

TS-T-MOBILE-006-101112

IN ROV 12 2010

November 11, 2010

ORIGINAL

CONNECTICUT SITING COUNCIL

Connecticut Siting Council 10 Franklin Square New Britain, Connecticut 06051

Attn: Ms. Linda Roberts, Executive Director

Re: T-Mobile Northeast, LLC - Tower Share Request

Lopus Road, Beacon Falls, Connecticut

Dear Ms. Roberts:

Pursuant to Connecticut General Statutes §16-50aa, as amended, and on behalf of T-Mobile Northeast LLC ("T-Mobile"), this letter and associated documentation is submitted as a request for an order from the Connecticut Siting Council ("Council") to approve the proposed shared use by T-Mobile of a tower at Town of Beacon Falls property on Lopus Road in Beacon Falls, Connecticut (coordinates 41-26-00, -73-04-13). The tower is owned by the Town of Beacon Falls and managed by Maxton Technologies. It currently supports antennas of AT&T Wireless and Pocket Wireless.

T-Mobile requests that the Council find that the proposed shared use of the tower satisfies the criteria stated in Connecticut General Statutes § 16-50aa and issue an order approving the proposed use. It should be noted that the Council previously approved T-Mobile's proposed use of the tower on January 26, 2006. A copy of that approval is attached. T-Mobile did not install its antennas and equipment at or subsequent to that time. Due to another carrier's installation in the interim, the location of T-Mobile's equipment must be modified from that previously shown.

As shown on drawings attached hereto, T-Mobile proposes to install up to twelve (12) panel-type antennas on the tower with an antenna center line of approximately 135'. T-Mobile's related equipment would be located on a 10' x 20' concrete pad to be installed in the southeast corner of the existing compound.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, "if the council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such shared use." The shared use of the tower satisfies those criteria as follows:

**A.** <u>Technical Feasibility.</u> Attached is documentation of the structural sufficiency of the existing tower to support the proposed T-Mobile loading. The proposed shared use of this tower therefore is technically feasible.

- **B.** Legal Feasibility. Under C.G.S. § 16-50aa, the Council has been authorized to issue orders approving the proposed shared use of a tower facility such as the Beacon Falls facility. In addition, § 16-50aa directs the Council to "give such consideration to other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of tower facilities. There is no legal impediment to the shared use of the facility.
- **C.** <u>Environmental Feasibility</u>. The proposed shared use would have a minimal environmental effect, for the following reasons:
  - 1. The proposed installations would have an insignificant incremental visual impact, and would not cause any significant change or alteration in the physical or environmental characteristics of the planned site. In particular, the proposed installation would not increase the height of the approved tower, and would not extend the boundaries of the tower site outside the limits of the approved site compound.
  - 2. The proposed installation would not increase the noise levels at the planned facility by six decibels or more.
  - 3. Addition of T-Mobile's antennas at this site would not result in a total radio frequency (RF) electromagnetic radiation power density level in excess of that adopted by the Federal Communications Commission. As indicated on the attached power density calculation, T-Mobile's operations at the site will result in a power density of 3.951%; the combined site operations will result in a total power density of 15.675%.
  - 4. The proposed installations would not require any water or sanitary facilities, or generate air emissions or discharges to water bodies. After construction is complete, the proposed installations would not generate any traffic other than for periodic maintenance visits.

The proposed use of this facility would therefore have a minimal environmental effect, and is environmentally feasible.

- **E.** <u>Economic Feasibility</u>. The parties have entered into agreements to share the use of the existing tower on terms mutually agreeable to the parties. The proposed tower sharing is therefore economically feasible.
- **F.** Public Safety Concerns. T-Mobile is not aware of any public safety concerns relative to the proposed sharing of the tower. As stated above, the tower is structurally capable of supporting the proposed and existing antennas. The proposed shared use will not interfere with municipal public safety activities. In fact, improved wireless communications service realized through shared use of the tower will enhance the safety and welfare of area residents.

