REDACTED – FOR PUBLIC INSPECTION

March 2, 2016

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: ***Special Access for Price Cap Local Exchange Carriers*, WC Docket No. 05-25, *AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, RM-10593**

Dear Ms. Dortch:

I hereby submit this Supplemental Reply Declaration on behalf of Level 3 Communications, LLC and Windstream Services, LLC in this proceeding. I am currently serving as an outside consultant to the above-mentioned parties and am a Senior Consultant for a subsidiary of FTI Consulting.

The attached Reply Declaration contains Highly Confidential Information under the Protective Orders and should not be made publicly available. Parties who are admitted to the Protective Orders can request a copy of the Highly Confidential version of the Reply Declaration by contacting John Nakahata at Harris, Wiltshire & Grannis LLP (JNakahata@hwglaw.com)

Please do not hesitate to contact me at 202-274-4315 if you have any questions regarding this submission.

Sincerely,

Jonathan Baker

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Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Special Access Rates for Price Cap Local Exchange Carriers	)	WC Docket No. 05-25
	)	
	)	
AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services	)	RM-10593

SUPPLEMENTAL REPLY DECLARATION OF JONATHAN B. BAKER ON MARKET POWER IN THE PROVISION OF DEDICATED (SPECIAL ACCESS) SERVICES

I. Introduction

1. I have been asked by Level 3 Communications and Windstream to respond to various comments submitted in these proceedings on February 19, 2016. This declaration supplements the two declarations I have previously submitted in these proceedings.[1]

2. My initial declaration explained, based on an analysis of the structure of dedicated services markets, that providers of dedicated services are likely able to exercise market power in most markets, and

[1] Declaration of Jonathan B. Baker on Market Power in the Provision of Dedicated (Special Access) Services (dated Jan. 22, 2016) (attached to Letter from Jonathan B. Baker to Marlene H. Dortch, Secretary, FCC, WCC Docket No. 05-25, RM-10593 (filed Jan. 27, 2016) (Baker Decl.); Reply Declaration of Jonathan B. Baker on Market Power in the Provision of Dedicated (Special Access) Services (dated Feb. 19, 2016) (attached to Letter from Jonathan B. Baker to Marlene H. Dortch, Secretary, FCC, WCC Docket No. 05-25, RM-10593 (filed Feb. 19, 2016) (Baker Reply Decl.).

would be expected to charge prices above competitive levels unless prevented by regulation.[2] My initial declaration also explained why this conclusion is consistent with the statistical analysis of the FCC's special access data. Section II of this reply explains why none of the criticisms of my statistical analysis in comments submitted by incumbent local exchange carriers (ILECs)[3] leads me to question the conclusions I reached from analyzing those data: **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]**

3. Section III discusses two non-statistical issues raised in reply comments: the ILEC economists' incorrect assumption that dedicated services markets are competitive if an ILEC competes with only one CLEC (which includes cable firms providing dedicated services), or if an ILEC competes with no CLECs but a CLEC has facilities; and an ILEC's incentive

[2] Baker Decl. ¶ 51.

[3] Reply Comments of AT&T Inc., WC Docket No. 05-25, RM-10593 (filed Feb. 19, 2016) (AT&T Reply Comments); Reply Comments of CenturyLink, WC Docket No. 05-25, RM-10593 (filed Feb. 19, 2016) (CenturyLink Reply Comments); Reply Comments of Verizon, WC Docket No. 05-25, RM-10593 (filed Feb. 19, 2016) (Verizon Reply Comments).

[4] Baker Decl. ¶ 8.

to raise wholesale prices in order to limit the possibility that the resulting retail competition would result in lower ILEC retail prices. Section IV briefly concludes.

II. ILEC Criticisms of My Statistical Analysis of the FCC's Special Access Data Do Not Change My Views

4. The ILECs, including the ILEC Economic Reply Comments,[5] offer criticisms of my statistical analysis of the FCC's Special Access data in three main areas: the interpretation of the regression equations, the significance of missing data, and the direction of biases in the estimated coefficients. I discuss these in turn, and explain why none of these issues leads me to change my conclusions.[6]

A. Interpretation of Regression Equations

5. **[BEGIN HIGHLY CONFIDENTIAL]** [redacted]

[5] Declaration of Mark Israel, Daniel Rubinfeld and Glenn Woroch (Feb. 19, 2016) (Attachment A to AT&T Reply Comments) (ILEC Economic Reply Comments).

