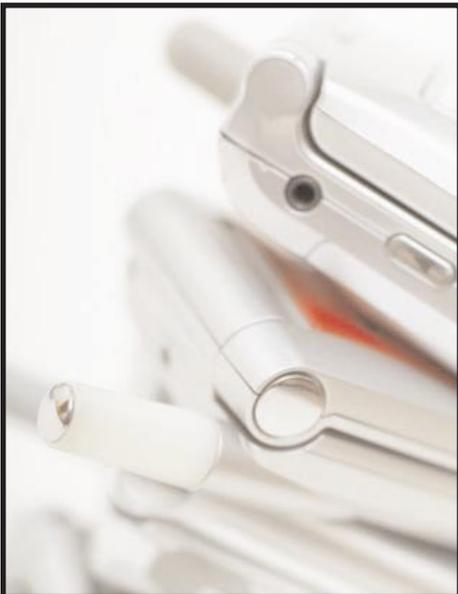




Connecticut Siting Council

State-Wide Telecommunications Coverage Plan Annual Review



State-Wide Plan For Wireless Telecommunications Coverage

Wireless Overview

From late 2004 to the end of 2005, wireless subscribers grew in the United States (by 20 million) to 200 million, or roughly 70% of the population. At the same time, the share of the four primary nationwide carriers has increased from 79% of subscribers to 87% of subscribers, signifying a trend away from small, regional carriers. At the end of the second quarter of 2005, the acquisition of Nextel by Sprint had been completed, resulting in the number of mega-carriers being increased from two to three, including Cingular, Verizon and Sprint.

Nationwide Wireless Operators:

Operator Name	Subscribers	2005 Net Adds
Cingular	54.1 million	5.1 million
Verizon	51.3 million	7.5 million
Sprint	47.6 million	5.4 million
T-Mobile USA	21.7 million	4.3 million

In 2005 the use of wireless data increased and roughly doubled its revenue per user from less than \$3 per month to around \$6 per month, thereby contributing approximately 10% of revenue for wireless carriers. This growth came not only from the increase of sales of converged devices and laptop data cards that now contribute between 10% and 20% of data revenues, but also from high-end data plans such as Sprint's PowerVision and Verizon's VCast services that offer streaming video and high quality games.

Fifty percent of people signing up or changing carriers also chose a data plan, including new location-based services, which allow handsets to provide users with turn-by-turn directions currently only available from dedicated Global Positioning System (GPS) devices. The combination of fast data networks with speeds of 400 to 700 kbps in real world applications, together with attractive content such as mobile video have made wireless devices very attractive to some 10 million third generation (3G) subscribers in the United States. Furthermore, mobile broadcast video services such as MediaFLO and DVVB-H will soon be rolled out across most platforms, effectively providing broadcast television in the palm of the users hand.



A flagpole, located at 100 Pond Lily Avenue, New Haven, containing a camouflage design for Verizon and Nextel antennas.

State-Wide Plan For Wireless Telecommunications Coverage

Methodology



Camouflage tree design;
127 New Hartford Road in
Barkhamsted.



Side-mounted panels



Rooftop mountings;
265 Benham Street in Hamden.

Pursuant to Public Act 04-226, the Connecticut Siting Council (Council) has built this forecast model to estimate the number of new towers and rooftop sites that carriers and tower builders will seek to develop in Connecticut from 2007 to 2011. The Council used the following publicly-available information as a basis for the model:

- 2005 US Census population data in Connecticut by county;
- the Federal Communications Commission's (FCC) 10th Competitive Mobile Radio System (CMRS) Report of the wireless subscriber penetration rate for Connecticut;
- the Council's wireless site database identifying all site locations in Connecticut, as of March of 2006;
- Ovum's (a company that specializes in researching the market of the telecommunications industry) wireless subscriber forecast for 2005 to 2010; and
- information from the wireless carriers from their 10-K and 10-Q reports to the U.S. Securities and Exchange Commission (SEC), as well as their press releases.