Ms. Linda Roberts November 11, 2010 Page 2

## Conclusion

For the reasons set forth above, the proposed shared use of the tower at Lopus Road in Beacon Falls, Connecticut satisfies the criteria stated in C.G.S. § 16-50aa and advances the General Assembly's and the Council's goal of preventing the proliferation of towers in Connecticut. T-Mobile therefore requests that the Council issue an order approving the proposed shared use.

Please contact the undersigned at (860) 798-7454 if there are any questions with respect to this matter. Thank you for your consideration.

Respectfully yours,

Jennifer Young Gaudet

Attachments

cc: Honorable Susan A. Cable, First Selectman, Town of Beacon Falls (also underlying property owner)



## STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051 Phone: (860) 827-2935 Fax: (860) 827-2950 E-Mail: siting.council@po.state.ct.us www.ct.gov/csc

January 26, 2006

Karina Fournier Zoning Department T-Mobile 100 Filley Street Bloomfield, CT 06002

RE:

TS-T-MOBILE-006-060111 - Omnipoint Communications, Inc. (T-Mobile) request for an order to approve tower sharing at an existing telecommunications facility located at Lopus Road, Beacon Falls, Connecticut.

Dear Ms. Fournier:

At a public meeting held January 25, 2006, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction. Please be advised that the validity of this action shall expire one year from the date of this letter.

The proposed shared use is to be implemented as specified in your letter dated January 11, 2006 and additional information received January 25, 2006, including the placement of all necessary equipment and shelters within the tower compound.

Thank you for your attention and cooperation.

Very truly yours,

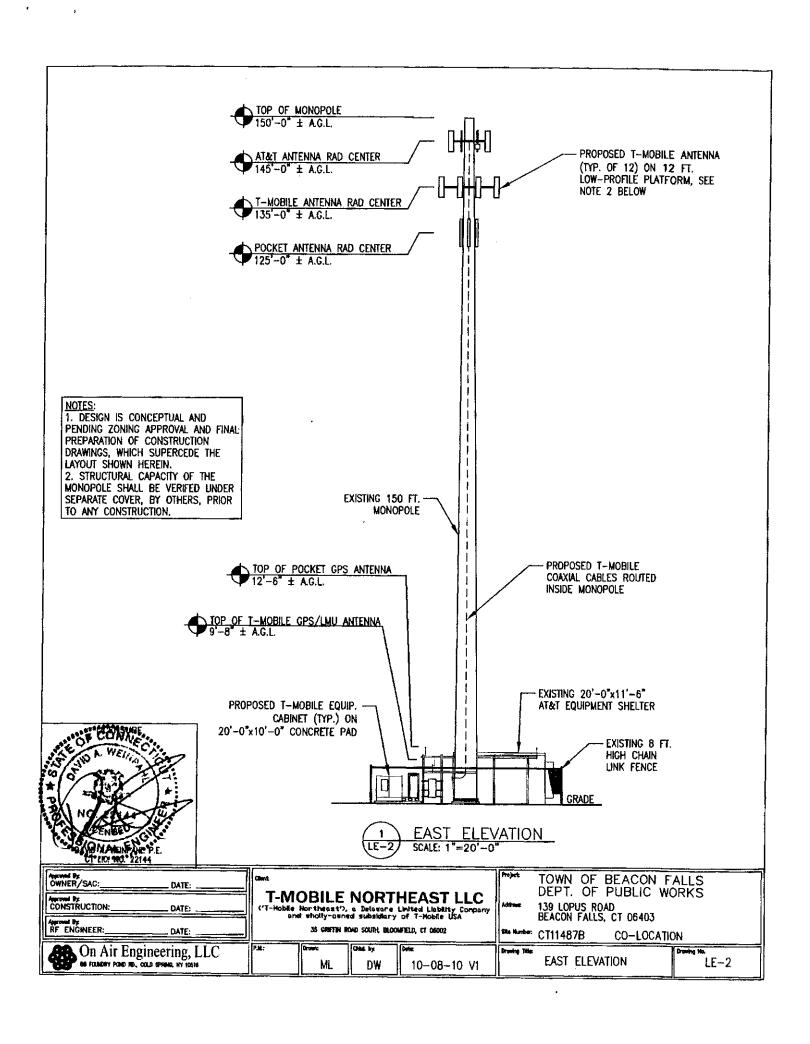
Pamble 10 - Pamela B. Katz, P.E.

