 2013         | 0.632     |                     | \$137,803          | 60,837             | \$0.48                 | \$29,403           | \$108,400          | \$68,541               |                     | \$67,489           | 29,895             | \$0.48                 | \$14,448         | \$53,041           | \$33,537               |
| 2014         | 0.560     |                     | \$144,618          | 60,837             | \$0.51                 | \$30,873           | \$113,746          | \$63,647               |                     | \$70,834           | 29,895             | \$0.51                 | \$15,171         | \$55,663           | \$31,147               |
| 2015         | 0.495     |                     | \$151,773          | 60,837             | \$0.53                 | \$32,416           | \$119,357          | \$59,103               |                     | \$74,345           | 29,895             | \$0.53                 | \$15,929         | \$58,416           | \$28,926               |
| 2016         | 0.438     |                     | \$159,285          | 60,837             | \$0.56                 | \$34,037           | \$125,247          | \$54,867               |                     | \$78,032           | 29,895             | \$0.56                 | \$16,726         | \$61,306           | \$26,856               |
| 2017         | 0.388     |                     | \$167,170          | 60,837             | \$0.59                 | \$35,739           | \$131,431          | \$50,952               |                     | \$81,902           | 29,895             | \$0.59                 | \$17,562         | \$64,340           | \$24,942               |
| 2018         | 0.343     |                     | \$175,448          | 60,837             | \$0.62                 | \$37,526           | \$137,922          | \$47,317               |                     | \$85,965           | 29,895             | \$0.62                 | \$18,440         | \$67,524           | \$23,166               |
| 2019         | 0.304     |                     | \$184,138          | 60,837             | \$0.65                 | \$39,402           | \$144,736          | \$43,942               |                     | \$90,230           | 29,895             | \$0.65                 | \$19,362         | \$70,868           | \$21,516               |
| 2020         | 0.269     |                     | \$193,262          | 60,837             | \$0.68                 | \$41,372           | \$151,889          | \$40,795               |                     | \$94,708           | 29,895             | \$0.68                 | \$20,330         | \$74,378           | \$19,977               |
| 2021         | 0.238     |                     | \$202,839          | 60,837             | \$0.71                 | \$43,441           | \$159,398          | \$37,886               |                     | \$99,409           | 29,895             | \$0.71                 | \$21,347         | \$78,062           | \$18,554               |
| 2022         | 0.210     |                     | \$212,894          | 60,837             | \$0.75                 | \$45,613           | \$167,281          | \$35,186               |                     | \$104,345          | 29,895             | \$0.75                 | \$22,414         | \$81,931           | \$17,233               |
| 2023         | 0.186     |                     | \$223,450          | 60,837             | \$0.79                 | \$47,894           | \$175,556          | \$32,678               |                     | \$109,527          | 29,895             | \$0.79                 | \$23,535         | \$85,992           | \$16,007               |
| 2024         | 0.165     |                     | \$234,532          | 60,837             | \$0.83                 | \$50,289           | \$184,243          | \$30,340               |                     | \$114,967          | 29,895             | \$0.83                 | \$24,712         | \$90,255           | \$14,862               |
| 2025         | 0.146     |                     | \$246,166          | 60,837             | \$0.87                 | \$52,803           | \$193,363          | \$28,178               |                     | \$120,678          | 29,895             | \$0.87                 | \$25,947         | \$94,731           | \$13,805               |
| 2026         | 0.129     |                     | \$258,380          | 60,837             | \$0.91                 | \$55,443           | \$202,937          | \$26,171               |                     | \$126,674          | 29,895             | \$0.91                 | \$27,245         | \$99,430           | \$12,823               |
| 2027         | 0.114     |                     | \$271,203          | 60,837             | \$0.96                 | \$58,215           | \$212,987          | \$24,307               |                     | \$132,969          | 29,895             | \$0.96                 | \$28,607         | \$104,363          | \$11,910               |
| 2028         | 0.101     |                     | \$284,665          | 60,837             | \$1.00                 | \$61,126           | \$223,539          | \$22,569               |                     | \$139,579          | 29,895             | \$1.00                 | \$30,037         | \$109,541          | \$11,060               |
| 2029         | 0.089     |                     | \$298,798          | 60,837             | \$1.05                 | \$64,182           | \$234,615          | \$20,962               |                     | \$146,518          | 29,895             | \$1.05                 | \$31,539         | \$114,978          | \$10,273               |
| 2030         | 0.079     |                     | \$313,636          | 60,837             | \$1.11                 | \$67,391           | \$246,244          | \$19,470               |                     | \$153,803          | 29,895             | \$1.11                 | \$33,116         | \$120,687          | \$9,543                |
| 2031         | 0.070     |                     | \$329,213          | 60,837             | \$1.16                 | \$70,761           | \$258,452          | \$18,084               |                     | \$161,451          | 29,895             | \$1.16                 | \$34,772         | \$126,679          | \$8,864                |
| 2032         | 0.062     |                     | \$345,568          | 60,837             | \$1.22                 | \$74,299           | \$271,269          | \$16,792               |                     | \$169,481          | 29,895             | \$1.22                 | \$36,510         | \$132,971          | \$8,231                |
| 2033         | 0.055     |                     | \$362,738          | 60,837             | \$1.28                 | \$78,014           | \$284,724          | \$15,597               |                     | \$177,912          | 29,895             | \$1.28                 | \$38,336         | \$139,576          | \$7,646                |
| 2034         | 0.048     |                     | \$380,764          | 60,837             | \$1.35                 | \$81,915           | \$298,849          | \$14,488               |                     | \$186,763          | 29,895             | \$1.35                 | \$40,253         | \$146,511          | \$7,103                |
| 2035         | 0.043     |                     | \$399,690          | 60,837             | \$1.41                 | \$86,010           | \$313,679          | \$13,457               |                     | \$196,056          | 29,895             | \$1.41                 | \$42,265         | \$153,791          | \$6,598                |
| 2036         | 0.038     |                     | \$419,559          | 60,837             | \$1.48                 | \$90,311           | \$329,248          | \$12,496               |                     | \$205,813          | 29,895             | \$1.48                 | \$44,379         | \$161,435          | \$6,127                |
| 2037         | 0.034     |                     | \$440,420          | 60,837             | \$1.56                 | \$94,826           | \$345,593          | \$11,607               |                     | \$216,057          | 29,895             | \$1.56                 | \$46,598         | \$169,459          | \$5,692                |
| 2038         | 0.030     |                     | \$462,321          | 60,837             | \$1.64                 | \$99,568           | \$362,753          | \$10,782               |                     | \$226,812          | 29,895             | \$1.64                 | \$48,927         | \$177,884          | \$5,287                |
| 2039         | 0.026     |                     | \$485,315          | 60,837             | \$1.72                 | \$104,546          | \$380,769          | \$10,015               |                     | \$238,104          | 29,895             | \$1.72                 | \$51,374         | \$186,730          | \$4,912                |
| 2040         | 0.023     |                     | \$509,457          | 60,837             | \$1.80                 | \$109,774          | \$399,683          | \$9,300                |                     | \$249,959          | 29,895             | \$1.80                 | \$53,942         | \$196,017          | \$4,561                |
| 2041         | 0.021     |                     | \$534,802          | 60,837             | \$1.89                 | \$115,262          | \$419,540          | \$8,639                |                     | \$262,406          | 29,895             | \$1.89                 | \$56,640         | \$205,767          | \$4,237                |
| <b>Total</b> |           | <b>\$2,757,350</b>  | <b>\$8,626,283</b> | <b>\$1,808,843</b> |                        | <b>\$1,852,972</b> | <b>\$9,530,661</b> | <b>\$3,736,380</b>     | <b>\$1,471,380</b>  | <b>\$4,212,159</b> | <b>\$880,592</b>   |                        | <b>\$906,740</b> | <b>\$4,776,799</b> | <b>\$1,915,770</b>     |

