

APPENDIX C

BUILD-OUT CALCULATIONS

BUILD-OUT ANALYSIS

A build-out analysis is designed to provide a general idea of the magnitude of development which could occur at some time in the future. For some municipalities, this time horizon is near term, for others it may be many decades in the future. It is a tool for estimation of the service infrastructure needed to support development and opportunities, e.g. transit, which may come to be in response to concentrations of development. Other than approved projects, the market pressure to develop in one location or another cannot be precisely nailed down. At the broad, regional level, build-out will most likely differ from municipal calculations if they have been done through calculation of the potential of specific vacant parcels. In all events, the results cannot be guaranteed to occur during any particular time period. These can be, however, a useful tool to evaluate the general impact of a particular zoning scheme. This analysis shall be reworked for Highlands communities once the Highlands Council have prepared and adopted a complete (per the Highlands Water Protection and Planning Act) Regional Master Plan and regulations therefore. Additionally, municipal decisions on opt-in will be critical to this effort.

The municipal and Hydrologic Unit Category (HUC) build out analysis is based upon various combinations of the following factors:

Developable land by zone – This measures the land remaining after areas of wetlands, streams, ponds, lakes (and associated buffers), severe slopes (35% or greater), developed lands, park and other preserved lands have been subtracted from the gross acreage in a zone or HUC.

Zone requirements – This sets the regulatory constraints for development, including minimum lot size, floor area ratio, density.

Anticipated lot yield – This is the number of developable lots which may be created from a tract of land. This number is reduced by 25% due to the fact that roads, tract shape and location of physical barriers to development reduce the lots (if any), which may result from subdivision.

Specific limitations e.g. NJPDES Individual Permit – In areas not served by sewerage treatment facilities, industrial development is limited to 15,999 square feet per lot regardless of lot size. This is the result of the requirement for an individual permit for generator of waste in excess of 2000 gallons per lot per day and the factors used by the DEP to calculate the volume

Water and/or sewerage treatment allocation – Where, for example in Andover Borough, a development proposal has some limitation due to available waste treatment capacity, the build-out of that tract is more precisely identified. In a municipality with allocation but no active development approvals, e.g. Hopatcong Borough there is little effect caused by waste treatment.

Impervious coverage limitations – Impervious coverage is a surrogate used to limit the amount of development on a parcel of land. For example, a 50% limitation on coverage allows up to one-half the parcel to be paved or built upon. For commercial or industrial uses requiring parking, access drives, and so forth, one square foot of coverage yields approximately 0.4 square feet of building area. Impervious coverage in single family detached residential areas has no impact on unit yield. The impact is felt where multifamily housing is permitted.

Residential Development

The vast majority of residential zoning in Sussex County is large lot single family detached housing. Here, the lot yield from a given area of developable land is reduced by a factor of 25%. This factor takes into account the loss of lots due to tract shape and the location of constraining elements on the tract. Some tracts, although shown as being developable, cannot be reached and yield no development. Many, if not most, are limited by the location of streams and wetlands beyond the buffer area requirements of NJDEP regulations. Where a Category One stream bisects a property, it will not be crossed. Not all the density thus cut off will be environmentally transferable, thereby reducing the ostensible lot yield. Given these and other common scenarios, the 25% factor is very conservative, probably yielding greater levels of development than will actually be realized.

Nonresidential Development

Non residential development will be affected in much the same ways as its residential counterpart. Lot yield, however, will be less important in the calculation of generated space as the 2000 gallon per day NJDEP limitation will hold development to 15,999 square feet of building per lot for industrial uses and small commercial groupings. For purposes of calculating the area of commercial and industrial space located in the County, an area of 200 square feet per worker has been used. One half of the development is assigned to the Highlands and the other to the remainder of the County. There are 38,000 jobs in the County. This, multiplied by 200 square feet per job, equals 7,600,000 square feet of space. If one half of this lies in the Highlands, 3,800,000 @ 2000 square feet per 225 gallon unit yields 1900 units. If Highlands areas generate only 148 gallons per acre per day of available recharge, two thousand square feet of space requires, on average, 1.5 acres of land. If there are 3,800,000 square feet of space in the Highlands, 2,889 acres of unpaved land are required to support it. Depending on the specific aquifer, a 100,000 square foot facility would require thirty-two to eighty acres to safely support its operation.

Areas Served by Wastewater Treatment Facilities

The principal limitation to larger scale development in Sussex County has historically been the availability of wastewater treatment. As noted, the vast majority of the Sussex County area is dependent upon septic systems for waste treatment. However, even those area with available capacity are more limited than the counties to the south and east. The major receiving stream, the Delaware River is off limits as it is a Wild and Scenic River, with the Delaware Water Gap National Recreation Area acting as a barrier. Additional streams in the County are relatively small as they are headwaters. The NJDEP has also ceased to issue permits for surface discharge of treated waste effluent.