The basic premise of the model is the study of the relationship between the number of subscribers and the number of cell sites, also known as base stations. We determined the number of wireless subscribers in Connecticut by multiplying the 2005 population number for each of Connecticut's counties with the subscriber penetration figure from the FCC's 10th CMRS Report. To forecast the future number of subscribers for each county we multiplied the expected population based on the historic population growth rate with Ovum's wireless penetration forecast.

Nationally, there is an average of 1,200 wireless subscribers per base station. In 2005, the Connecticut average was 884 wireless subscribers per base station. We expect that the ratio for Connecticut will continue to track upwards towards the national average. By dividing the wireless subscriber number by 1,200, the subscriber-per-base-station multiplier, we determine the number of base stations required for each of the future years. Wireless carriers place approximately 10% of their new base stations on rooftops, with the remainder being placed on tower structures.

Multiple base stations can often be placed on the same tower or rooftop; a practice known as colocation. In Connecticut, the 2005 average colocation rate for towers was 2.01 – or, on average, two base stations on every tower -- where as for rooftops it was 1.39. The average colocation rate reported by the large tower asset companies such as American Tower, SpectraSite, and others, is between 2.0 and 2.5; hence the colocation rate in Connecticut will likely increase over the next five years. This is due to the practical economic pressure to colocate, which is generally less expensive than building new towers, and tower the sharing policies enforced by the Council.

We calculated the predicted tower and rooftop colocation rate for each county in Connecticut in 2005. This model assumes a colocation of three carriers per tower, based on previous Council experience with new tower applications within the state, and an increase by 7% per year for rooftops.

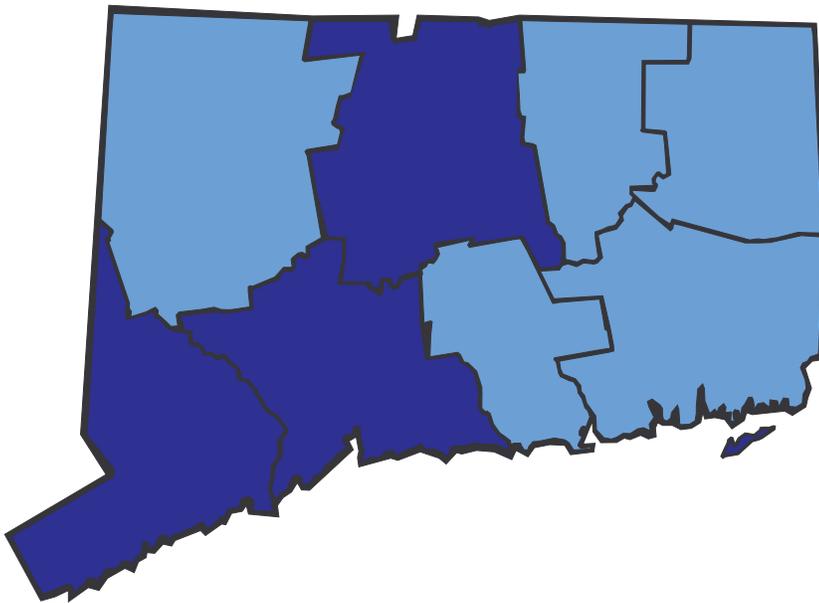
To predict the number of new towers and rooftops that may be built, we divided the number of new base stations in a given year per county by the colocation rate for the given year in the county.

State-Wide Plan For Wireless Telecommunications Coverage

Discussion of Results

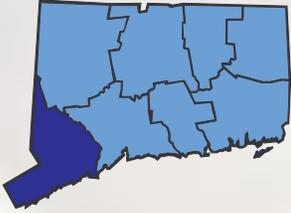
The cell tower and rooftop projections for 2007 are roughly in line with the current application load to the Council. For 2007, we expect 48 new towers to be needed and 12 new rooftops, based on the number of new wireless subscribers we expect in Connecticut. It should be noted that because of internal issues at the carrier company level some investments are made earlier and some later than they are actually needed, based on the subscriber multiple. This leads to some variations between the actual number of base stations and sites (both towers and rooftops) being built and the number that are predicted.

