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FILED/ACCEPTED

OCT 29 2009

Federal Communications Commission  
Office of the Secretary

October 29, 2009

Marlene Dortch  
Office of Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street SW  
Washington, DC 20554

Re: In the Matter of A National Broadband Plan for our Future; GN Docket No. 09-51

Dear Ms. Dortch:

Attached are two copies of AT&T Inc.'s Redacted version of our response as required by the protective order in the above referenced docket. If you have any questions, please contact me at 202-457-2107.

Sincerely,

/s/ Joseph Marx

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NP&E Response to AT&T Federal Regulatory Request

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## LEGAL (FCC TO AT&T) QUESTIONS AND RESPONSES (PART ONE – FOLLOW UP)

The task of developing a model to accurately assess the costs of building and deploying a wireless broadband network across various topologies is not an easy task. There are a significant number of variables that vary based on the specifics of a unique area that make it nearly impossible to generalize and come up with an accurate answer. With that in mind, we have provided as much information as possible (subject to policies that prevent the release of sensitive information) to answer the questions posed by the FCC.

1. Can you share traffic characteristics in your network today, especially as it relates to network planning? So, for example:
  - a. What are usage characteristics by user-type? [I.e., Smartphone, PC, iPhone, etc.]
    - i. Smartphones, including iPhone, Blackberry etc., consume significant data network capacity.
    - ii. PC users who connect via 3G wireless data cards consume significantly more average capacity.
    - iii. \*\*REDACTED\*\*
    - iv. Significant growth is expected in the future with MB/month per subscriber doubling in some cases over the next 2 years.
  - b. What are current network needs? And what are relevant trends?
    - i. The greatest need is wireless network capacity and it is driven by the most significant trend which is ever increasing data demand which drives need for additional bandwidth, spectrum and footprint.
    - ii. AT&T wireless total data usage has increased nearly 5,000 percent during last 12 quarters (2Q06-2Q09). A small number of users consume a disproportionate amount of data: the top 3 percent of smartphone customers use 40 percent of all smartphone data.
    - iii. As we continue to address capacity and coverage requirements driven by our customers' demands, we are challenged at times by regulatory issues (zoning, permitting, etc...) that impede our growth efforts.
  - c. What is the DL:UL asymmetry today? [E.g., you have told us that U-verse sees ~82Kbps busy hour traffic per sub, which is ~10% of daily usage.]
    - i. \*\*REDACTED\*\*
2. What user experience do you typically dimension your current GPRS/EDGE and HSPA deployments for? For example:
  - a. what cell-edge rates do you target?

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- i. \*\*REDACTED\*\*
    - b. What over-subscription do you target?
      - i. \*\*REDACTED\*\*
  3. Can you provide estimates of the following upgrade costs per site with an illustrative breakdown by equipment and installation:
    - a. GSM to HSPA
    - b. HSPA to HSPA 7.2
    - c. HSPA to LTE
      - i. Except for HSPA to HSPA 7.2 each technology stands alone; saying "upgrade" is a misnomer. The cost to deploy HSPA to an existing location varies by type of existing plant installed as well as specific site preparation. The costs affect both capital and expense due to transport requirements as well as potentially increasing tower rents. \*\*REDACTED\*\*. The expense cost (lease and transport) vary greatly by carrier, landlord, and capacity required.
        - ii. \*\*REDACTED\*\*
        - iii. \*\*REDACTED\*\*
  4. What are the core costs for HSPA? What do you expect the costs to be for LTE? [Let us use cost per sub or cost per Mbps as the basis of comparison.
    - i. We are currently in negotiation with vendors for the deployment of LTE technology and as a result, we may not provide this information.
  5. Can you give us an illustrative breakdown of the OPEX for a 3G network? [E.g., what is the site OPEX? Etc.]
    - i. \*\*REDACTED\*\*

\*\*REDACTED\*\*

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b. How do you expect it to change with LTE?

i. **\*\*REDACTED\*\***

6. **Bringing 4G to the last 5%:**

- a. What do you estimate will be the cost per site (or pop covered) to bring 4G to the last 5% in your current coverage area? [By cost, we refer to both CAPEX and OPEX]
- b. What do you estimate the same cost is for those not in your current wireless service area?
- c. In most areas that are currently not in your service area, how does the cost per site differ from those that are in your service area? Alternately, in areas that you don't serve currently, to what extent is the decision based on higher cost considerations?