[6] In addition, my initial declaration has a minor expositional error, called to my attention by Verizon. *See* Verizon Reply Comments at 28-29. **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]**

[redacted] **[END HIGHLY CONFIDENTIAL]** The ILECs' criticism of my interpretation of the regression results is based primarily on two features of those results that I also report: **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]** This section also addresses several other issues with the interpretation of coefficients raised by the ILECs.

1. Variation in the Sign and Significance of Coefficients

6. Variation across regressions in the sign and statistical significance of the coefficients on variables that count the number of rivals does not mean that the data are uninformative as to the relationship between the number of rivals and ILEC retail prices, contrary to what the ILECs suppose.[10] **[BEGIN HIGHLY CONFIDENTIAL]** [redacted]

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[7] Baker Decl. ¶¶ 62, 66.

[8] Baker Decl. ¶¶ 60, 62. *See* ILEC Economic Reply Comments ¶13 at 6 ("the results of the regression reported by Prof. Baker are a checkerboard of positive, negative and insignificant results"); *id*. at 7 ("When Prof. Baker computes standard errors by clustering by special access location and provider, … he finds that many of the results in his analysis become statistically insignificant.").

[9] Baker Decl. ¶ 64. *See* Verizon Reply Comments at 29-30 (comparing the magnitude of individual regression coefficients within and across regressions); ILEC Economic Reply Comments ¶ 24 (same).

[10] *Compare* ERNST R. BERNDT, THE PRACTICE OF ECONOMETRICS: CLASSIC AND CONTEMPORARY 160 (1991) ([T]the practicing econometrician in labor economics is typically forced to make use of data that are considerably less than ideal….[I]n spite of these serious measurement problems, much has been learned

[redacted] **[END HIGHLY CONFIDENTIAL]**

2. The Magnitude of Specific Coefficients

7. The limits to the precision with which the data analysis ties down the magnitude of specific coefficients (which are evident from comparing the results of estimating alternative specifications), call for caution in interpreting relative magnitudes of individual coefficients. **[BEGIN HIGHLY CONFIDENTIAL]** [redacted]

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concerning the determinants of wages.") *with* ILEC Economic Reply Comments ¶13 at 6 (the results "cannot be used to draw any specific inference about the relationship between special access competition and prices with any confidence").

[11] Baker Decl. ¶¶ 68-95. If the true coefficients are negative, the estimated coefficients could be negative and smaller in magnitude, or positive. *Id.* at ¶ 74.

[redacted] **[END HIGHLY CONFIDENTIAL]**

Because the magnitude of the biases likely differs across samples, moreover, inferences made from comparing the magnitude of specific coefficients across regressions are unlikely to be correct.[14] In addition, inferences made by comparing cumulative or average effects within or across regressions, both of which are derived from summing several regression coefficients, are likely to be more reliable than inferences made by comparing the magnitude of individual coefficients within or across regressions, contrary to what the ILEC economists suggest.[15]

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[12] **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]** ILEC Economic Reply Comments ¶¶ 11, 18; AT&T Reply Comments at 12. **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]**

[13] In addition, many CLECs experience impediments to output expansion, so do not provide a substantial constraint on high retail prices charged by ILECs. Baker Decl. ¶ 82 (CLECs that face substantial impediments to output expansion would not constrain ILEC prices). The coefficient estimates average the incremental effects of rivals that provide limited and more substantial constraints on ILEC prices, *id.* at ¶ 84, so they understate the magnitude of the price reduction associated with a significant rival (one less subject to impediments to expansion).

[14] Verizon makes inappropriate inferences by comparing the magnitudes of specific coefficients. Verizon Reply Comments at 28-29.

[15] **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]** That inference is not called into question by the differences in the magnitudes of individual coefficients across various regressions that the ILEC economists point to. *See* ILEC Economic Reply Comments ¶ 24 (in many regressions, "the effect of a nearby competitor is … larger than the effect of an in-building competitor").