Notes & Sources

Assumes that construction on buildings 2, 3 and 4 would have begun November 2008 and that water usage would have begun in January 2012. Assumes that construction on building 1 would have begun November 2009 and water usage would have begun in January 2013. Deposition Exhibit 75; Urban-00001473 - 74; e-mail with attachment from Matt Koirtjohann (February 7, 2008); and conversation with Brian Selfe.

[A] Assumes mid-year cash flows for 2010 through 2041.

[B] 2009 through 2040 =  $1 / (1 + 13\%)^{\wedge} (\# \text{ of days between date in [A] and October 1, 2009} / \text{divided by } 365 \text{ days})$ . Based on 13% discount rate. See Mayo Report. 2008 based on 6% discount rate. I understand that 6% can be used at the discretion of the court as the prejudgement rate of interest. Code of Virginia, Section 6.1-330.54.

[C] From Exhibit 6. Tap Fees assumed to be paid when construction begins.

[D] From Exhibit 7, [J].

[E] From Exhibit 7, [D].

[F] From Exhibit 10. Annual growth rate is 5%.

[G] = [E] \* [F].

[H] = [C] + [D] - [G].

[I] = [B] \* [H].

[J] From Exhibit 8. Tap Fees assumed to be paid when construction begins.

[K] From Exhibit 9, [J].

[L] From Exhibit 9, [D].

[M] From Exhibit 10. Annual growth rate is 5%.

[N] = [L] \* [M].

