



# Broadcast Signal Lab

Lori Londis Dwyer  
Bernstein Shur  
100 Middle Street  
PO Box 9729  
Portland, ME 04104-5029

January 30, 2007

Dear Ms. Dwyer,

As you know, I am a municipal wireless consultant who has been providing municipalities throughout New England with advice on the regulation and approval of wireless facilities since 1988. In response to your inquiry regarding whether alternatives or design modifications to the tower proposed by GridCom exist, my answer is a resounding, “yes”—there are plenty of things the Lincolnville Planning Board could require by way of design or site modifications under site plan review to mitigate the objectionable impact of the proposed facility and provide the coverage Unicef seeks. Unfortunately, the current record before the Planning Board on the subject is seriously lacking. Overall, the record consists primarily of the applicant’s vague and unsubstantiated assertions about the need for the tower and the alleged absence of alternatives, and of a single incomplete report by a third party (the Davol Report).

In Section I of this letter I make some general observations about the facts in the record and GridCom’s submissions to date. In Section II, I describe specific possible alternatives. Although it is not my intent at this point to state definitively what alternatives or design modifications would work on the proposed site, in my view the applicant has failed to meet its burden of proving that alternative designs or locations would not be feasible. Should the Planning Board decide to re-open the record before making its decision under site plan review, the modifications and alternatives outlined in this letter should be studied more carefully, and a more comprehensive study obtained.

**Section I: Observations about the Process and Record to Date**

First, it is clear that the Planning Board was misdirected by the applicant’s presumption that the only possible design that would provide adequate coverage would be a single, 190-foot tall tower, located more than 1000 feet inland of Route 1. By focusing on this single-tower approach, the

Broadcast Signal Lab, LLP  
503 Main Street  
Medfield, MA 02052  
508 359 8833

applicant defined the problem (the supposed need for a single tall tower) by the solution (a single tall tower inland from Route 1). In other words, the applicant stated that its goals can only be met by the construction of the tower it proposed. This is simply not the case.

Second, the applicant misstated that the Telecommunications Act of 1996 says that towns “must give providers a reasonable opportunity to site towers.”<sup>1</sup> In fact, the TCA simply prevents towns from acting in a way that would “prohibit or have the effect of prohibiting the provision of personal wireless services.”<sup>2</sup> The Act makes no mention of towers and is silent on the issue of how the provision of service might be permitted. Under the TCA, towns retain the authority to exercise local zoning control by following reasonable, duly enacted ordinances.

Third, the Board’s laudable attempt to obtain independent analysis of the visual impact assessment and alternative facility deployments, including DAS, was unsuccessful. The Davol report on coverage and alternatives was regarded by some members of the Board as “lacking in information” and “unclear.”<sup>3</sup> I agree. The Davol report did not provide a thorough review of the facts and possibilities regarding ways to enable the provision of wireless service other than a tall tower at the proposed location. Following observations by Planning Board members that the Davol report was inadequate, one Board member advocated that the Board not pursue further expert analysis to avoid being unfair to the applicant by causing further delay. In its haste to be fair to the applicant, the Board appears to have placed fairness to the objectives of the Ordinance in the back seat.

Fourth, The Davol Report is rife with misstatements and errors, particularly regarding alternative means of providing service to the area. Somehow the discussion became a choice between a single 190-foot tall tower at the proposed location (or some place within 200 yards of it<sup>4</sup>) and a Distributed Antenna System. The Board’s direction to Mr. Davol was broader than that, “...provide technical opinions...if there are any options or alternatives to placing the tower at this location using other technologies.”<sup>5</sup> Mr. Davol did not address the spectrum of techniques that can be employed to eliminate a 190-foot tower in an undesirable location. The idea of distributing more antennas, at lower heights, with less conspicuous installations is a fundamental

---

<sup>1</sup> December 14, 2005 Planning Board minutes

<sup>2</sup> The Davol Report also perpetuates this myth, stating incorrectly, “The Federal government does not allow towns to be overly restrictive in the placement of new towers.”

<sup>3</sup> March 8, 2006 PB Minutes

<sup>4</sup> Said by Applicant, Planning Board Minutes, December 14, 2005

concept of improving coverage while minimizing impact. This can be done with attachments to existing structures or poles, and with the installation of short flagpole-like monopoles or other camouflaged structures. Mr. Davol did not consider such technologies.

DAS facilities are just one part of the full spectrum of alternatives. In the general sense, DAS is a means of distributing wireless antennas throughout the service area rather than relying on a single massive facility to throw signals over longer distances to cover the same area. DAS exists in many forms, although it often consists of communications “nodes” on utility poles with small antennas and small cabinets. In a common implementation, these nodes on the utility poles may be connected back to a common hub facility by fiber optic cables strung along the utility poles.