Most of the predicted cell sites are in the three largest counties: Fairfield, Hartford, and New Haven. We expect from 2007 to 2011 that out of a total of 161 new towers and 37 new rooftops, 40 new towers and 7 new rooftops are going to be built in Fairfield County, 40 new towers and 8 new rooftops in Hartford County, and 38 new towers and 7 new rooftops in New Haven County. The less populated New London County is expected to require 13 new towers and 5 new rooftops; Tolland County and Middlesex County will need 7 new towers and 3 new rooftops each; Litchfield County will need 9 new towers and 3 new rooftops; whereas Windham County will need 7 new towers and 1 new rooftop.



The actual demand by the carriers will vary from the predicted amount depending on the actual demand incurred by increased wireless usage, the timing of the increase in usage, and the availability of funds for capital investment by the carriers in their infrastructure. Also, the placement of an actual site might change the allocation from one county to another where the site is located in one county but predominantly serves citizens in another.

State-Wide Plan For Wireless Telecommunications Coverage

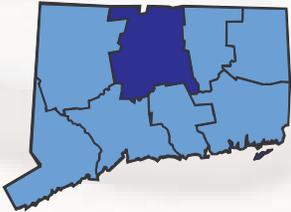


Fairfield County

Fairfield County has 230 towers with 449 colocated tenants and 97 rooftop installations with 161 tenants. Please see the table below for the forecasted number of new towers needed.

Year	New Towers	New Rooftops
2007	12	2
2008	10	2
2009	8	1
2010	5	1
2011	5	1
Total	40	7

The higher population number demands more base stations and hence more towers than in less densely populated counties. The higher density of urban areas also drives the greater use of rooftop installations.



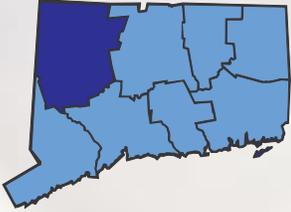
Hartford County

Hartford County has 258 towers with 491 colocated tenants and 81 rooftop installations with 106 tenants.

Year	New Towers	New Rooftops
2007	12	3
2008	10	2
2009	8	1
2010	5	1
2011	5	1
Total	40	8

Hartford County, which has a similar population density to Fairfield County, shows a similar demand for cell sites.

State-Wide Plan For Wireless Telecommunications Coverage

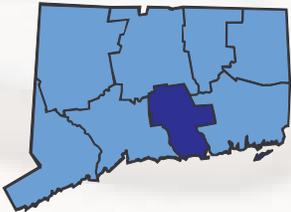


Litchfield County

Litchfield County had 84 towers with 204 tenants and only 2 rooftops with one tenant each. The less populated Litchfield County will also see a significantly lower demand for towers and rooftop than other counties in Connecticut.

Year	New Towers	New Rooftops
2007	3	1
2008	2	1
2009	2	1
2010	1	0
2011	1	0
Total	9	3

The less dense population in Litchfield County lends itself much more to tower deployment to maximize coverage than rooftop deployments which typically are more used for urban deployments.

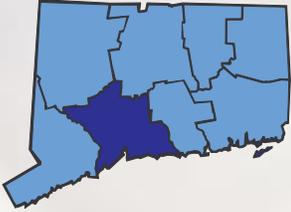


Middlesex County

Middlesex County, which is similar in terms of population density to Litchfield, shows the same tower demand.