[O] = [J] + [K] - [N].

[P] = [B] \* [O].

**EXHIBIT 6**

**CALCULATION OF TAP FEES FOR FAIRFAX WATER  
4-BUILDING SCENARIO**

|              | Building #   | Proposed Multi-Family Units | Proposed Retail Area (Sq Ft) | Proposed Hotel Units | Availability Fee      |                  | Service Connection Fee | Total Tap Fee      |
|--------------|--------------|-----------------------------|------------------------------|----------------------|-----------------------|------------------|------------------------|--------------------|
|              |              |                             |                              |                      | Per Multi-family Unit | 4" Meter         |                        |                    |
|              | [A]          | [B]                         | [C]                          | [D]                  | [E]                   | [F]              | [G]                    | [H]                |
| [1] Phase 1: | 2            | 193                         | 22,300                       | 0                    | \$594,440             | N/A              | \$3,970                | \$598,410          |
| [2]          | 3            | 144                         | 0                            | 140                  | \$443,520             | \$128,300        | \$7,940                | \$579,760          |
| [3]          | 4            | 228                         | 24,870                       | 0                    | \$702,240             | N/A              | \$3,970                | \$706,210          |
| [4]          | Subtotal     | 565                         | 47,170                       | 140                  | \$1,740,200           | \$128,300        | \$15,880               | \$1,884,380        |
| [5] Phase 2: | 1            | 275                         | 2,830                        | 0                    | \$869,000             | N/A              | \$3,970                | \$872,970          |
| [6]          | <b>Total</b> | <b>840</b>                  | <b>50,000</b>                | <b>140</b>           | <b>\$2,609,200</b>    | <b>\$128,300</b> | <b>\$19,850</b>        | <b>\$2,757,350</b> |

Notes & Sources:

[A]-[D] Proposed units and space are based on information contained in revised Site Plan #24817-SP-01, approved by Fairfax Water on March 10, 2009; Option 2 of the Proffer B-6 (Deposition Exhibit 157); Deposition Exhibit 30; and conversations with David Guerra and Brian Selfe.

[E] = [B] \* \$3080 for Phase 1 and [B] \* \$3160 for Phase 2. For mixed use developments the Availability Fee is based on the greater of the number of residential units multiplied by a unit charge, or the base meter fee. From conversation with Steven T. Edgemon; Deposition Exhibit 163, at Schedule 1; and Fairfax County Water Authority, Schedule of Rates, Fees and Charges, Schedule 1, April 1, 2008. Assumes Tap Fee paid upon commencement of construction (November 2008 for Buildings 2, 3, and 4 and November 2009 for Building 1).

[F] From Fairfax County Water Authority, Schedule of Rates Fees and Charges, Schedule 1, April 1, 2008.

[G] Each building has a Service Connection Fee of \$3970. From Rates, Fees, and Charges for New Water Service, April 1, 2009, and conversation with Steven T. Edgemon.

[H] = [E] + [F] + [G].

[5],[B] Calculated such that the sum of proposed multi-family units equals 840. From conversation with Brian Selfe and Option 2 of the Proffer (Deposition Exhibit 157).

[5],[C] Calculated such that the sum of proposed retail space equals 50,000 square feet. From conversation with Brian Selfe and Option 2 of the Proffer (Deposition Exhibit 157).

[6] = [4] + [5].