3. Method of Testing Statistical Significance

8. My initial declaration reports significance tests based on robust standard errors, and, in the alternative, discusses significance tests based on clustering those standard errors on provider and location. Clustering was undertaken in the alternative as a robustness test.[16] The ILEC economists prefer to rely on clustered standard errors.[17]

9. Nothing important to the interpretation of the regression results turns on the choice between the two approaches to testing statistical significance. That choice does not affect the magnitude of any estimated coefficient. **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]**

4. Nearby Rivals Absent In-Building Competitors

[16] Clustering would be appropriate, for example, if the errors in measuring price across customers of the same provider within a location are expected to be correlated for reasons unobservable to the econometrician. Non-spurious correlations along these lines are possible, but the ILEC economists do not suggest any reason to expect them, so clustering is not necessarily appropriate when estimating the regression models I specified.

[17] ILEC Economic Comments ¶ 41.

10. The ILEC economists also observe that the reported coefficients on the number of nearby rivals in my regression equations are averages of the effect of nearby rivals when there are many in-building competitors and the effect of nearby rivals when there are few or no in-building competitors. They are most interested in the effect of nearby rivals when there are few or no in-building competitors.[18]

11. In the FCC's Special Access Data, customers in the great majority of buildings have few or no in-building competitors. **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]** For that reason, the estimated coefficients on the number of nearby rivals are most likely dominated by the effect of nearby rivals when there are few or no in-building competitors – the effect the ILEC economists are most concerned to identify.

5. Regulatory Treatment

12. AT&T also contends that my results are not meaningful because they do not control for differences in regulatory treatment across regions (*i.e.,* whether the ILECs are subject to price caps or to phase I or phase II

[18] ILEC Economic Reply Comments ¶ 35.

[19] Baker Decl. ¶ 44.

pricing flexibility).[20] To address that concern, I added fixed effects accounting for regulatory treatment to the primary specification. The coefficients on variables accounting for the number of rivals were similar to those reported for the primary specification in my initial declaration.[21]

13. **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]** Both approaches to accounting for regulatory treatment show that doing so does not change the results of my analysis or the conclusions I draw from it.

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[20] AT&T Reply Comments at 6. The ILEC economists also appear to suppose that ILEC prices cannot vary across customers in price cap areas. *See* ILEC Economic Reply Comments at 19. But the price caps do not apply to all dedicated services; many large ILECs offer Ethernet services outside of price caps. Moreover, an ILEC has an incentive to market its term discount plans to large retail customers in response to CLEC competition, and it can lower prices of regulated dedicated services in response to potential or actual CLEC entry by reengineering circuits to reduce channel mileage charges or by revising the boundaries of price zones. In addition, ILECs have pricing flexibility in phase I areas, even though price caps apply.

[21] **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]**

[22] *See* Baker Decl. ¶ 62 & n. 57.

B. The Significance of Missing Data

14. The ILEC economists contend that two types of missing data make my regression results biased and unreliable.[23] First, the ILEC economists observe that prices are unavailable for some locations in the FCC's Special Access Data. Second, the ILEC economists claim that I undercount the number of rivals offering service in a building or nearby. For the reasons indicated below, neither of these issues causes me to question the conclusions I reached in my initial declaration.[24]

1. Missing Prices

15. The ILEC economists observe that measures of price may be unavailable in the FCC's Special Access Data for some locations where dedicated services are provided, and that locations reported by filers that have no reported prices are not distributed uniformly across regions and

[23] The ILEC economists also discuss a third possibility: measurement error from locations recorded in the data without an association with a specific building. ILEC Economic Reply Comments ¶ 32. If missing building associations were to bias estimates of the relationship between number of providers and ILEC retail prices, that bias would arise from undercounting the number of CLECs. **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]**