Mr. Davol also misrepresented the Brookline, Massachusetts DAS network. It has been permitted, but not yet constructed. It does not consist of “smaller height towers” as stated by Mr. Davol. The DAS provider, ClearLinx (now Extenet), has designed a utility-pole mounted system. Gridcom had also proposed a DAS in Brookline, employing 80-foot poles installed for the purpose. Perhaps Mr. Davol was referring to the Gridcom DAS proposal in Brookline, rather than that of the winning bidder, ClearLinx. Mr. Davol parrots the industry myth that DAS is used in “metropolitan areas and areas where conventional RF (Radio Frequency) coverage and penetration into buildings is not possible.” Certainly, these are good uses for DAS networks. However, there are, for instance, hundreds of miles of fiber-fed DAS networks along the California coast, providing service in the corridors occupied by human development and activity.

The applicant made similar vague assertions about DAS including similar suggestions that DAS was invented for another purpose (“not used to provide coverage to large areas”).<sup>6</sup> The applicant also made other misrepresentations that were left unchallenged by Mr. Davol, “The primary purpose [of a DAS] is to fill a demand for the consistent bandwidth required for high speed video and data transmission;” and DAS “is not used to cover large areas;” and “it is basically used to fill in gaps in service where there is already a primary system of towers in place.” These assertions grossly generalize the nature of DAS, incorrectly. If DAS has a purpose, it is to obtain the benefits of distributing antennas throughout a service area. On campuses and at airports the benefits are realized in penetrating buildings and providing capacity to densely-occupied areas.

---

<sup>5</sup> Agreement for Service, February 6, 2006

<sup>6</sup> Planning Board Minutes, December 14, 2005

In scenic areas, DAS is a means of eliminating the scourge of tall towers. Hilton Head South Carolina's DAS comes to mind as a successful effort to avoid unnecessary towers.

Mr. Davol reflects the unwarranted pessimism of the applicant when his report states, "In the Lincolnton area, the area is too great to try to cover this area with multiple short-elevation towers." On the contrary, the area targeted by the tower is primarily a corridor of development and human activity only up to ½-mile wide. This is a tantalizing opportunity for a less objectionable approach that would employ a series of antennas along Route 1 (whether with short monopoles, existing structures, and/or attachments to utility poles such as with a DAS.)

Mr. Davol also expands the applicant's coverage objective to the disadvantage of Lincolnton by surmising that the applicant wants to serve Penobscot Bay and the islands. This opinion is based not on the record, but on what he sees in the tower's over-water coverage. Lincolnton is under no obligation to provide wireless service to the islands, nor to marine activity. Wireless signals originating from any coastal wireless facility, tall or short, will spill out to near-coastal mobile phone subscribers because over water the wireless signals are not obstructed by terrain or vegetation.

Fifth, the applicant seems to want to leave the impression that the proposed tower will provide all the coverage it will require between Camden and Northport. However, their data suggest that they would seek more towers in the future. Even with the proposed tower, Unice's coverage on some parts of the Route 1 area will still fall below the levels that carriers often seek for serving highways- a signal level labeled "in-vehicle coverage." I am astonished that there appears to have been no discussion regarding the meaning of the coverage plots provided by the applicant. Mr. Davol's analysis is lacking any such analysis as well. In other words, the applicant is vaguely presenting the proposed tower as providing "adequate coverage to the targeted sections of the Town of Lincolnton and the immediately surrounding areas..."<sup>7</sup> But just what does the applicant mean by "adequate coverage"?

The applicant's coverage maps show a coverage footprint for the proposed tower. Those places where the tower will provide adequate coverage are collectively the targeted area. Those places where it will not provide adequate coverage are not part of the tower's objective. The applicant, however, never explained what signal levels on its coverage plots represented "adequate" or

“inadequate” coverage. It is easy for the Board to assume that wherever there is a color on the coverage map, the applicant considers that to be adequate coverage. It may appear to the layman that the tower provides adequate coverage along Route 1 and environs that connects with the coverage from the adjacent facilities. However, the colors on the coverage plots represent a wide range of signal levels that the applicant may or may not consider to be adequate. In short, the plots suggest to an expert such as myself that in the future additional towers will be sought halfway between the proposed tower and the existing facilities in Camden and Northport. In other words, this one proposed tower may not be a final solution or the last of the towers GridCom or other tower builders aim to build in Lincolnton.