i. The cost structure varies greatly depending on a number of factors including:

- Civil Engineering (environmental requirement, etc.)
- Spectrum used
- Leasing Costs
- Permitting Costs
- Topography
- Backhaul requirements (fiber versus microwave)
- Utilities availability

7. **4G deployment in a metropolitan area:** We want to deploy a 4G network in a metropolitan area (like the Greater Washington DC area) that delivers X Mbps down/Y Mbps up (1.5Mbps Down and 0.25Mbps Up, say) in 90% of its coverage area during busy hour. We can segment the area by population densities. Let us assume that we are building the network for 25% penetration. Help us understand what the network deployment will look like. For example:

- a. Cell sites: Can you walk us through a simple model (using, e.g., LTE link budgets, RF propagation models, busy hour traffic characteristics, population densities, etc.) that can help us get to a good answer on realistic 4G deployment economics in metropolitan areas?
- b. What would be the cell radius of these sites?
- c. What other factors can drive the answers (or variations to the answer) above?
- d. Can you provide an illustrative breakdown of the CAPEX and OPEX of such a 4G deployment?

i. We are currently in negotiation with our LTE vendors and as such we can not provide detailed costs in these areas. As suggested in the answer to question 6, the capital and operating costs will vary significantly based on the factors listed.

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### LEGAL (FCC TO AT&T) QUESTIONS AND RESPONSES (PART TWO - OPEX)

1. **Cost of Sales:** Can you provide us with a break-down of the cost of sales for 2006 through 2008:
  - a. Employee costs (assumed this part of Cost of Sales)
  - b. Cell site & maintenance
  - c. Utility costs
  - d. Switch & backhaul
  - e. Regulatory fees
  - f. Reseller costs
  - g. Interconnect Costs
  - h. Roaming costs
  - i. Long Distance costs
  - j. Other (please identify)

Some of the data requested may be found in AT&T Company Reports and SEC Filings at the Corporate Web Site below:

<http://www.att.com/gen/investor-relations?pid=5691>

2. **SG&A Costs:** Can you provide us with a break-down of the SG&A costs 2006 through 2008:
  - a. Selling Expense
  - b. Upgrade Commissions
  - c. Customer Service Costs
  - d. Customer Maintenance Costs
  - e. Bad Debt
  - f. Support costs / Admin. Costs
  - g. Billing Expenses
  - h. Other (please list)

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3. **Cost of Sales for the last 10%:** For bringing 3G to the last 10% of your coverage area, please indicate what the estimated incremental costs would be as a percent of the 2008 costs & per incremental subscriber:

- a. Employee costs (assumed this part of Cost of Sales)
- b. Cell site & maintenance
- c. Utility costs
- d. Switch & Back haul
- e. Regulatory fees
- f. Reseller costs
- g. Interconnect Costs
- h. Roaming costs
- i. Long Distance costs
- j. Other (please identify)

i. We have not studied deployment based on that cost structure; We estimate cost based on engineering assumptions as to how many sites are required to provide coverage in a specified area based on our spectrum position in that area. This kind of analysis cannot be easily generalized in per subscriber cost structure.

4. **SG&A Costs for the last 10%:** For bringing 3G to the last 10% of your coverage area, please indicate what the estimated incremental costs would be as a percent of incremental revenue:

- a. Selling Expense
- b. Upgrade Commissions
- c. Customer Service Costs
- d. Customer Maintenance Costs
- e. Bad Debt
- f. Support costs / Admin. Costs
- g. Billing Expenses
- h. Other (please list if material (i.e., > than 5%))

i. We have not studied deployment based on that cost structure; We estimate cost based on engineering assumptions as to how many sites are required to provide coverage in a specified area based on our spectrum position in that area. This kind of analysis cannot be easily generalized in per subscriber cost structure.

5. **Cost of Sales for 4G:** If your network was 4G, please indicate what the estimated total 2008 cost would be as a as a percent of the actual 2008 cost by the following expense categories assuming the same current coverage and per incremental subscriber:

- a. Employee costs (assumed this part of Cost of Sales)
- b. Cell site & maintenance
- c. Utility costs

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- d. Switch & backhaul
- e. Regulatory fees
- f. Reseller costs
- g. Interconnect Costs
- h. Roaming costs
- i. Long Distance costs
- j. Other (please list if material (i.e., > than 5%)
  - i. We are currently in negotiation with vendors for the deployment of LTE technology and as a result, we may not provide this information.

