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January 19, 2010

Filed Electronically Via ECFS

Marlene H. Dortch, Secretary
Office of the Secretary
Federal Communications Commission
445 12th Street, SW, Room TW-A325
Washington, DC 20554

Re: Supplement to Ex Parte Presentation - WT Docket No. 06-229

Dear Ms. Dortch:

During recent *ex parte* meetings between the North Dakota Rural Telecom Coalition ("RTC") and certain Commission employees (reflected in RTC's January 8, 2010 letter in the above-referenced proceeding), it was requested that RTC provide additional information on certain points noted in its presentation about the waiver request filed by New EA, Inc. dba Flow Mobile ("Flow Mobile" or "Flow"). In response to these requests, RTC is providing the following information:

Costs of Establishing LTE Coverage in North Dakota

As described in RTC's November 16, 2009 Reply Comments and January 8, 2010 *ex parte* presentation in this proceeding, Flow Mobile's claims that its technology can be deployed for one-tenth the cost of 3G or LTE are wildly inaccurate. RTC has demonstrated the flaws in Flow's cost claims at pps. 13-17 of the RTC Reply Comments, in the January 8 *ex parte* presentation at pages 6-9 of Attachment A, and in Slide 25 of the power point presentation. Therein, RTC pointed out that its members had hired Vantage Point Solutions to formulate a proposal to provide a new LTE public safety broadband network covering at least 95% of North Dakota. Vantage Point found that a statewide network can be built providing LTE (the technology already designed by the Public Safety Spectrum Trust) for approximately $65 million, not the $528 to $700 million that Flow has claimed. Details about the system proposal are included in Attachment A. The $65 million estimate covers features that are vital to a public safety system, such as backup power, network redundancy, and even the cost of CPE. These costs do not appear to be accounted for in Flow Mobile's $45 million dollar estimate for its network, which would employ 80 foot utility poles that will be vulnerable to floods, tornadoes and other adverse conditions.

RTC has not pursued its network proposal further because it became aware that Verizon Wireless submitted a proposal to North Dakota to adapt its existing 3G and future 4G network to accommodate a statewide mobile broadband capability for public safety use, at a fraction of the cost of a new network. As shown in Attachment A hereto, Vantage Point estimates that Verizon will be able to leverage its 4G network to provide public safety broadband for under $15 million – less than a third of the cost of Flow Mobile's proposed $45 million network. More importantly, the Verizon network would allow the State access to 3G EVDO now, with a seamless transition to 4G LTE as Verizon upgrades its nationwide network to LTE technology over the next few years. Thus, the Verizon solution will follow the path endorsed by PSST and the rest of the public safety community, while the Flow network will not be interoperable with LTE and will have to be replaced. Moreover, Flow has admitted that it will charge the State the same cost ($55-$60 per month/per card) that Verizon charges for its mobile broadband service. Thus, any cost savings claimed by Flow are illusory.

More detailed information about flaws in Flow Mobile's cost claims is contained in RTC's January 8, 2010 ex parte presentation in the above-captioned proceeding.

Governor's Endorsement of Flow Mobile Network

During one of the meetings reflected in RTC's January 8 ex parte letter, a Commission staff member observed that Flow Mobile had provided a letter from the Governor of North Dakota appearing to endorse the Flow network. RTC wants to ensure that the Commission is aware that North Dakota subsequently rescinded any endorsement of Flow as North Dakota's choice for a public safety network. In particular, we are providing as Attachment B hereto Governor John Hoeven's August 11, 2009 letter to Flow Mobile. The letter states in unequivocal terms that:

> The State has not started the competitive bidding process to identify the entity that will prov[id]e the service and therefore has not selected nor endorsed a specific company or entity to provide the State with the service. Any company applying for a stimulus grant should not represent that the State has selected its products or company to develop a statewide mobile broadband emergency network, only that the State wants to develop a statewide mobile broadband emergency communications network.

It does not appear from the docket that Flow Mobile ever supplemented its waiver request to bring this subsequent letter from the Governor to the Commission's attention.