**EXHIBIT 7**

**CALCULATION OF PROJECTED COMMODITY REVENUES FOR FAIRFAX WATER  
4-BUILDING SCENARIO**

| Year         | Annual Consumption (1,000 Gal) |       |        |        | Service Charges               |                   |                  |               |            | Annual Revenue     |
|--------------|--------------------------------|-------|--------|--------|-------------------------------|-------------------|------------------|---------------|------------|--------------------|
|              | Residential                    | Hotel | Retail | Total  | Commodity Fee (\$/1,000 Gal.) | Commodity Revenue | Qtrly Rate/Meter | No. of Meters | Annual Fee |                    |
|              | [A]                            | [B]   | [C]    | [D]    | [E]                           | [F]               | [G]              | [H]           | [I]        |                    |
| 2008         | 0                              | 0     | 0      | 0      | \$0.00                        | \$0               | \$0.00           | 0             | \$0        | \$0                |
| 2009         | 0                              | 0     | 0      | 0      | \$1.83                        | \$0               | \$114.50         | 0             | \$0        | \$0                |
| 2010         | 0                              | 0     | 0      | 0      | \$1.92                        | \$0               | \$116.79         | 0             | \$0        | \$0                |
| 2011         | 0                              | 0     | 0      | 0      | \$2.02                        | \$0               | \$119.13         | 0             | \$0        | \$0                |
| 2012         | 32,769                         | 6,643 | 5,165  | 44,577 | \$2.12                        | \$94,435          | \$121.51         | 4             | \$1,944    | \$96,379           |
| 2013         | 48,719                         | 6,643 | 5,475  | 60,837 | \$2.22                        | \$135,324         | \$123.94         | 5             | \$2,479    | \$137,803          |
| 2014         | 48,719                         | 6,643 | 5,475  | 60,837 | \$2.34                        | \$142,090         | \$126.42         | 5             | \$2,528    | \$144,618          |
| 2015         | 48,719                         | 6,643 | 5,475  | 60,837 | \$2.45                        | \$149,195         | \$128.95         | 5             | \$2,579    | \$151,773          |
| 2016         | 48,719                         | 6,643 | 5,475  | 60,837 | \$2.57                        | \$156,654         | \$131.52         | 5             | \$2,630    | \$159,285          |
| 2017         | 48,719                         | 6,643 | 5,475  | 60,837 | \$2.70                        | \$164,487         | \$134.15         | 5             | \$2,683    | \$167,170          |
| 2018         | 48,719                         | 6,643 | 5,475  | 60,837 | \$2.84                        | \$172,711         | \$136.84         | 5             | \$2,737    | \$175,448          |
| 2019         | 48,719                         | 6,643 | 5,475  | 60,837 | \$2.98                        | \$181,347         | \$139.57         | 5             | \$2,791    | \$184,138          |
| 2020         | 48,719                         | 6,643 | 5,475  | 60,837 | \$3.13                        | \$190,414         | \$142.37         | 5             | \$2,847    | \$193,262          |
| 2021         | 48,719                         | 6,643 | 5,475  | 60,837 | \$3.29                        | \$199,935         | \$145.21         | 5             | \$2,904    | \$202,839          |
| 2022         | 48,719                         | 6,643 | 5,475  | 60,837 | \$3.45                        | \$209,932         | \$148.12         | 5             | \$2,962    | \$212,894          |
| 2023         | 48,719                         | 6,643 | 5,475  | 60,837 | \$3.62                        | \$220,428         | \$151.08         | 5             | \$3,022    | \$223,450          |
| 2024         | 48,719                         | 6,643 | 5,475  | 60,837 | \$3.80                        | \$231,450         | \$154.10         | 5             | \$3,082    | \$234,532          |
| 2025         | 48,719                         | 6,643 | 5,475  | 60,837 | \$3.99                        | \$243,022         | \$157.18         | 5             | \$3,144    | \$246,166          |
| 2026         | 48,719                         | 6,643 | 5,475  | 60,837 | \$4.19                        | \$255,173         | \$160.33         | 5             | \$3,207    | \$258,380          |
| 2027         | 48,719                         | 6,643 | 5,475  | 60,837 | \$4.40                        | \$267,932         | \$163.53         | 5             | \$3,271    | \$271,203          |
| 2028         | 48,719                         | 6,643 | 5,475  | 60,837 | \$4.62                        | \$281,328         | \$166.80         | 5             | \$3,336    | \$284,665          |
| 2029         | 48,719                         | 6,643 | 5,475  | 60,837 | \$4.86                        | \$295,395         | \$170.14         | 5             | \$3,403    | \$298,798          |
| 2030         | 48,719                         | 6,643 | 5,475  | 60,837 | \$5.10                        | \$310,165         | \$173.54         | 5             | \$3,471    | \$313,636          |
| 2031         | 48,719                         | 6,643 | 5,475  | 60,837 | \$5.35                        | \$325,673         | \$177.01         | 5             | \$3,540    | \$329,213          |
| 2032         | 48,719                         | 6,643 | 5,475  | 60,837 | \$5.62                        | \$341,957         | \$180.55         | 5             | \$3,611    | \$345,568          |
| 2033         | 48,719                         | 6,643 | 5,475  | 60,837 | \$5.90                        | \$359,054         | \$184.17         | 5             | \$3,683    | \$362,738          |
| 2034         | 48,719                         | 6,643 | 5,475  | 60,837 | \$6.20                        | \$377,007         | \$187.85         | 5             | \$3,757    | \$380,764          |
| 2035         | 48,719                         | 6,643 | 5,475  | 60,837 | \$6.51                        | \$395,857         | \$191.61         | 5             | \$3,832    | \$399,690          |
| 2036         | 48,719                         | 6,643 | 5,475  | 60,837 | \$6.83                        | \$415,650         | \$195.44         | 5             | \$3,909    | \$419,559          |
| 2037         | 48,719                         | 6,643 | 5,475  | 60,837 | \$7.17                        | \$436,433         | \$199.35         | 5             | \$3,987    | \$440,420          |
| 2038         | 48,719                         | 6,643 | 5,475  | 60,837 | \$7.53                        | \$458,254         | \$203.33         | 5             | \$4,067    | \$462,321          |
| 2039         | 48,719                         | 6,643 | 5,475  | 60,837 | \$7.91                        | \$481,167         | \$207.40         | 5             | \$4,148    | \$485,315          |
| 2040         | 48,719                         | 6,643 | 5,475  | 60,837 | \$8.30                        | \$505,226         | \$211.55         | 5             | \$4,231    | \$509,457          |
| 2041         | 48,719                         | 6,643 | 5,475  | 60,837 | \$8.72                        | \$530,487         | \$215.78         | 5             | \$4,316    | \$534,802          |
| <b>Total</b> |                                |       |        |        |                               |                   |                  |               |            | <b>\$8,626,283</b> |