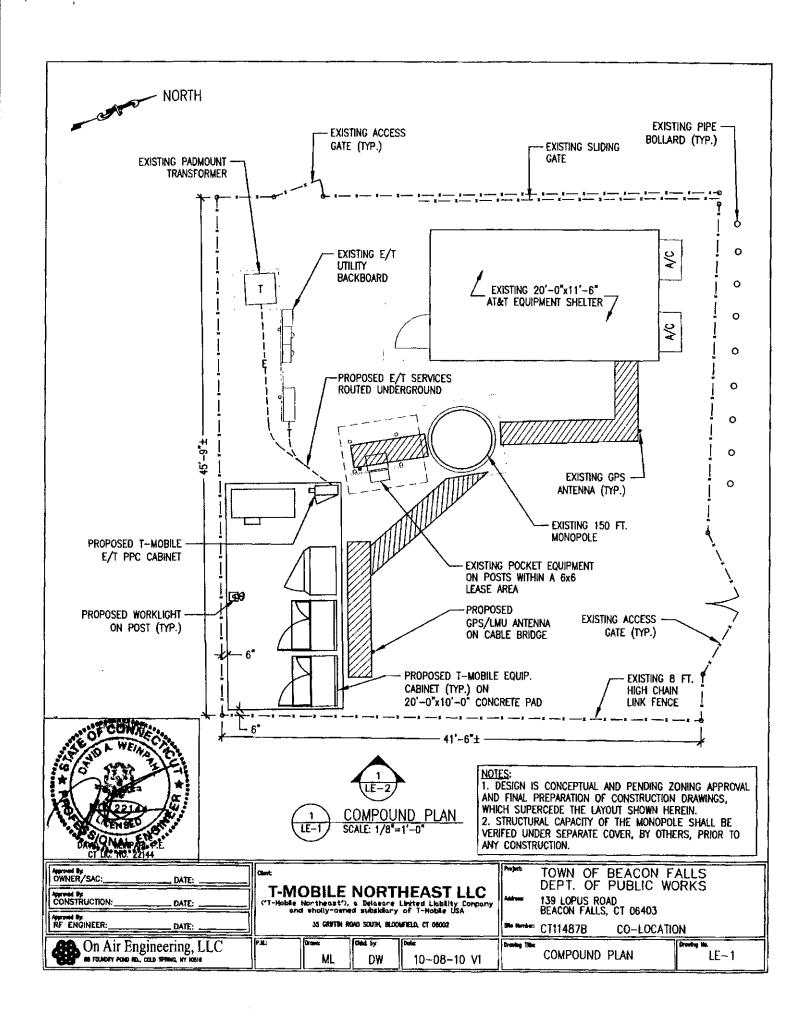
Chairman

PBK/laf

c: The Honorable Susan Ann Cable, First Selectman, Town of Beacon Falls Brian Herb, Zoning Enforcement Officer, Town of Beacon Falls Michele G. Briggs, New Cingular Wireless PCS, LLC Christopher B. Fisher, Esq., Cuddy & Feder LLP Christine Farrell, T-Mobile

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# Structural Analysis Report

PJF Project No.: 42910-0003

Structure: Existing 150-Ft Monopole

Manufacturer: Engineered Endeavors, Inc.