The Waiver Context Should Not Force A Rushed Decision That Will Have Harmful Long-Term Consequences

The Commission's frustration over the time it has taken to implement an interoperable public safety network is understood; however public safety has taken extraordinary strides to achieve the accord it has reached in designating LTE as the uniform technology for public safety broadband. The threshold has also been reached for the ability to implement LTE, and its universal acceptance is widely understood. Polluting the public safety spectrum with an interfering and non-interoperable technology such as Flow's at this late hour would subvert the long and hard efforts of the entire public safety community to date, and only make it more

difficult for public safety to accomplish the last step in what has been a complicated process. Therefore, the Commission should deny the North Dakota and Flow waiver requests, and should instead support public safety's unanimous selection of LTE and its final steps toward a truly interoperable network solution.

Consistent with section 1.1206 of the Commission's rules, 47 C.F.R. §1.1206, one copy of this notice is being filed electronically in the above-captioned proceeding. Please direct any questions concerning the above matter to the undersigned at (202) 659-0830.

Sincerely,

D. Cary Mitchell, Esq.

cc: FCC Attendees (via email)

Attachment A

Statement of John M. De Witte, P.E – Vantage Point Solutions, Inc.

RTC Analysis of LTE versus Flow Mobile Network Costs

&

CapEx Estimations for ND State 700 MHz LTE Project

VantagePoint
Customer Focused. Technology Driven.

January 19, 2010

Federal Communications Commission
Washington, DC 20554

Re: PS Docket No. 06-229

Vantage Point Solutions, Inc. (VPS) has been asked to provide additional information concerning its earlier analysis of the technical arguments contained in the November 16, 2009 "Comments of New EA dba Flow Mobile" and the related attachments, concerning the waiver requests filed by Flow Mobile and the State of North Dakota to allow use of the 700 MHz broadband and narrowband spectrum for a proposed statewide broadband system. VPS is providing the attached further analysis, focusing on the cost of building 3G and LTE coverage to the State of North Dakota. Our analysis is based on sound engineering principles and available technical and industry data, including data that we developed last year when assessing the costs for a new statewide LTE public safety system to be built by the members of the North Dakota Rural Telecom Coalition ("RTC").

VPS is a telecommunications engineering and consulting firm in Mitchell, South Dakota, with a full-time staff of over 100 employees. We will be glad to provide the Federal Communications Commission with additional information as may be helpful in reviewing this matter.

Respectfully Submitted,

John Michael De Witte
Vice President of Engineering

2211 North Minnesota Street, Mitchell SD 57301 | Phone: 605-995-1777 | Fax: 605-995-1778 | www.vantagepnt.com

RTC Analysis of LTE versus Flow Mobile Network Costs

RTC's Ex Parte comments of January 8, 2009 include a section addressing the grossly misstated claims of Flow Mobile as to network costs, especially the claim that finishing a 3G network, let alone constructing a new 4G network in ND, would cost $528 and even $700 Million. Flow claims that its costs would be one tenth of these figures, or even one twentieth, as it claimed in a paid article in the Bismarck Tribune on January 6, 2010. Based on its own cost analysis (performed last summer when RTC's members were formulating a proposal to North Dakota to build an LTE network), RTC has determined that the range of costs claimed for the Flow Mobile system are too low to account for the requirements of a public safety network. RTC also determined that the real costs for Flow's network would be in the same range as the costs for <u>any</u> mobile broadband provider constructing a new network to serve North Dakota public safety. This is because <u>all</u> mobile broadband network providers (regardless of their chosen technology) will be faced with the same challenges and costs for supporting structures, robust and survivable broadband backhaul, hardened power supplies and other ancillary facilities and the like, in order to roll out a necessarily highly available public safety network with ubiquitous RF coverage. Any savings in the cost of the radio access electronics alone simply will not reduce the cost of such a network by even one third, let alone by 90% or 95% as claimed by Flow. Such claims are preposterous.