## EXHIBIT 7

### CALCULATION OF PROJECTED COMMODITY REVENUES FOR FAIRFAX WATER 4-BUILDING SCENARIO

#### Notes & Sources:

Assumes that construction on buildings 2, 3 and 4 would have begun November 2008 and that water usage would have begun in January 2012. Assumes that construction on building 1 would have begun November 2009 and water usage would have begun in January 2013. Deposition Exhibit 75; Urban-00001473 - 74; e-mail with attachment from Matt Koirtyohann (February 7, 2008); and conversation with Brian Selfe.

[A] 2012 from [4][B] on Exhibit 6. 2013 forward from [6][B] on Exhibit 6. Units multiplied by 158.9 gallons per day (gpd), divided by 1,000 gallons, multiplied by 365 days. Residential consumption based on multi-family dwelling unit demand of 158.9 gpd. Ani Kame'enui et al., Water Supply Reliability Forecast for the Washington Metropolitan Area Year 2025, Report No. 05-06, Interstate Commission on the Potomac River Basin (June 2005), at 4-10.

[B] From [6][D] on Exhibit 6. Units multiplied by 130 gallons per day, divided by 1,000 gallons, multiplied by 365 days. Hotel consumption based on a hotel unit demand of 130 gpd. Virginia Administrative Code, at 12VAC5-590-690.

[C] 2012 from [4][C] on Exhibit 6. 2013 forward from [6][C] on Exhibit 6. Square footage divided by 1,000 square feet, multiplied by 300 gallons per day, divided by 1,000 gallons, multiplied by 365 days. Retail consumption based on 300 gpd/1,000 square feet of space. Virginia Administrative Code, at 12VAC5-590-690.

[D] = [A] + [B] + [C].

[E] Commodity fees based on adopted rate of \$1.83/1,000 gallons starting April 1, 2009. Fees assumed to increase 5% per year. See Fairfax County Water Authority, Schedule of Rates, Fees and Charges, Schedule 6, April 1, 2009. See also Fairfax Water Strategic Financial Plan.

[F] = [D] \* [E].

[G] Service charge based on quarterly fee of \$114.5 for 4 inch meter starting April 1, 2009. Fees assumed to increase 2% per year. From conversation with Steven T. Edgemon and Fairfax County Water Authority, Schedule of Rates, Fees and Charges, Schedule 6, April 1, 2009.

[H] 1 meter per multi-family or hotel space.

[I] = [G] \* [H] \* 4.

[J] = [F] + [I].

## EXHIBIT 8

### CALCULATION OF TAP FEES FOR FAIRFAX WATER 2-BUILDING SCENARIO

|                  | Building # | Proposed Multi-Family Units | Proposed Retail Area (Sq Ft) | Availability Fee      |            | Service Connection Fee | Total Tap Fee      |
|------------------|------------|-----------------------------|------------------------------|-----------------------|------------|------------------------|--------------------|
|                  |            |                             |                              | Per Multi-family Unit | 4" Meter   |                        |                    |
|                  | [A]        | [B]                         | [C]                          | [D]                   | [E]        | [F]                    | [G]                |
| [1] Phase 1:     | 2          | 193                         | 22,300                       | \$594,440             | N/A        | \$3,970                | \$598,410          |
| [2] Phase 2:     | 1          | 275                         | 2,830                        | \$869,000             | N/A        | \$3,970                | \$872,970          |
| [3] <b>Total</b> |            | <b>468</b>                  | <b>25,130</b>                | <b>\$1,463,440</b>    | <b>N/A</b> | <b>\$7,940</b>         | <b>\$1,471,380</b> |

Notes & Sources:

- [A]-[C] Proposed units and space are based on information contained in revised Site Plan #24817-SP-01, approved by Fairfax Water on March 10, 2009; Option 2 of the Proffer B-6 (Deposition Exhibit 157); Deposition Exhibit 30; and conversations with David Guerra and Brian Selfe.
- [D] = [B] \* \$3080 for Phase 1 and [B] \* \$3160 for Phase 2. For mixed use developments the Availability Fee is based on the greater of the number of residential units multiplied by a unit charge, or the base meter fee. From conversation with Steven T. Edgemon; Deposition Exhibit 163, at Schedule 1; and Fairfax County Water Authority, Schedule of Rates, Fees and Charges, Schedule 1, April 1, 2008. Assumes Tap Fee paid upon commencement of construction (November 2008 for Buildings 2 and November 2009 for Building 1).
- [F] Each building has a Service Connection Fee of \$3970. From Rates, Fees, and Charges for New Water Service, April 1, 2009, and conversation with Steven T. Edgemon.
- [G] = [D] + [E] + [F].
- [2],[B] Calculated such that the sum of proposed multi-family units equals 840. From conversation with Brian Selfe and Option 2 of the Proffer (Deposition Exhibit 157).
- [2],[C] Calculated such that the sum of proposed retail space equals 50,000 square feet. From conversation with Brian Selfe and Option 2 of the Proffer (Deposition Exhibit 157).
- [3] = [1] + [2].

**EXHIBIT 9**

**CALCULATION OF PROJECTED COMMODITY REVENUES FOR FAIRFAX WATER  
2-BUILDING SCENARIO**

| Year         | Annual Consumption (1,000 Gal) |       |        |        | Service Charges               |                   |                  |               |            | Annual Revenue     |
|--------------|--------------------------------|-------|--------|--------|-------------------------------|-------------------|------------------|---------------|------------|--------------------|
|              | Residential                    | Hotel | Retail | Total  | Commodity Fee (\$/1,000 Gal.) | Commodity Revenue | Qtrly Rate/Meter | No. of Meters | Annual Fee |                    |
|              | [A]                            | [B]   | [C]    | [D]    | [E]                           | [F]               | [G]              | [H]           | [I]        |                    |
| 2008         | 0                              | 0     | 0      | 0      | \$0.00                        | \$0               | \$0.00           | 0             | \$0        | \$0                |
| 2009         | 0                              | 0     | 0      | 0      | \$1.83                        | \$0               | \$114.50         | 0             | \$0        | \$0                |
| 2010         | 0                              | 0     | 0      | 0      | \$1.92                        | \$0               | \$116.79         | 0             | \$0        | \$0                |
| 2011         | 0                              | 0     | 0      | 0      | \$2.02                        | \$0               | \$119.13         | 0             | \$0        | \$0                |
| 2012         | 11,194                         | 0     | 2,442  | 13,636 | \$2.12                        | \$28,886          | \$121.51         | 1             | \$486      | \$29,372           |
| 2013         | 27,143                         | 0     | 2,752  | 29,895 | \$2.22                        | \$66,498          | \$123.94         | 2             | \$992      | \$67,489           |
| 2014         | 27,143                         | 0     | 2,752  | 29,895 | \$2.34                        | \$69,823          | \$126.42         | 2             | \$1,011    | \$70,834           |
| 2015         | 27,143                         | 0     | 2,752  | 29,895 | \$2.45                        | \$73,314          | \$128.95         | 2             | \$1,032    | \$74,345           |
| 2016         | 27,143                         | 0     | 2,752  | 29,895 | \$2.57                        | \$76,980          | \$131.52         | 2             | \$1,052    | \$78,032           |
| 2017         | 27,143                         | 0     | 2,752  | 29,895 | \$2.70                        | \$80,829          | \$134.15         | 2             | \$1,073    | \$81,902           |
| 2018         | 27,143                         | 0     | 2,752  | 29,895 | \$2.84                        | \$84,870          | \$136.84         | 2             | \$1,095    | \$85,965           |
| 2019         | 27,143                         | 0     | 2,752  | 29,895 | \$2.98                        | \$89,113          | \$139.57         | 2             | \$1,117    | \$90,230           |
| 2020         | 27,143                         | 0     | 2,752  | 29,895 | \$3.13                        | \$93,569          | \$142.37         | 2             | \$1,139    | \$94,708           |
| 2021         | 27,143                         | 0     | 2,752  | 29,895 | \$3.29                        | \$98,248          | \$145.21         | 2             | \$1,162    | \$99,409           |
| 2022         | 27,143                         | 0     | 2,752  | 29,895 | \$3.45                        | \$103,160         | \$148.12         | 2             | \$1,185    | \$104,345          |
| 2023         | 27,143                         | 0     | 2,752  | 29,895 | \$3.62                        | \$108,318         | \$151.08         | 2             | \$1,209    | \$109,527          |
| 2024         | 27,143                         | 0     | 2,752  | 29,895 | \$3.80                        | \$113,734         | \$154.10         | 2             | \$1,233    | \$114,967          |
| 2025         | 27,143                         | 0     | 2,752  | 29,895 | \$3.99                        | \$119,421         | \$157.18         | 2             | \$1,257    | \$120,678          |
| 2026         | 27,143                         | 0     | 2,752  | 29,895 | \$4.19                        | \$125,392         | \$160.33         | 2             | \$1,283    | \$126,674          |
| 2027         | 27,143                         | 0     | 2,752  | 29,895 | \$4.40                        | \$131,661         | \$163.53         | 2             | \$1,308    | \$132,969          |
| 2028         | 27,143                         | 0     | 2,752  | 29,895 | \$4.62                        | \$138,244         | \$166.80         | 2             | \$1,334    | \$139,579          |
| 2029         | 27,143                         | 0     | 2,752  | 29,895 | \$4.86                        | \$145,156         | \$170.14         | 2             | \$1,361    | \$146,518          |
| 2030         | 27,143                         | 0     | 2,752  | 29,895 | \$5.10                        | \$152,414         | \$173.54         | 2             | \$1,388    | \$153,803          |
| 2031         | 27,143                         | 0     | 2,752  | 29,895 | \$5.35                        | \$160,035         | \$177.01         | 2             | \$1,416    | \$161,451          |
| 2032         | 27,143                         | 0     | 2,752  | 29,895 | \$5.62                        | \$168,037         | \$180.55         | 2             | \$1,444    | \$169,481          |
| 2033         | 27,143                         | 0     | 2,752  | 29,895 | \$5.90                        | \$176,438         | \$184.17         | 2             | \$1,473    | \$177,912          |
| 2034         | 27,143                         | 0     | 2,752  | 29,895 | \$6.20                        | \$185,260         | \$187.85         | 2             | \$1,503    | \$186,763          |
| 2035         | 27,143                         | 0     | 2,752  | 29,895 | \$6.51                        | \$194,523         | \$191.61         | 2             | \$1,533    | \$196,056          |
| 2036         | 27,143                         | 0     | 2,752  | 29,895 | \$6.83                        | \$204,250         | \$195.44         | 2             | \$1,564    | \$205,813          |
| 2037         | 27,143                         | 0     | 2,752  | 29,895 | \$7.17                        | \$214,462         | \$199.35         | 2             | \$1,595    | \$216,057          |
| 2038         | 27,143                         | 0     | 2,752  | 29,895 | \$7.53                        | \$225,185         | \$203.33         | 2             | \$1,627    | \$226,812          |
| 2039         | 27,143                         | 0     | 2,752  | 29,895 | \$7.91                        | \$236,444         | \$207.40         | 2             | \$1,659    | \$238,104          |
| 2040         | 27,143                         | 0     | 2,752  | 29,895 | \$8.30                        | \$248,267         | \$211.55         | 2             | \$1,692    | \$249,959          |
| 2041         | 27,143                         | 0     | 2,752  | 29,895 | \$8.72                        | \$260,680         | \$215.78         | 2             | \$1,726    | \$262,406          |
| <b>Total</b> |                                |       |        |        |                               |                   |                  |               |            | <b>\$4,212,159</b> |