Year	New Towers	New Rooftops
2007	2	1
2008	2	1
2009	1	1
2010	1	0
2011	1	0
Total	7	3

State-Wide Plan For Wireless Telecommunications Coverage

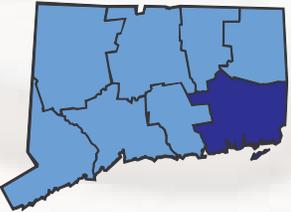


New Haven County

New Haven County is Connecticut's third most populous county, but roughly in line with the other two large counties, Fairfield and Hartford. New Haven County has 249 towers with 469 tenants and 80 rooftops with 120 tenants.

Year	New Towers	New Rooftops
2007	11	2
2008	9	2
2009	8	1
2010	5	1
2011	5	1
Total	38	7

Due to the similarities between New Haven County and the two other large counties in Connecticut, the demand for towers and roof tops is very similar.

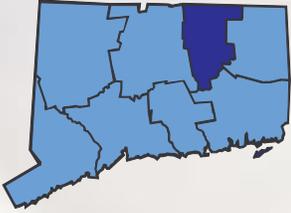


New London County

New London County had 134 towers with 264 tenants and 15 rooftops with 5 clients. The unused rooftop sites were built speculatively. It is likely they will be filled, but, in the meantime, they have decreased the need for new rooftops.

Year	New Towers	New Rooftops
2007	4	1
2008	3	1
2009	2	1
2010	2	1
2011	2	1
Total	13	5

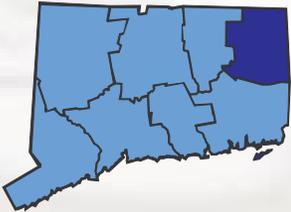
State-Wide Plan For Wireless Telecommunications Coverage



Tolland County

Tolland County had 67 towers with 141 tenants and 4 rooftops with 5 tenants. Similar to the other less populated counties, the demand for towers in Tolland County decrease from 2 a year in 2006 to 1 in 2011, for a total of 7 towers in the five year period.

Year	New Towers	New Rooftops
2007	2	1
2008	2	1
2009	1	2
2010	1	0
2011	1	0
Total	7	4



Windham County

Windham County had 61 towers with 137 tenants and 2 rooftops with 1 tenant. Just as in Tolland County, we expect that the unoccupied rooftop will be occupied by at least one tenant soon, but due to Windham County's low population density we expect little demand for towers.

Year	New Towers	New Rooftops
2007	2	1
2008	2	0
2009	1	0
2010	1	0
2011	1	0
Total	7	1

Over the next five years, we expect 7 towers to be built and only one rooftop location.

State-Wide Plan For Wireless Telecommunications Coverage

Conclusion

Pursuant to Public Act 04-226, the Council currently maintains a detailed database on all wireless telecommunications facilities in the State of Connecticut. Based on the above information, the Council anticipates that the need for construction of new base stations within Connecticut will increase. Growth in population density and new technology have created a greater demand for wireless telecommunications devices, which leads to a need for more base stations, to handle increased use by wireless subscribers. Other base stations are needed to provide coverage to an area that currently is lacking. The Council will continue to thoroughly review proposals for new towers to determine if public need for the facility outweighs environmental impact.



Co-location on an electric transmission structure located on 3 Mechanic Street in Darien.

State-Wide Plan For Wireless Telecommunications Coverage

Glossary

Base Station (Controller): Control Electronics with antennas that act as radio transmitter and receiver. The base station in conjunction with the antenna connects the mobile handset with the telephone network. Base Stations are typically placed on a tower or rooftop.

Colocation: Placing several base station on one physical structure such as a tower or rooftop.

Colocation Rate: The average amount of base stations on a structure. For 2006, in Connecticut the average colocation rate for towers ranged from 1.88 to 2.55, with an average of 2.01 and from 0.33 to 1.66 with an average of 1.39 for roof tops. The national average is approximately 2.5.



Mohawk Mountain in Cornwall.

Rooftop: A structure that is attached to a building which holds several base stations and antennas.

Tenant: Each base station on a tower or rooftop is also called a tenant.

Third Generation (3G): technology that support increased capacity and services over digital wireless networks.