RTC discusses at length in its January 8 Ex Parte Comments (at pages 6 through 9 of Attachment A) how the algorithms cited by Flow for determining 3G/4G provider network costs, besides being outdated by more than two years, are taken out of context to the point of absurdity; and how the resulting incredible costs claimed for a 3G and/or LTE system are thus inflated by a power of ten. To provide realistic information on the subject of costs therefore, RTC is providing the attached high-level Capital Expenditure estimations for a completely new LTE network for ND, which, even in this highly conservative assumption, amounts to $65 Million, not $700 Million. RTC drew up its proposal to deploy an LTE network for North Dakota, composed of 142 tower sites statewide, the predicted coverage from which encompasses over 95% of the state's total geography, as depicted in the coverage map in Figure 1 below. 119 of these sites exist today, composed of 32 of the State's owned towers and 87 member-owned towers, requiring the construction of 23 new towers. Even though it may only be required for some, a significant additional budgetary amount for tower modification was included for all existing towers. RTC's CapEx estimations further include all of the items required to make any fully mobile broadband network robust and highly available, many of which appear to be missing in Flow's plan, per the Elert Report. For example, all component systems estimated by RTC, such as DC plant and cell site and Core network electronics, are fully redundant and meet carrier class (99.999%) availability. A minimum of eight hours battery backup at every site is assumed, along with emergency generation for the Core and for at least half of all cell sites. (Permanent generators are assumed for key sites, assumed to be one third of all sites, with portable generation assumed on a one-for-four basis for all remaining sites – a higher ratio than typically employed in carrier networks.)