[24] The ILEC economists also say that in deriving a measure of price from the information supplied by providers, out-of-cycle adjustments or discounts should not have been included given that non-recurring charges were not included. ILEC Economic Reply Comments ¶ 28 n.21. Out-of-cycle adjustments were included on the view that they likely reflected, in substantial part, adjustments to prices (as from billing errors), while non-recurring charges more likely are unrelated to prices. Nothing important turns on the choice between the two methods of measuring price. When the primary specification was re-estimated with price measured with out-of-cycle adjustments excluded, as the ILEC economists propose, the estimated coefficients on variables accounting for the number of rivals were close to those reported in my initial declaration.

across providers.[25] If the distribution of missing prices is correlated with the price level, the estimated coefficients in my regression analyses would be biased if they are interpreted as describing the relationship between the number of rivals and price for all dedicated services.[26] The resulting sample selection bias could go in either direction.

16. Empirical tests show that this possibility is not a concern for interpreting the regressions presented in my initial declaration, as the regression results are not sensitive to the inclusion of states or providers with a relatively high proportion of missing prices. **[BEGIN HIGHLY CONFIDENTIAL]** [redacted]

[25] ILEC Economic Reply Comments ¶ 30.

[26] The estimated coefficients would not be biased if interpreted as describing the relationship only for the locations where prices are available. **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]** (This is a lower percentage than the ILEC economists report, presumably because of differences in the way the data were cleaned.) Not all locations would be expected to be associated with prices, as the data includes locations where providers were capable of offering service but were not actually doing so.

[27] **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]**

[redacted] **[END HIGHLY CONFIDENTIAL]**

2. Counting the Number of Rivals

17. The ILEC economists also claim that I systematically undercounted the number of in-building rivals because I excluded all connections supplied by cable companies.[28] This is incorrect. As indicated in my initial declaration, the Special Access Data includes information about cable providers offering dedicated services.[29] Those cable firms were included when counting the number of in-building and nearby providers.[30]

C. Direction of Biases in the Estimated Coefficients

[28] ILEC Economic Reply Comments ¶ 31.

[29] *See* Instructions for Data Collection for Special Access Proceeding, WC Docket No. 05-25, RM-10592 (Dec. 5, 2014) at 2 (indicating that cable systems operators must respond if they provide dedicated services).

[30] If the cable provider had a fiber connection but was not offering dedicated services, no price would be reported for the connection but the connection was counted when identifying in-building or nearby competitors. Cable connections identified on the National Broadband Map that were not identified in the Special Access Data were not included. Those connections may be used, among other things, to provide best efforts broadband, which is not a substitute for dedicated services, and services to residences, which are not locations where dedicated services would be purchased.

18. **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]** The ILEC economists do not question any of these reasons. Instead, the ILEC economists claim that my analysis does not account for two additional possibilities that could bias the results in the opposite direction: missing price data, or the possibility that CLECs enter where costs of service are low (endogeneity of entry). **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]**

1. Endogeneity of Entry

19. For the reasons indicated in section II.B.1, missing price data does not bias the results in the way the ILEC economists postulate. This section explains why the endogeneity of entry is also unlikely to do so.

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[31] Verizon also argues that my regressions are flawed because the ILECs do not price on a building-specific basis, but instead provide uniform prices across large geographic areas. Verizon Reply Comments at 28, 33. **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]**

20. The ILEC economists' theory is that CLECs are more likely to enter at locations where their costs are low and bandwidth demand is high, such as urban centers and office parks.[32] Were that to occur, they continue, prices would be low (because costs are low) and the number of rivals would simultaneously be high (because demand is high).[33] **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]**

21. The ILEC's theory of bias based on endogeneity of entry is implausible, however, because the regressions include fixed effects for census tracts and a control variable that increases with (the logarithm of) bandwidth. Given the small size of most census tracts,[35] the location fixed effects would be expected to remove most variation in cost that depends

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[32] ILEC Economic Reply Comments ¶ 34.

[33] *Id.*

[34] ILEC Economic Reply Comments ¶ 38.