## EXHIBIT 9

### CALCULATION OF PROJECTED COMMODITY REVENUES FOR FAIRFAX WATER 2-BUILDING SCENARIO

Notes & Sources:

Assumes that construction on building 2 would have begun November 2008 and that water usage would have begun in January 2012. Assumes that construction on building 1 would have begun November 2009 and water usage would have begun in January 2013. Deposition Exhibit 75; Urban-00001473 - 74; e-mail with attachment from Matt Koirtyohann (February 7, 2008); and conversation with Brian Selfe.

- [A] 2012 from [1][C] on Exhibit 8. 2013 forward from [3][C] on Exhibit 8. Units multiplied by 158.9 gallons per day (gpd), divided by 1,000 gallons, multiplied by 365 days. Residential consumption based on multi-family dwelling unit demand of 158.9 gpd. Ani Kame'enui et al., Water Supply Reliability Forecast for the Washington Metropolitan Area Year 2025, Report No. 05-06, Interstate Commission on the Potomac River Basin (June 2005), at 4-10.
- [B] There is no hotel consumption in the 2-building scenario.
- [C] 2012 from [1][C] on Exhibit 8. 2013 forward from [3][C] on Exhibit 8. Square footage divided by 1,000 square feet, multiplied by 300 gallons per day, divided by 1,000 gallons, multiplied by 365 days. Retail consumption based on 300 gpd/1,000 SF of space. Virginia Administrative Code, at 12VAC5-590-690.
- [D] = [A] + [B] + [C].
- [E] Commodity fees based on adopted rate of \$1.83/1,000 gallons starting April 1, 2009. Fees assumed to increase 5% per year. See Fairfax County Water Authority, Schedule of Rates Fees and Charges, Schedule 6, April 1, 2009. See also Fairfax Water Strategic Financial Plan.
- [F] = [D] \* [E].
- [G] Service charge based on quarterly fee of \$114.5 for 4 inch meter starting April 1, 2009. Fees assumed to increase 2% per year. From conversation with Steven T. Edgemon and Fairfax County Water Authority, Schedule of Rates Fees and Charges, Schedule 6.
- [H] 1 meter per multi-family or hotel space.
- [I] = [G] \* [H] \* 4.
- [J] = [F] + [I].