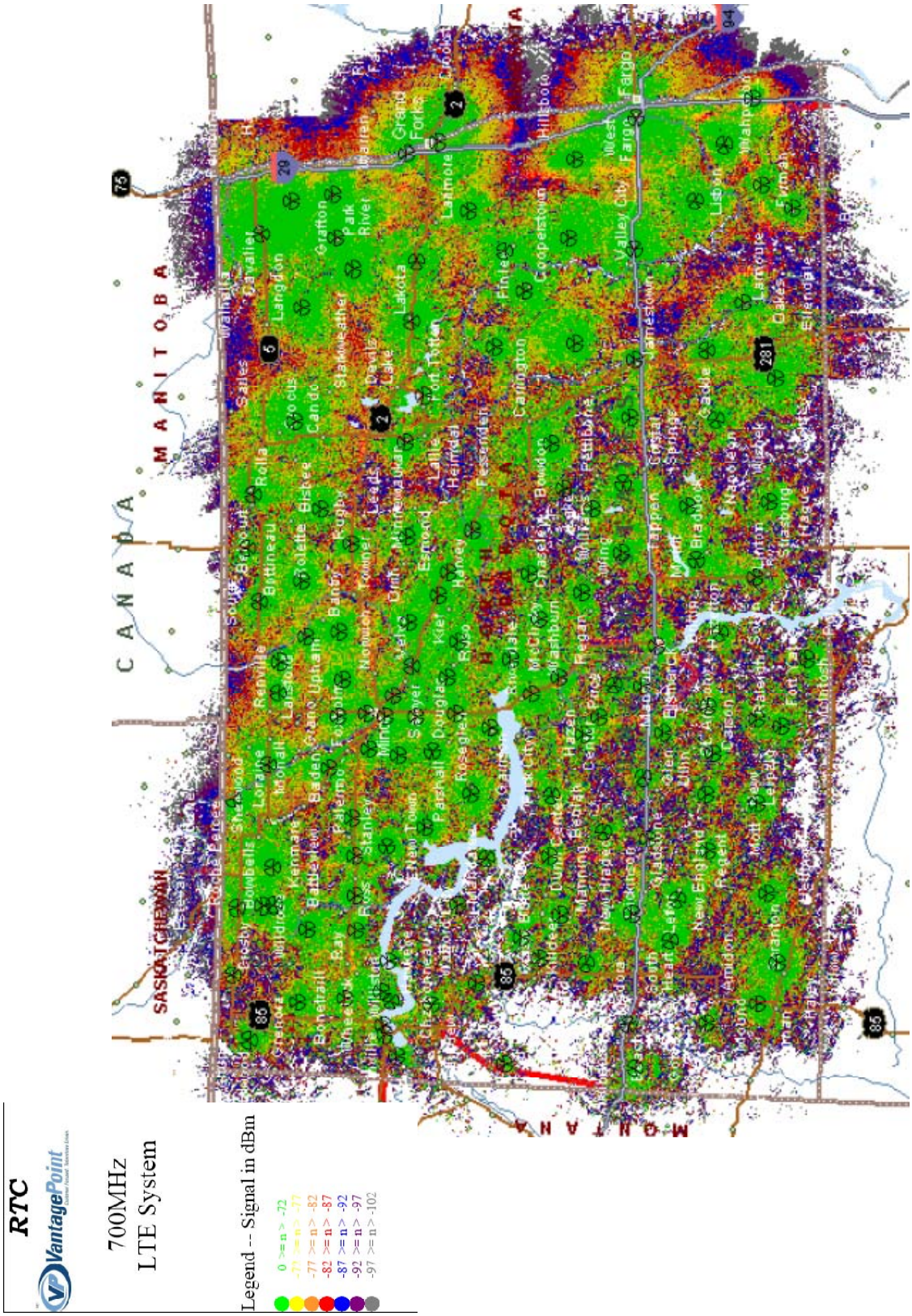

Figure 1 - RTC Proposed 95% LTE Coverage

Backhaul is a subject to which close attention must be paid. It should be pointed out that Flow's Wi-Fi network is not a mesh network, and thus it does not have any inherent backhaul redundancy; every site must be backhauled directly. RTC further understands that Flow contemplates the use of unlicensed microwave or even unlicensed point-to-multipoint (PMP) systems for backhaul. Unlicensed microwave transport is obviously unacceptable for a public safety network, as it is easily interfered with and/or counter-measured, and makes little sense for transporting licensed and protected radio access. Worse, PMP systems generally provide no path or equipment redundancy. Copper facilities such as leased T1s also are not a desirable backhaul medium for broadband networks such as public safety that must be highly available, as they will not survive flooding (unlike fiber optics); and, copper generally provides insufficient transport rates for 4G networks.[1]

RTC's backhaul plan, on the other hand, leverages the fact that it is composed of 16 ILECs covering the majority of ND, all of which are members in Dakota Carrier Network (DCN).