Location: Beacon Falls, CT

T-Mobile Site Number: CT11487B

## Prepared For:

# On Air Engineering, LLC

88 Foundry Pond Rd Cold Spring, NY. 10516 Attn: Dave Weinpahl. P.E.

October 15, 2010



Analyzed by: Kurt J. Swarts, P.E. Project Manager kswarts@pjfweb.com

Reviewed by: Kevin P. Bauman, P.E. CT License #17891



Page 2 of 6 October 15, 2010 PJF Project #42910-0003 CT11487B: Beacon Falls, CT On Air Engineering

## **Executive Summary**

## **Design Standard:**

Paul J. Ford and Company has analyzed the existing monopole in accordance with the Telecommunications Industry Association Standard TIA/EIA-222-F for the following fastest mile design wind velocities:

85 mph Basic Wind Velocity without ice 74 mph Basic Wind Velocity with 1/2" radial ice 50 mph (Operational) Basic Wind Velocity without ice

#### Antenna Loads:

The existing monopole was analyzed for the following antenna loading:

Status	Elevation	Description		ax	Owner	
Existing	145'	(6) Powerwave 7770 + (6) TMA's 12-Ft Low Profile Platform	(12) *	1 5/8"	AT&T	
Proposed	135'	(12) RFS APX16DWV-16DWV-S-E-ACU (3) RFS ATMAA1412D-1A20 TMA's (3) Andrew ETW190VS12UB TMA's 12-Ft Low Profile Platform	(24)	1-5/8"	T-Mobile	
Proposed	125'	(3) APXV18-206517LS (3) Flush Antenna Mounts	(6) *	1-5/8"	Pocket	

<sup>\*</sup> Quantity and size of existing coax have been assumed.

Coaxial cable for this analysis were assumed internally mounted and not exposed to the wind.

#### Results:

The monopole and foundation has sufficient capacity to support the above antenna loading while meeting the local minimum wind requirements.



Page 3 of 6 October 15, 2010 PJF Project #42910-0003 CT11487B: Beacon Falls, CT On Air Engineering

### **Project Description:**

Paul J. Ford and Company has analyzed the existing 150-ft monopole for On Air Engineering. The purpose of the analysis is to determine if the monopole will have sufficient capacity to support the proposed T-Mobile antennas at the 135-ft elevation. At this elevation, T-Mobile proposes to install (12) RFS APX16DWV-16DWV-S-E-ACU antennas, (3) RFS ATMAA1412D-1A20 TMA's, and (3) Andrew ETW190VS12UB TMA's. The proposed equipment will be fed with (24) 1 5/8" coax.

#### Pole History:

The monopole and foundation were designed and manufactured by Engineered Endeavors, Inc. in 2005, per EEI Job Number #13674. The monopole was originally designed in accordance with TIA/EIA-222-F for an 85 mph design wind.

Elevation	Description	
150'	(3) Omnidirectional Antennas	
	Side Arm Mounts	
145'	(12) 7770 Antennas	
	(6) LGP2140X TMA's + (18) LGP13519 Diplexers	
	12-Ft Low Profile Platform	
135'	(12) ALP 9212	
	12-Ft Low Profile Platform	
	(12) ALP 9212	
125'	12-Ft Low Profile Platform	
115'	(12) ALP 9212	
	12-Ft Low Profile Platform	
105'	(12) ALP 9212	
	12-Ft Low Profile Platform	
95'	(12) ALP 9212	
	12-Ft Low Profile Platform	

#### Structural Analysis:

Our analysis was completed according to the recommendations of the TIA/EIA-222-F 1996. This standard recommends a minimum design wind velocity of 85 mph (no ice) for New Haven County. If ice accumulation is considered, the TIA/EIA standard allows the design wind pressure reduced by 25% in conjunction with ½" radial ice. Our analysis was completed in compliance with the minimum wind requirements under the following load cases:

85 mph Basic Wind Velocity without ice 74 mph Basic Wind Velocity with 1/2" radial ice 50 mph (Operational) Basic Wind Velocity without ice



Page 4 of 6 October 15, 2010 PJF Project #42910-0003 CT11487B: Beacon Falls, CT On Air Engineering

### **Existing & Proposed Antenna Loading:**

Our analysis was completed using the following existing and proposed antenna loading:

Status	Elevation	Description	Coax		Owner	
Existing	145'	(6) Powerwave 7770 + (6) TMA's 12-Ft Low Profile Platform	(12)*	1 5/8"	AT&T	
Proposed	135'	(12) RFS APX16DWV-16DWV-S-E-ACU (3) RFS ATMAA1412D-1A20 TMA's (3) Andrew ETW190VS12UB TMA's 12-Ft Low Profile Platform	(24)	1-5/8"	T-Mobile	
Proposed	125'	(3) APXV 18-206517LS (3) Flush Antenna Mounts		1-5/8"	Pocket	

<sup>\*</sup> Quantity and size of existing coax have been assumed.

Coaxial cable for this analysis were assumed internally mounted and not exposed to the wind.

#### Results:

When the new antenna configuration is considered, the monopole has sufficient capacity to safely support the new loads.

Member	Elevation	Percent Capacity
Shaft #1	126'	18.7%
Shaft #2	96'	39.9%
Shaft #3	48'	38.1%
Shaft #4	1'	37.6%
Base Plate	1'	31.1%
Anchor Rods	1'	31.1%

Paul J. Ford and Company performed an analysis of the existing spread footing foundation using the soil parameters listed in a geotechnical report completed by he Tectonic, reference W.O.3917.BEACON, dated August 17, 2005. The existing spread footing foundation has sufficient capacity to support the existing and proposed antenna loads.



Page 5 of 6 October 15, 2010 PJF Project #42910-0003 CT11487B: Beacon Falls, CT On Air Engineering

### Conclusion:

The existing monopole and foundation have sufficient capacity to support the new antenna loading while meeting the minimum wind requirements of this analysis.

If you have any questions concerning our analysis, or if we can be of further service to you, please feel free to contact us at (614) 221-6679.

Sincerely,

Paul J. Ford and Company

Kurt J. Swarts, P.E. Project Manager



T-Mobile USA Inc.

35 Griffin Rd South, Bloomfield, CT 06002-1853

Phone: (860) 692-7100 Fax: (860) 692-7159

## **Technical Memo**

To: HPC

From: Amir Uzzaman - Radio Frequency Engineer

cc: Jason Overbey

Subject: Power Density Report for CT11487B

Date: October 29, 2010

#### 1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile antenna installation on a Monopole at 150 Lopus Road, Beacon Falls, CT. This study incorporates the most conservative consideration for determining the practical combined worst case power density levels that would be theoretically encountered from locations surrounding the transmitting location.

#### 2. Discussion:

The following assumptions were used in the calculations:

- 1) The emissions from T-Mobile transmitters are in the (1935-1944.8), (1980.2-1984.8), (2140-2145), (2110-2120)MHz frequency Band.
- 2) The antenna array consists of three sectors, with 1 antenna per sector.
- 3) The model number for GSM antenna is APX16DWV-16DWV.
- 3) The model number for UMTS antenna is APX16DWV-16DWV.
- 4) GSM antenna center line height is 170 ft.
- 4) UMTS antenna center line height is 175 ft.
- 5) The maximum transmit power from any GSM sector is 2497.58 Watts Effective Radiated Power (EiRP) assuming 8 channels per sector.
- 5) The maximum transmit power from any UMTS sector is 2491.67 Watts Effective Radiated Power (EiRP) assuming 2 channels per sector.
- 6) All the antennas are simultaneously transmitting and receiving, 24 hours a day.
- 7) Power levels emitting from the antennas are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) The average ground level of the studied area does not change significantly with respect to the transmitting location.

Equations given in "FCC OET Bulletin 65, Edition 97-01" were then used with the above information to perform the calculations.