Tower: A free standing structure onto which antennas and base stations are attached to in variable height.

State-Wide Plan For Wireless Telecommunications Coverage

	Fairfield County	Hartford County	Litchfield County	Middlesex County	New Haven County	New London County	Tolland County	Windham County	Connecticut
Sites	327	339	86	89	329	149	71	63	1,453
Tennants/BSC	610	597	208	183	589	269	146	138	2,740
Overall Colocation Rate	1.87	1.76	2.42	2.06	1.79	1.81	2.06	2.19	1.89
Towers	230	258	84	79	249	134	67	61	1,162
Tower Clients	449	491	206	178	469	264	141	137	2,335
Tower Colo Rate	1.95	1.90	2.45	2.25	1.88	1.97	2.10	2.25	2.01
Rooftops	97	81	2	10	80	15	4	2	291
Rooftop Tennants	161	106	2	5	120	5	5	1	405
Rooftop Colo Rate	1.66	1.31	1.00	0.50	1.50	0.33	1.25	0.50	1.39
Pop 2005	902,775	877,393	190,671	163,214	846,766	266,618	147,634	115,826	3,510,897
Growth	2.30%	2.40%	4.30%	5.30%	2.80%	2.90%	8.30%	6.20%	
Pop 2010	923,539	898,450	198,870	171,864	870,475	274,350	159,888	123,007	3,620,444

2005

	Fairfield County	Hartford County	Litchfield County	Middlesex County	New Haven County	New London County	Tolland County	Windham County	Connecticut
Sub/Site	1,905	1,786	1,530	1,265	1,776	1,235	1,435	1,269	1,667
Sub/Tenn	1,021	1,014	633	615	992	684	698	579	884
Sub/Location Avg	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200

Populations

	Fairfield County	Hartford County	Litchfield County	Middlesex County	New Haven County	New London County	Tolland County	Windham County	Connecticut
2006	902,775	877,393	190,671	163,214	846,766	266,618	147,634	115,826	
2007	906,928	881,604	192,311	164,944	851,508	268,164	150,085	117,262	
2008	911,081	885,816	193,951	166,674	856,250	269,711	152,535	118,698	
2009	915,233	890,027	195,590	168,404	860,992	271,257	154,986	120,135	
2010	919,386	894,239	197,230	170,134	865,734	272,804	157,437	121,571	
2011	923,539	898,450	198,870	171,864	870,475	274,350	159,888	123,007	



State-Wide Plan For Wireless Telecommunications Coverage

Penetration

	Fairfield County	Hartford County	Litchfield County	Middlesex County	New Haven County	New London County	Tolland County	Windham County	Connecticut
2006	69%	69%	69%	69%	69%	69%	69%	69%	
2007	74%	74%	74%	74%	74%	74%	74%	74%	
2008	78%	78%	78%	78%	78%	78%	78%	78%	
2009	81%	81%	81%	81%	81%	81%	81%	81%	
2010	83%	83%	83%	83%	83%	83%	83%	83%	
2011	85%	85%	85%	85%	85%	85%	85%	85%	

Subs

	Fairfield County	Hartford County	Litchfield County	Middlesex County	New Haven County	New London County	Tolland County	Windham County	Connecticut
2006	622,915	605,401	131,563	112,618	584,269	183,966	101,867	79,920	2,422,519
2007	671,127	652,387	142,310	122,059	630,116	198,442	111,063	86,774	
2008	710,643	690,936	151,281	130,006	667,875	210,374	118,978	92,585	
2009	741,339	720,922	158,428	136,407	697,403	219,718	125,539	97,309	
2010	763,090	742,218	163,701	141,211	718,559	226,427	130,673	100,904	
2011	785,008	763,683	169,039	146,085	739,904	233,197	135,904	104,556	3,077,377