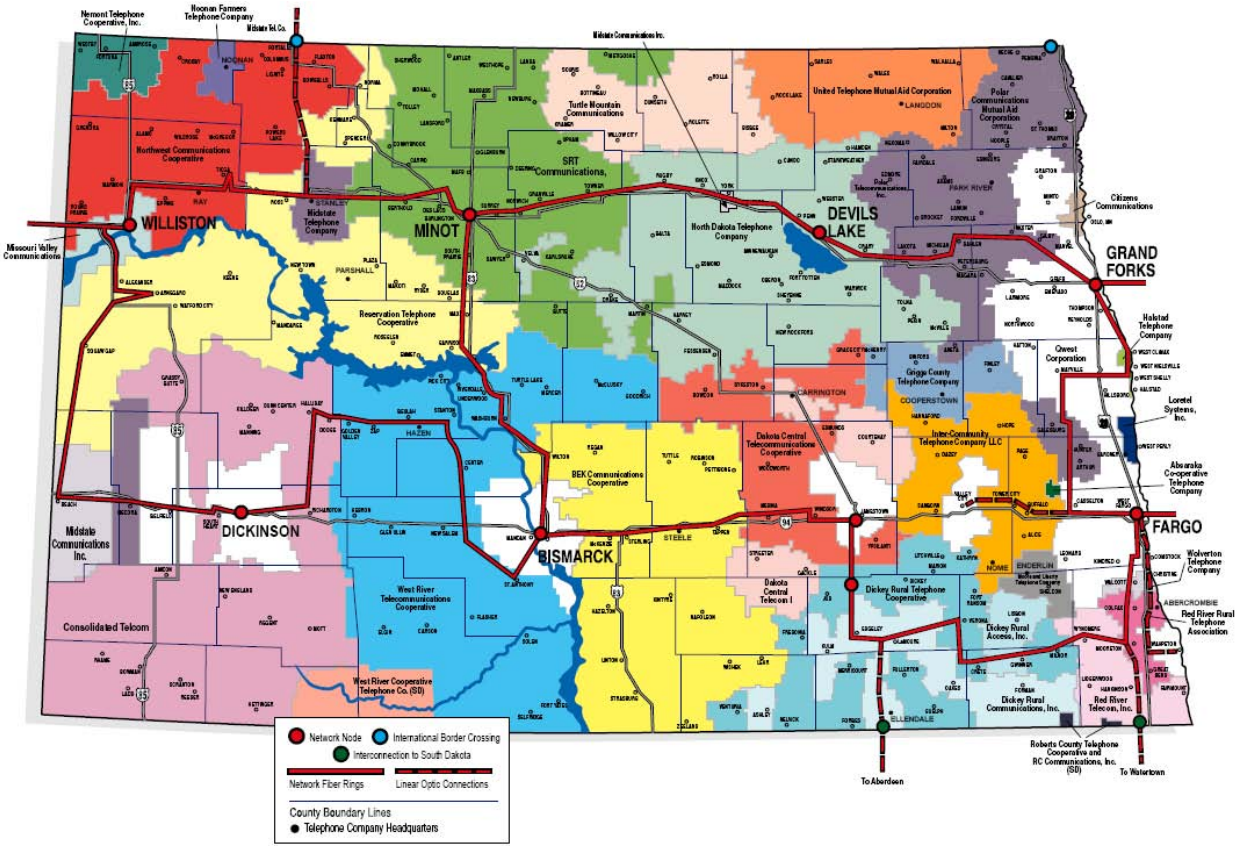

Figure 2 - Dakota Carrier Network Self-Healing Fiber Optic Transport Rings

[1] For this reason, for instance, Verizon Wireless has recently circulated an RFP nationwide for installation of fiber optic backhaul facilities to all of its transmitter sites. The installation of fiber optic backhaul for Verizon sites has been underway in North Dakota for years, in many cases being performed by RTC member companies.

RTC's cost estimations assume that last-mile backhaul for every site is to be composed of buried fiber optic facilities or licensed microwave, designed in a ring configuration where feasible,[2] connecting to the individual member ILECs' fiber networks, which in turn are already interconnected with and are component parts of the DCN statewide network of self-healing fiber optic rings, shown in Figure 2 above, and which would connect ultimately to the Core network and NOC in a hardened facility to be co-located with DCN's protected central office facilities. For any sites not within RTC member territory, RTC would arrange for the last mile transport construction to the DCN ring.

All above assumptions are included within RTC's $65 Million estimation. Flow's CapEx estimations of $45 Million are thus fully 69% of RTC's, even with RTC's estimations having included all of the above required protections that Flow's does not. And, RTC's estimations are highly conservative. For example, RTC has included costs to construct traditional 2G/3G network form factors, assuming for example RF equipment to be installed in 10' x 14' shelters, with transmission line to antennas on the towers. In practice, 4G networks are a much smaller and more efficient form-factor, and can employ all tower-mounted RF electronics, thus requiring no additional tower-mounted amplifiers (TMAs) and only hardened fiber-optic cable down the tower to minimal equipment that can be installed in an outdoor cabinet below, and requiring much less energy and associated DC plant and battery backup.

Further, RTC's estimations for LTE Core and RAN equipment are median amounts derived from confidential major vendor responses to an RFI circulated by RTC for same, and costs necessarily would improve with competitive bidding on a network of this size. RTC's cost estimations also are fully-loaded, including costs such as for freight, tax, site acquisition and preparation, engineering, project management, vendor implementation and optimization, among others. RTC's estimation even includes $4.5 Million for the cost of subscriber equipment. Thus it is readily conceivable that actual costs to implement could be considerably less than $65 Million, and comparable to Flow's – certainly not the incredible 1000% or even 2000% of Flow's costs, as Flow has claimed – in any genuine "apples to apples" comparison of costs for all components necessary for a truly survivable, highly available, fully-mobile 4G broadband public safety network.