#### 3. Conclusion:

Based on the above worst case assumptions, the power density calculation from the T-Mobile antenna installation on a Monopole at 150 Lopus Road, Beacon Falls, CT, is 0.03951 mW/cm^2. This value represents 3.951% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm^2) set forth in the FCC/ANSI/IEEE C95.1-1991. Furthermore, the proposed antenna location for T-Mobile will not interfere with existing public safety communications, AM or FM radio broadcasts, TV, Police Communications, HAM Radio communications or any other signals in the area. The combined Power Density from other carriers is 11.72417%. The combined Power Density for the site is 15.675% of the M.P.E. standard.

Connecticut Market		T · · Mobile ·			
Worst Case Power Dens	sitv				
Site:	CT11487B				
Site Address:	150 Lopus Road				
Town:	Beacon Falls				
Tower Height:	150 ft.				
Fower Style:	Monopole				
	wonopole	Indea & Commission of the Comm			
GSM Data		UMTS Data			
Base Station TX output	20 W	Base Station TX output	40 W		
lumber of channels Antenna Model	8 APX16DWV-16DWV	Number of channels	2		
antenna woder Cable Size	A SECURITY HOLD CONTRACTOR OF THE PROPERTY OF	Antenna Model	APX16DWV-16DWV		
Cable Length	1 5/8 ▼ in.	Cable Size	1 5/8 ▼   135 ft.		
intenna Height	135 it. 170.0 ft.	Cable Length	135 π. 175.0 ft.		
interna neight Fround Reflection	1.6	Antenna Height Ground Reflection	175.0 ft. 1.6		
requency	1945.0 MHz	Frequency	2.1 GHz		
umper & Connector loss	4.50 dB	Jumper & Connector loss	1.50 dB		
Intenna Gain	18.0 dBi	Antenna Gain	18.0 dBi		
able Loss per foot	0.0116 dB	Cable Loss per foot	0.0116 dB		
otal Cable Loss	1.5660 dB	Total Cable Loss	1,5660 dB		
otal Attenuation	6.0660 dB	Total Attenuation	3.0660 dB		
otal EIRP per Channel	54.94 dBm	Total EIRP per Channel	60.95 dBm		
n Watts)	312.20 W	(In Watts)	1245.83 W		
otal EIRP per Sector	63.98 dBm	Total EIRP per Sector	63.96 dBm		
n Watts)	2497.58 W	(In Watts)	2491.67 W		
sg	11.9340	nsg	14.9340		
Power Density (S) =	0.020373 mW/cm^2	Power Density (S) =	0.019140 mW/cm^2		
T-Mo	bile Worst Case % MPE =	3.9513%			
qualion Used : $S = \frac{(1000)(grf)^2(Power}{4\pi (R)^2}$ Office of Engineering and Technology (OET) Bit					

Co-Location Total		
Carrier	% of Standard	
Cingular	5.177199125	
Cingular	2.190748134	
Pocket	4.356221089	
Verizon		
MetroPCS	[28] [28] [28] [28] [28] [28] [28] [28]	
Nextel		
Other Antenna Systems		
Total Excluding T-Mobile	11.7242 %	
T-Mobile	3.9513	
Total % MPE for Site	15.6754%	



# STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051 Phone: (860) 827-2935 Fax: (860) 827-2950 E-Mail: siting.council@ct.gov Internet: ct.gov/csc

November 19, 2010

The Honorable Susan Ann Cable First Selectman Town of Beacon Falls 10 Maple Avenue Beacon Falls. CT 06403

RE:

TS-T-MOBILE-006-101112 - T-Mobile Northeast LLC request for an order to approve tower sharing at an existing telecommunications facility located at Lopus Road, Beacon Falls, Connecticut.

Dear Ms. Cable:

The Connecticut Siting Council (Council) received this request for tower sharing, pursuant to Connecticut General Statutes § 16-50aa.

The Council will consider this item at the next meeting scheduled for December 2, 2010, at 2:00 p.m. in Hearing Room One, Ten Franklin Square, New Britain, Connecticut.

If you have any questions or comments regarding this proposal, please call me or inform the council by December 1, 2010.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Tower Sharing

c: Brian Herb, Zoning Enforcement Officer, Town of Beacon Falls