## **Section 2: Possible Alternatives to the Single, 190-Foot Tower Proposed by Grid Com**

### **1. Utilize a DAS**

The Route 1 corridor that is the subject of Unicef's desire to improve service is quite possibly an ideal location for a DAS solution. It consists of a single main road with no major crossroads. That main road is found substantially on one topographical contour (no significant peaks or valleys to confound signal coverage). Off that main road there extend feeder roads that are generally single stubs, short, and linear. Most of these roads appear to be about ¼-mile long or less. These characteristics indicate that a series of DAS antennas along Route 1 could do a good job of extending coverage to where the people actually are.

### **2. Install a Series of Shorter Towers**

The record is entirely lacking in a technical discussion and illustration of the potential not only of a DAS, but also of other approaches that employ low-profile, low-impact wireless installations. The applicant provided no evidence indicating why a single site is necessary to achieve the objective. It stands to reason, based on the evidence already before the Board, that more, shorter, appropriately-placed towers or other facilities could mitigate the impact of the proposed facility by working in concert with it or by eliminating it altogether. Even if a DAS were not employed, communities are recognizing that some smaller, shorter poles such as utility poles or monopoles, can be less objectionable than one single massive tower. In lieu of a DAS, two or three shorter, sleeker poles could be placed along Route 1 in areas where there is already compatible development. Poles that are 60 feet tall, or in areas with greater vegetation, up to about 80-90

---

<sup>7</sup> Gridcom Aug 29, 2005, narrative.)

feet tall, can have an acceptable appearance on the right parcels-- either those already scarred with commercial development or those that are well screened from view by vegetation or terrain.

In a similar situation, while the Cape Cod Commission very closely regulates new wireless towers, it used to review *every* wireless tower application in the county in order to minimize regional impacts of towers. The Commission came to realize that it could encourage smart wireless development that would have minimal regional impact by allowing certain wireless facilities to forego Commission review. Consequently, the Commission no longer reviews applications for concealed antenna monopoles 80 feet or less in height, leaving placement of those to local regulation. The Commission recognizes that these facilities have a much lower impact than the single tall tower. They protect the viewsheds and place the facilities where they will be most useful—where the people are. When sensibly placed, short monopoles are proportional and compatible with the surrounding land uses. Likewise, the sensitive scenic nature of the Route 1 corridor in Lincolntonville could be preserved with similar low-height, low-impact installations instead of towers up to 190-feet tall.

### **3. Relocate or Shorten the Proposed Tower**

While it is not necessary to consider relocating the proposed tower to a less offensive site (because the tower itself is not necessary), as a third alternative the tower could be relocated to get it out of the direct view to the sea. The proposed tower sits squarely between the summit of Bald Rock and the coast, creating an impact that could not be more “in your face.” The applicant dismisses alternative locations because the proposed location is within the sweet spot that they deem to be ideal. However, the tower could be placed  $\frac{1}{2}$  to  $\frac{3}{4}$  mile northeast and/or southwest of the proposed location to get it out of the most scenic view from Bald Rock. Alternatively, the height of the tower could be significantly reduced. If there were any coverage gap remaining after relocating or shortening the tall tower, a small fill-in facility could be placed near the gap.

### **4. Set Other, Minor Limitations on the Site Design.**

In addition to the more significant changes referenced above, there are many small adjustments that could be made to the site design that would minimize impact on the viewshed. They include but are not limited to:

- a) Reduce the height of the tower to 65 feet (about 10 feet above the tree canopy) to minimize its projection above the canopy;

brackets and to eliminate the visual distraction of the many exposed parts of the antennas, cables and mounts;<sup>7</sup>

- c) Reduce the size of the cleared area to the minimum necessary to support the tower and one wireless carrier's equipment (about 15 x 15 feet), to minimize the amount of the tower below tree canopy level that would be exposed to the scenic vista and to minimize the size of the scar in the view;
- d) Place the tower at the side of the clearing closest to Bald Rock, to minimize the amount of the tower below tree canopy level that would be exposed to the scenic vista
- e) Retain the requirement to color all visible elements of the structure brown.

In summary, the Board was not the beneficiary of a thorough vetting of the facts. There are indeed feasible alternatives to the proposed tower that should be studied further. Moreover, the proposed coverage area was not properly explained, leaving the Board with no information on which to assess the collective impact of future wireless facilities implied by approving the proposed facility. Without good facts on the record, only after the damage is done will the community realize that the proposed tower is not the end of it, and that coverage could have been accomplished in other ways.

Yours truly,



David Maxson  
Municipal Wireless Consultant  
Managing Partner  
Broadcast Signal Lab, LLP  
503 Main Street  
Medfield, MA 02052

---

<sup>7</sup> The applicant might protest that the height reduction, and/or the compacting of the antennas within a sleek tubular enclosure will not work for technical reasons. If so, then the record should be reopened to take evidence from all parties to resolve the issue. As far as I am aware, there is no evidence on the record that speaks against this common mitigation.