The fact that Flow Mobile has not prepared its cost estimate based on sound engineering and design for a public safety network is confirmed by the many issues raised in the report prepared by North Dakota's independent contractor, Elert & Associates, which issues remain unresolved:

- Wi-Fi suffers overload when users converge at a scene: p. 11
- Wi-Fi subscriber devices outside of 2.4 GHz are non-standard and rare. p.12
- Handoff demo in 2.4 GHz dropped 20-25% of calls. p. 13

[2] Where fiber optic is not feasible, redundant licensed microwave is planned, in a reversible ring configuration, or as hot standby on any single path where multiple paths are not possible to create a ring. $75,000 has been budgeted for every site in the network for last mile backhaul.

- Only one 700 MHz access point was constructed for Flow's demo, so 700 MHz handoff could not be assessed. p. 13
- Due to frequency re-use, three 5 MHz channels are desirable for reliable handoff pp. 14-15
- No data is provided supporting the claim that advanced video, data and voice in a mobile environment will be supported. p. 15
- How adjacent states will be protected is not exactly clear. p. 15
- Backhaul viability is not clear, especially if heavy loading occurs in one area. p. 16
- Redundancy of the network is not defined or described, and no plan is in place for loss of a core node. p. 16
- Initial Flow buildout will take 24 months. p. 19
- Flow is not committed to implement 4G p. 21
- It is clear that the Flow design is not entirely known or understood by ND IT public safety staff. p. 23

The full Elert Report is attached to Flow Mobile's October 16, 2009 comments in this proceeding. It is likely that any perceived savings would be seriously diminished by the costs of rectifying the shortfalls called out in the Elert Report, if they could be rectified at all. They would be diminished still further when the potentially significant costs for mitigation of the interference cases detailed in RTC's January 8 Ex Parte Comments are considered, (many of which are serious and may not even be achievable by any means), and, by the cost of the chilling affect they are likely to have on private investment in the D block and on any public-private benefit that might otherwise have resulted. And in any case, any perceived savings from constructing an unnecessary interim network with non-interoperable, prototype technology will be lost entirely when it inevitably must be scrapped in favor of PSST-selected LTE (as it must be to accommodate LTE for necessary physical layer interoperability, as even Flow admits, without even any smooth migration path possible), long before the assets are depreciated, and rendering all interim devices worthless. Thus the entire cost of building an unnecessary interim network can only be seen as a significant additional cost that could have been avoided, and an egregious <u>waste of precious public safety resources</u>.

Another consideration is that Verizon will be constructing the vast majority of this network in the next two years for its own LTE deployment. Some vendor form factors could accommodate the inclusion of PSBL spectrum in Verizon's LTE radio access network with no hardware changes and with only additional

software costs. Even if one assumes that PSBL spectrum could only be accommodated on Verizon's 4G network with the addition of complete cell site radios however, and even with the conservative cost approach used by RTC, this would amount to a cost of only $8.5 Million in cell site electronics, which, with all overheads, engineering and implementation costs would certainly amount to less than $15 Million, and would allow public safety to enjoy interoperability with the rest of the nation and all of the economies afforded by the global implementation of LTE.

Finally, as noted in the January 8 Ex Parte Comments, any Flow Mobile claims of cost savings are refuted by Flow Mobile's admission to Elert & Associates (at p. 19), that Flow will charge North Dakota $55 to $60 per month per card for use of its WiFi system by public safety personnel – approximately the same prices as would be charged by Verizon Wireless for immediate access to a 3G EVDO service today, which unlike Flow's, will seamlessly transition to LTE, in the fashion endorsed by the Public Safety Spectrum Trust.