**EXHIBIT 10**

**CALCULATION OF VARIABLE COSTS FOR FAIRFAX WATER'S RETAIL WATER SALES  
BASED ON 2009 BUDGET**

| <b>Retail Sales</b>    |  | <u>Volume (millions of gallons)</u> |                     |                     |
|------------------------|--|-------------------------------------|---------------------|---------------------|
| <u>Production</u>      |  |                                     |                     |                     |
| [1]                    | Estimated Total Wholesale Water Production | 24,760                              | 46.0%               |                     |
| [2]                    | Estimated Total Retail Water Production    | 29,014                              | 54.0%               |                     |
| [3]                    | Estimated Total Water Production           | 53,774                              | 100.0%              |                     |
| <u>Transmission</u>    |  |                                     |                     |                     |
| [4]                    | Wholesale Transmission                     | 127,950                             | 37.1%               |                     |
| [5]                    | Retail Transmission                        | 217,050                             | 62.9%               |                     |
| [6]                    | Total Transmission                         | 345,000                             | 100.0%              |                     |
| <b>Variable Costs</b>  |  | <u>Total Costs</u>                  | <u>Retail Share</u> | <u>Retail Costs</u> |
| <u>Power Purchased</u> |  |                                     |                     |                     |
| <u>Supply</u>          |  |                                     |                     |                     |
| [7]                    | Occoquan                                   | \$2,837,000                         | 54.0%               | \$1,530,716         |
| [8]                    | Potomac                                    | \$2,438,000                         | 54.0%               | \$1,315,434         |
| <u>Treatment</u>       |  |                                     |                     |                     |
| [9]                    | Griffith                                   | \$538,000                           | 54.0%               | \$290,280           |
| [10]                   | Corbalis                                   | \$3,401,000                         | 54.0%               | \$1,835,025         |
| <u>Transmission</u>    |  |                                     |                     |                     |
| [11]                   | Full system                                | \$1,760,000                         | 62.9%               | \$1,107,270         |
| <u>Distribution</u>    |  |                                     |                     |                     |
| [12]                   | Retail system                              | \$20,000                            | 100.0%              | \$20,000            |
| [13]                   | Purchased water                            | \$6,000                             | 100.0%              | \$6,000             |
| <u>Chemicals</u>       |  |                                     |                     |                     |
| [14]                   | Both Plants                                | \$9,629,000                         | 54.0%               | \$5,195,370         |
| <u>Waste</u>           |  |                                     |                     |                     |
| [15]                   | Corbalis Plant                             | \$438,000                           | 54.0%               | \$236,325           |
| [16]                   | Total                                      |                                     |                     | \$11,536,419        |
| [17]                   | Retail Production (millions of gallons)    |                                     |                     | 29,014              |
| [18]                   | Cost per 1,000 gallons                     |                                     |                     | \$0.40              |

Notes & Sources:

- [1]-[3] From Fairfax Water, 2009 Annual Budget, at 15 (December 11, 2008).  
 [4]-[6] From conversation with Steven T. Edgemon.  
 [7]-[8] From Fairfax Water, 2009 Annual Budget, at 33 (December 11, 2008).  
 [9]-[10] From Fairfax Water, 2009 Annual Budget, at 35 (December 11, 2008).  
 [11] From Fairfax Water, 2009 Annual Budget, at 37 (December 11, 2008).  
 [12] From Fairfax Water, 2009 Annual Budget, at 36 (December 11, 2008).  
 [13] From Fairfax Water, 2009 Annual Budget, at 34 (December 11, 2008).  
 [14] From Fairfax Water, 2009 Annual Budget, at 35 (December 11, 2008).  
 [15] From Fairfax Water, 2009 Annual Budget, at 30 (for Solid Waste Disposal) and 35 (for Waster Disposal Chemicals) (December 11, 2008).  
 [16] Sum of [7] through [15].  
 [17] From Fairfax Water, 2009 Annual Budget, at 25 (December 11, 2008).  
 [18] = [16] / [17].