The net result is that the future of compact development in Sussex County is limited to the capacity of those already permitted facilities with surface discharge (See Exhibit 15, Existing and Proposed Sewer Service Areas) and new facilities discharging highly treated effluent to groundwater. This can only occur where there are highly permeable soils such as glacial outwash capable of absorbing discharges of some magnitude.

Additionally, a review of the acreage zoned for non-residential uses in light of available water supplies indicates that the county is significantly overzoned for its carrying capacity.

Buildable Lands

The first step in preparing a build-out analysis is to evaluate the resource base and particularly those elements which affect the ability of land to sustain development. Lands which are permanently preserved, currently occupied, wetlands, excessive slopes, subject to regulatory restrictions (Category 1 streams and associated buffers), flood plains, etc. are not considered developable in this context. That analysis, presented below, yields the amount of land, by municipality and by zone which remains potentially developable. The Highlands has not been included in this calculation as the regulations and master plan have not yet been completed. It may be safely assumed, however, that development within the Highlands core will be significantly curtailed in the future. In addition to the above, allowance was made for substandard lots in lake communities.

Once the land area available for development has been calculated, the zoning standards for each municipality are applied to the developable lands. This calculation requires us to make assumptions based on sewer capacity, NJDEP permit limitations, maximizing density and impervious coverage, and without variances. With those understood, the following charts provide estimated build-out for Sussex County, by municipality, by zone.

Residential Units/Lots Potential Build-out by Municipality

Municipality	Zone	Zone Name	Minimum Lot Size (acres)	Developable Acres	Potential Units/Lots
Andover Borough					
	R-1A	Residential	0.344	1.31	2
	R-1	Residential	2.000	554.21	193
	R-2	Residential	0.230	0.00	0
	R-3	Residential	0.230	0.69	2
	Sum				197
	% of County Total - 0.81%				
Andover Township					
	PRC	Planned Retirement Community	200.0 (1.5 units/acre)	87.13	91
	R-2/A-1	Single Family Residential /Airport 1	1.0	0.57	0
	SR	Special Residential	5.0 (3630sq.ft./bed)	28.81	241
	R-3	Single-Family Residential	3.0	425.80	99
	R-2.5	Single Family Residential	2.5	130.75	36
	R-2	Single-Family Residential	1.997	2108.49	739
	R-1	Single Family Residential	1.033	136.82	92
	R-0.5	Single Family Residential Development	0.459	58.56	89
	ML	Mount Laurel	0.344	71.26	145
	MFR	Multi-Family Residential	5.0 (9 units/acre)	10.78	67
	R-0.5/A	Single Family Residential 0.5/Airport	0.459	25.05	38
	Sum				1637
	% of County Total – 6.80%				
Branchville Borough					
	R-1	Residential District	0.344	32.39	65
	R-2	Residential District	0.344	0.00	0
	R-3	Residential District	0.459	49.66	75
Municipality	Zone	Zone Name	Minimum Lot Size (acres)	Developable Acres	Potential Units/Lots

Sum **140**
% of County Total – 0.58%

Byram Township

R-1	Single Family Residential	5.0	730.11	102
R-1A	Single Family Residential	3.5	126.07	25
R-2	Single Family Residential	0.918	863.04	658
R-3	Single Family Residential	0.459	278.35	424
R-4	Single Family Residential	0.230	83.62	254

Sum **1633**
% of County Total - 6.78%

Frankford Township

AR-5	Agricultural/Residential	5.0	6051.58	1210
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Sum **1210**
% of County Total – 5.02%

Franklin Borough

R-1	Residential	3.0	446.24	104
R-3	Residential	0.344	7.44	15
R-2	Residential	1.0	42.32	29
R-4	Residential	0.143	12.67	62
MF	Multi-Family Residential	50 (15 units/acre)	32.00	0
ZM	Zinc Mine Zone	20 (35 units/acre)	21.00	490
MHP	Modular Home Park	25.0	7.67	0
MAAH	Mixed Active Adult Housing	70 (3.05 units/acre)	169.00	515
Q	Quarry	1.0 (1 unit/ 3 acre)	37.35	12
HMF	Hospital Multi-Family Zone	15.0 (6 units/acre)	18.36	90

Sum **1317**
% of County Total – 5.47%

Fredon Township

AR-6	Agricultural-Residential	6.000	4092.25	477
ER-1	Existing Residential	1.000	93.15	65
AR-2	Agricultural-Residential	2.000	76.80	26
PD	Planned Development	1.5	106.94	49