CapEx Estimations

RTC - ND State 700 MHz LTE Project

		Core, Ancillary	eNodeB Site (new 300' tower)	eNodeB Site (co-locate)
RAN Equipment				
Site Acq, Planning, RF Survey - New Tower Sites			25,000	-
Site Acq, Planning, RF Survey - Co-Location Sites			-	6,400
Land (Purchase) - New Tower Sites			5,000	-
Tower Steel & Other Materials, Mounts, Hdwe			50,000	1,020
Tower Foundation			34,833	-
Tower Erection/Structural Analysis & Modification			80,000	22,500
Site Civil / Make Ready			7,500	7,500
Huts/Outdoor Cabinets, Complete			28,500	28,500
Antenna and Line Installation			8,000	8,000
On-Site Physical Eqpt. Installation			3,200	3,200
Antennas, TMAs			11,200	11,200
Transmission Line & Hardware			18,000	18,000
eNode B (3-sector), with Software Licenses			55,000	55,000
Site DC & Ancillary Equipment			30,000	30,000
Site Emergency Generation (avg. 1 per 2 sites)			10,000	10,000
Backhaul OSP/Equipment Budget			75,000	75,000
Freight & Tax Estimate (10%)			41,123	26,992
Engineering & Gen. Project Mgmt. Services			38,589	15,166
	Subtotals	**$ -**	**$ 520,945**	**$ 318,478**
No. "Greenfield" Sites			23	
No. Co-Lo Sites				119
	Subtotals	**$ -**	**$ 11,981,740**	**$ 37,898,834**
	Total, RAN	**$ 49,880,574**		
CORE NETWORK EQUIPMENT				
EPC (P-GW, S-GW, MME, OSS/EMS)		$ 3,750,000		
MPBN		$ 575,000		
IMS Components		$ 2,500,000		
Power (incl. Emergency Generation)		$ 250,000		
Implementation, Integration, Optimization		$ 1,500,000		
Freight & Tax Estimate (10%)		857,500		
MSO Civil, Leasehold Improvement, Ancillary		$ 1,000,000		
Engineering & Gen. Project Mgmt. Services		521,625		
Total Core Network Equipment		**$ 10,954,125**		
	Total, Core Network	**$ 60,834,699**		
CPE				
Subscribers:		**6,000**	**2,000**	**1,000**
	$ 500 100%	3,000,000	1,000,000	500,000
	Subtotals	**$ 3,000,000**	**$ 1,000,000**	**$ 500,000**
	Total, CPE	**$ 4,500,000**		
	TOTAL PROJECT CAPEX ESTIMATION	**$ 65,334,699**		

Attachment B

August 11, 2009 letter from North Dakota Governor John Hoeven to Bill Owens, Chairman, New EA, Inc. d/b/a Flow Mobile

State of
North Dakota
Office of the Governor

John Hoeven
Governor

August 11, 2009

Bill Owens
Chairman of the Board
New EA, Inc.
1915 North Kavaney Drive
Bismarck, ND 58503

Dear Mr. Owens,

North Dakota is working to expand its broadband network to include a statewide mobile broadband emergency communications network that is interoperable and provides even more coverage and services to all rural communities. North Dakota is actively evaluating new and innovative technologies that may help to develop the infrastructure necessary to ensure our state's public safety goals are met.

When selecting commodities or services that will be used by state government, North Dakota state law requires executive agencies to use a competitive bidding process that provides equal opportunity to all qualified entities to submit a proposal for the service. The State has not started the competitive bidding process to identify the entity that will prove the service and therefore has not selected nor endorsed a specific company or entity to provide the State with the service. Any company applying for a stimulus grant should not represent that the State has selected its product or company to develop its statewide mobile broadband emergency network, only that the State wants to develop a statewide mobile broadband emergency communications network.

The State is working to move forward in accordance with its strategic plan to develop a statewide mobile broadband emergency communications network to help ensure every region of our state has reliable access to emergency services.

Sincerely,

John Hoeven
Governor

38:34:58

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