State-Wide Plan For Wireless Telecommunications Coverage

Calculated BSC

	Fairfield County	Hartford County	Litchfield County	Middlesex County	New Haven County	New London County	Tolland County	Windham County	Connecticut
2006	519	505	110	94	487	153	85	67	2,019
2007	559	544	119	102	525	165	93	72	2,179
2008	592	576	126	108	557	175	99	77	2,311
2009	618	601	132	114	581	183	105	81	2,414
2010	636	619	136	118	599	189	109	84	2,489
2011	654	636	141	122	617	194	113	87	2,564

New BSC

	Fairfield County	Hartford County	Litchfield County	Middlesex County	New Haven County	New London County	Tolland County	Windham County	Connecticut
2006									
2007	40	39	9	8	38	12	8	6	160
2008	33	32	7	7	31	10	7	5	132
2009	26	25	6	5	25	8	5	4	104
2010	18	18	4	4	18	6	4	3	75
2011	18	18	4	4	18	6	4	3	75
Rooftop Proportion	10%	10%	10%	10%	10%	10%	10%	10%	



State-Wide Plan For Wireless Telecommunications Coverage

New Tower BSC

	Fairfield County	Hartford County	Litchfield County	Middlesex County	New Haven County	New London County	Tolland County	Windham County	Connecticut
2006									
2007	36	35	8	7	34	11	7	5	143
2008	30	29	6	6	28	9	6	5	119
2009	23	23	5	4	23	7	4	4	93
2010	16	16	4	4	16	5	4	3	68
2011	16	16	4	4	16	5	4	3	68

New Rooftop BSC

	Fairfield County	Hartford County	Litchfield County	Middlesex County	New Haven County	New London County	Tolland County	Windham County	Connecticut
2006									
2007	4	4	1	1	4	1	1	1	17
2008	3	3	1	1	3	1	1	0	13
2009	3	2	1	1	2	1	1	0	11
2010	2	2	0	0	2	1	0	0	7
2011	2	2	0	0	2	1	0	0	7

State-Wide Plan For Wireless Telecommunications Coverage

Colocation Rate Tower — 7% increase

	Fairfield County	Hartford County	Litchfield County	Middlesex County	New Haven County	New London County	Tolland County	Windham County	Connecticut
2006	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
2007	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
2008	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
2009	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
2010	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
2011	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	

Colocation Rate Rooftop — 7% increase

	Fairfield County	Hartford County	Litchfield County	Middlesex County	New Haven County	New London County	Tolland County	Windham County	Connecticut
2006	1.66	1.31	1.00	0.50	1.50	0.33	1.25	0.50	
2007	1.78	1.40	1.07	1.00	1.61	1.00	1.34	1.00	
2008	1.90	1.50	1.14	1.07	1.72	1.07	1.43	1.07	
2009	2.03	1.60	1.23	1.14	1.84	1.14	1.53	1.14	
2010	2.18	1.72	1.31	1.23	1.97	1.23	1.64	1.23	
2011	2.33	1.84	1.40	1.31	2.10	1.31	1.75	1.31	

State-Wide Plan For Wireless Telecommunications Coverage

New Tower Built

	Fairfield County	Hartford County	Litchfield County	Middlesex County	New Haven County	New London County	Tolland County	Windham County	Connecticut
2006									
2007	12	12	3	2	11	4	2	2	48
2008	10	10	2	2	9	3	2	2	40
2009	8	8	2	1	8	2	1	1	31
2010	5	5	1	1	5	2	1	1	21
2011	5	5	1	1	5	2	1	1	21
Total	40	40	9	7	38	13	7	7	161

New Rooftop Built

	Fairfield County	Hartford County	Litchfield County	Middlesex County	New Haven County	New London County	Tolland County	Windham County	Connecticut
2006									
2007	2	3	1	1	2	1	1	1	12
2008	2	2	1	1	2	1	1	0	10
2009	1	1	1	1	1	1	1	0	7
2010	1	1	0	0	1	1	0	0	4
2011	1	1	0	0	1	1	0	0	4
Total	7	8	3	3	7	5	3	1	37



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