292

Sum **617**
% of County Total - 2.56%

Municipality	Zone	Zone Name	Minimum Lot Size (acres)	Developable Acres	Potential Units/Lots
Green Township					
	AR-5/2	Agricultural-Residential	5.0	3397.01	475
	R-1	Residential	1.0	53.21	37
	R-1.5	Residential	1.5	42.25	19
	Sum				531
	% of County Total – 2.29%				

Hamburg Borough

PD	Planned Development	1.0	21.15	14	
RR	Residential-Medium Density	0.230	63.38	192	
RO	Residential Office	0.344	0.00	0	
PR	Planned Residential-High Density	0.115	6.20	37	
ARPR	Age Restricted Planned Res. High-Density	20.0	approved for:	67	
	Sum			310	
	% of County Total – 1.28%				

Hampton Township

R-3	Single Family Residential	3.0	2970.19	693	
R-2	Single Family Residential	2.0	2760.79	966	
R-1.5	Single Family Residential	1.5	299.79	139	
APT/TH	Apartment/ Townhouse Multi-Family District	15.0 (5 units/acre)	42.13	150	
	Sum			1808	
	% of County Total – 7.51%				

Hardyston Township

R-4	Medium Density Residential (Multi-Family)	0.222	52.58	165
MIDD-10	Minimum Impact Development District (10)	10.0 (0.1 units/acre)	562.57	39
MIDD-5	Minimum Impact Development District (5)	5.0 (0.2 units/acre)	1209.58	169
MIDD-3	Minimum Impact	3.33 (0.3 units/acre)	1164.77	244
				293

R-3	Development District (3) Lakeside Residential	0.344	30.15	87
R-C	Residential Commercial	0.918	59.45	45
Sum				749
% of County Total - 3.11%				

Hopatcong Borough

R-1	Residential-Medium Density	0.344	271.40	552
R-2	Residential	1.377	96.29	48
R-2T	Townhouse Residential	25.0 (5 units/acre)	8.73	0
R-3	Residential-Low Density	5.000	537.61	75
RPD	Residential Planned Development	3.000	206.16	48
MPD	Multiple Purpose Development	3.000	116.50	38
Sum				761
% of County Total – 3.16%				

Lafayette Township

R-2.5	Residential	2.500	236.27	66
R-4.0	Residential	4.000	1035.62	181
R-5.0	Residential	5.000	2109.35	295
VR	Village Residential	0.344	17.0	34
Sum				576
% of County Total – 2.39%				

Montague Township

R-4	High Density Single Family	0.390 (9 units/acre max)	144.17	258
R-4SC	Planned Adult Residential Community Zone	0.390	41.07	73
R	Low Density Single Family	3.000	4273.12	997
Sum				1328
% of County Total – 5.52%				

Newton

R-4	High Density Residential	0.293	2.07	5
				294

R-TH	Medium/ High Density Residential	0.293	12.90	30
R-3	Medium Density Residential	0.207	21.22	71
R-2	Low/ Medium Density Residential	0.293	177.33	423
R-1	Low Density Residential	0.482	86.57	125
PRD-A	Planned Residential Development	40.000 (5 units/acre)	25.38	126
Sum				780
% of County Total – 3.24%				

Ogdensburg Borough

R-10	Residential	0.230	0.26	0
R-100	Residential	2.296	1.97	0
R-15	Residential	0.344	19.37	39
R-30	Residential	0.689	8.08	8
R-40	Residential	0.918	20.77	15
RMF	Residential - Single and Multi-Family	25.000 (5 units/acre)	27.99	125
Sum				187
% of County Total - 0.77%				

Sandyston Township

LC	Lake Community	0.230	226	687
V	Village	2.296	6.17	2
D	Medium Mountain Residential	1.837	480.39	183
B	Valley Residential-Agricultural	1.377	1247.92	634
A	Walpack Ridge Residential-Agricultural	2.755	972.79	247
C	Mountain Residential-Agricultural	4.591	844.19	128
Sum				1881
% of County Total – 7.82%				

Sparta Township

R-1	Residential	0.92	176.51	134
RRV	Rural Residential Development	10.000	403.55	28
RR	Rural Residential	5.000	2844.12	398
				295

	Constraints			
RC-2	Rural Conservation/ Residential	5.000	966.20	135
RC-1	Rural Conservation/ Residential	5.000	2.75	0
R-4	Residential/ Professional	0.459	4.98	7
R-2	Residential	0.459	95.91	146
MF-1,2,3	Multi-Family	20.00/3.00(5.5 units/acre)	28.01	107
R-3	Residential	0.321	57.37	125
Sum				1080
% of County Total – 4.49%				