[35] **[BEGIN HIGHLY CONFIDENTIAL]** [redacted] **[END HIGHLY CONFIDENTIAL]**

on distance between the customer and the provider's fiber facilities. Other costs of serving buildings may vary within a census tract, such as building access fees or costs of obtaining rights of way. But the latter costs are unlikely to be correlated with the bandwidth demanded by all the customers in a building, which the ILECs presume to be related to the number of firms serving that building. Even if those costs were correlated with bandwidth, moreover, the control variable accounting for bandwidth would help account for that correlation,[36] removing the possibility of the bias the ILECs hypothesize.

2. Instrumental Variables Estimation

22. The ILEC economists also observe that I did not seek to correct for the biases I identified through instrumental variables estimation.[37] To do so would require identifying instruments with the appropriate statistical characteristics. Yet the ILEC economists did not suggest any specific, observable instruments that might have these characteristics,[38] nor make any other attempt to correct these biases through estimation. Hence their

[36] The regression equations can be thought of as reduced form relationships explaining price. If costs are correlated with bandwidth, controls for bandwidth would appear in the underlying structural equations for both supply and demand, and the bandwidth control in the regression would account for the net effect on price.

[37] ILEC Economic Reply Comments ¶ 36.

[38] My reference to instrumental variables estimation in a footnote was presented in order to clarify one of the six statistical issues I discussed, and did not identify specific, observable instruments that would be appropriate for addressing that or any other statistical issue in the regressions. Baker Decl. ¶ 74 n. 62.

reference to instrumental variables estimation is an academic discussion, not a criticism of my report.

III. Other Issues

A. Bidding Markets

23. The ILEC economists, in their reply comments, claim that dedicated services markets are subject to "intense competition" even if an ILEC competes with only one CLEC (including a cable firm providing dedicated services), either in the same building or nearby.[39] This claim is a version of the incorrect assertion that in bidding markets, two firms, or even one firm subject to potential competition from an entrant, is enough to create a competitive market. I explained why this assertion is incorrect in my reply declaration.[40]

B. High Wholesale Prices

24. AT&T and Verizon dispute my conclusion, which is based in part on the FCC's Special Access Data, that ILECs often charge a high price for wholesale connections relative to the retail price they charge for similar connections.[41] But neither presents any data analysis, whether based on

[39] ILEC Economic Reply Comments ¶ 13 at 11 ("[W]ith even one competitor connected to (or nearby) a building, customers within the building will generally enjoy the benefits of intense competition among providers ....").

[40] Baker Reply ¶¶ 11-13.

[41] AT&T Reply Comments at 50 n. 132 (citing Baker Decl. ¶ 38); Verizon Reply Comments at 37-38.

the FCC's Special Access Data or its own internal records, that shows otherwise.

25. Moreover, neither AT&T nor the ILEC economists question my observation that ILECs may have an incentive to raise wholesale prices in order to limit the possibility that the resulting retail competition would result in lower ILEC retail prices.[42] Verizon contends that exclusionary pricing behavior "is exceedingly unlikely once facilities-based competitors have entered the marketplace" on the view that if a facilities-based rival later exits, its facilities would be purchased by some other firm and remain in the marketplace.[43] The contention's limitation to conduct after CLEC entry appears to concede that an ILEC can prevent such entry through exclusionary pricing. In addition, the argument is concerned only with whether exclusionary conduct leads to CLEC exit. It does not address the ability of an ILEC to maintain market power at retail after CLEC entry has occurred by discouraging aggressive retail price competition from CLECs (whether or not it induces CLEC exit).[44]

IV. Conclusion

26. Nothing in the reply comments filed by any ILEC, or the ILEC economists, leads me to question the conclusion I reached in my initial

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[42] Baker Decl. ¶ 38 & ¶ 38 n. 30.

[43] Verizon Reply Comments at 36.

[44] *See generally* Baker Reply Decl. ¶ 14-16 (discussing the incentive and ability of a vertically-integrated ILEC to exclude CLEC rivals and harm competition by setting a high wholesale price relative to its retail price (*i.e.,* by creating a "price squeeze"), with references to the economic literature).

report that ILECs likely exercise market power in most dedicated services markets and would be expected to charge prices above competitive levels unless prevented by regulation.

I declare under penalty of perjury that the foregoing is true and correct to the best of my information and belief.

_____ Executed on March 1, 2016
Jonathan B. Baker