6. **SG&A Costs for 4G:** If your network was 4G, please indicate what the estimated total 2008 cost would be as a percent of the actual 2008 cost by the following expense categories assuming the same current coverage:

- a. Selling Expense
- b. Upgrade Commissions
- c. Customer Service Costs
- d. Customer Maintenance Costs
- e. Bad Debt
- f. Support costs / Admin. Costs
- g. Billing Expenses
- h. Other (please list if material (i.e., > than 5%)
  - i. We are currently in negotiation with vendors for the deployment of LTE technology and as a result, we may not provide this information.

7. For 2009, please indicate what AT&T charges other providers to access your wireless network per MOU (roaming) during busy hour segregated between voice & data. If AT&T's network was 4G, estimate what roaming charge would be as a percent of the actual 2009 charges segregated between voice & data. If the roaming costs charged to other providers would vary by population density (i.e., rural area versus urban area), provide detail how this would vary.

- i. We are not able to provide this information as it is considered sensitive information.

8. For 2009, please indicate what AT&T charges other providers to access your wireline network per MOU during busy hour segregated between voice & data. If available, provide this for each of the 22 states your ILEC's operate in and/or by ILEC entity (i.e., PacBell, Nevada Bell, BellSouth, SW Bell, etc....).

9. For 2004 through 2008, please provide total number of cell sites.

- i. See table below (Cell site count in thousands)

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<b>AT&amp;T Mobility - RSEG</b>					
<b>Cell Site Count</b>					
<b>2004 to 2008</b>					
<b>Cell Site Count</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Cingular Wireless	25.0	29.0	44.8	48.5	50.3
AT&T Wireless	15.0	14.0	-	-	-
<b>Total Cell Site Count</b>	<b>40.0</b>	<b>43.0</b>	<b>44.8</b>	<b>48.5</b>	<b>50.3</b>

10. For internal planning and/or capital budgeting purposes, what cost per incremental subscriber does AT&T use to estimate the deployment cost in the last 10% of your coverage area.

i. **\*\*REDACTED\*\***

11. Based on a 100% 4G deployment, the following margins assuming the current total coverage:

- Operating Margin
- As a % of Revenue, the recurring variable operating expense
- As a % of revenue, the non-recurring variable operating expense
- As a % of revenue, fixed costs.

i. We are currently in negotiation with vendors for the deployment of LTE technology and as a result, we may not provide this information.

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## LEGAL (FCC TO AT&T) QUESTIONS Follow-up questions from 10/23

1. We are trying to scope the size of the “underserved and unserved by mobile broadband” problem. **\*\*REDACTED\*\***. Can you provide some more details on the areas that are not covered by 3G? E.g., what is the distribution of population densities of these areas, how much land mass, etc?
  - a. By contrast, how would you characterize the areas that have 3G? And what % of your cell sites has 3G?

i. **\*\*REDACTED\*\***

ii. **\*\*REDACTED\*\***

2. Should we assume that all of your 3G coverage area will upgrade to LTE within the next 3-5 years? Or, should we assume that some portion of your network will continue to operate 3G only?
  - a. If some sites will continue to operate 3G only, can you provide some details on these areas (similar to in (1) above)?

i. Currently our 3G footprint does not completely overlay all covered areas for AT&T. We will extensively cover our existing 3G footprint with LTE. We are working through the analysis how much further our deployments of 3G & LTE will cover

3. We would like to understand the extent to which we can expect adequate backhaul to be available at tower sites in 3-5 years. How would you describe the backhaul availability at your sites today? E.g., could you please provide the following information:
  - a. What percentage of your 3G sites today has the following backhaul available?

	Urban	Suburban	Rural
Fiber-fed			
Microwave			
Copper-fed or T-1s			

- b. How do you expect the distribution above to change in 3-5 years?

i. **\*\*REDACTED\*\***

ii. **\*\*REDACTED\*\***

iii. **\*\*REDACTED\*\***

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Microwave sites are extremely rare and are not used to by AT&T for connectivity to cell sites.

The percentage of sites with fiber will continue to increase, most significantly to UMTS 3G sites that are HSPA 7.2 enabled. The plan will be for 90% of our existing 3G network to be deployed with HSPA 7.2 by the end of 2011 and more than 95% of these 3G HSPA 7.2 sites in franchise territory will be fiber fed in that same timeframe based on current strategy.