Stanhope Borough

HR	High Density Residential	5.000 (10 units/acre)	6.03	60
HVR	Historic Village Residential	0.250	3.50	9
MR	Medium Density Residential	0.333	91.07	191
RC	Residential Conservation	5.000	40.42	5
MLR	Medium-Low Density Residential	1.000	65.86	46
LR	Low Density Residential	2.00	0	0
Sum				311
% of County Total - 1.29%				

Stillwater Township

R-30	Residential	0.689	58.18	59
R-5	Residential	5.000	3194.57	447
R-7.5	Residential	7.500	4113.58	383
Sum				889
% of County Total – 3.69%				

Sussex Borough

R-1	Low Density Residential	0.230	20.46	118
R-2	Medium Density Residential	0.344	1.96	5
R-3	High Density Residential (Garden Apartments)	3.000	0.21	8
Sum				131
% of County Total - 0.54%				

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Municipality	Zone (acres)	Zone Name	Minimum Lot Size Acres	Developable Units/Lots	Potential
Vernon Township					
	PLC	Private Lake Community Residential	0.230	596.05	1814
	R-4	Single-Family Residential	0.230	24.73	75
	R-3	Single-Family Residential	0.689	152.36	154
	R-1	Single-Family Residential	2.755	1442.80	366
	R-2	Single-Family Residential	1.377	1785.77	907
	Sum				3316
	% of County Total – 13.77%				
Wantage Township					
	RC	Residential-Commercial	0.918	77.97	59
	ML	Mount Laurel	0.167	104.44	437
	M-R	Multi-Family Residential	25.00(6 units/acre)	121.40	600
	E-5	Residential Environs	5.00	10238.58	1433
	R-2	Residential	0.258	54.01	146
	Sum				2675
	% of County Total – 11.11%				
				Grand Total	24064

Commercial Square Footage Potential by Zone Build-out

Municipality/Zone	Zone Name	Minimum Lot Acres	Developable Square Feet	Total Size (Acres)
Andover Borough				
C-1	Commercial	0.5	3.4	15,240
C-2	Shopping Center	5.0	2.4	13,462
C-3	Office, Shopping Center & limited Industrial	4.0	7.3	41,367
IP	Industrial Park	5.0	28.5	161,284
Sum			246	411,357
% County total			3.2%	1.3%
Andover Township				
B/A	Business/Airport	0.5	33.1	183,500
BPO/R/A	Business Professional Office/Residential/Airport	1.4	1.2	6,736
CB	Community Business	0.5	22.3	118,532
CR/A-2	Community Recreation/Airport-2	15.0	31.4	32,000
HC	Highway Commercial	1.4	45.5	257,675
I	Industrial	3.0	399.4	1,391,733
I/A-2	Industrial/Airport-2	3.0	66.0	230,136
Sum			599	2,220,311
% County total			7.8%	6.8%
Branchville Borough				
C	Commercial District	0.3	0.0	0
HC	Highway Commercial District	0.9	4.0	22,925
O	Professional & Office District	0.9	18.5	104,526
Sum			23	127,450
% County Total			0.3%	0.4%
Byram Township				
B-1	Highway Commercial	0.9	31.8	171,964
B-2	Shopping Center Commercial	5.0	54.9	310,776
C-R	Commercial-Recreation	20.0	70.2	36,478
ICP	Industrial Commercial Park	2.5	212.7	852,794
Sum			370	1,372,012
% County total			4.8%	4.2%

Municipality	Zone	Zone Name	Minimum Lot Acres	Developable Square Feet	Total Size (Acres)
Frankford Township					
	C-1	Commercial	0.9	11.1	0
	C-2	Commercial	5.0	259.4	1,425,082
	C-3	Commercial	0.9	102.3	555,388
	C-R	Commercial/ Recreation Resort	100.0	247.2	160,667
	LI	Light Industry	3.0	1015.2	517,536
	Sum			725	2,658,674
	% County Total			9.4%	8.1%
Franklin Borough					
	B-1	Business	0.1	0.5	1,395
	B-2	Business	0.3	0.6	3,441
	HC-2	Highway Commercial	2.9	4.5	25,212
	HC-3	Highway Commercial	0.5	10.9	61,945
	HC-4	Highway Commercial	2.9	48.4	274,244
	I	Industrial	4.8	18.9	64,914
	LC-1	Limited Commercial	4.0	1.2	6,792
	LC-2	Limited Commercial	23.0	102.5	580,250
	Q	Quarry	2.8	4.3	24,615
	Sum			196	1,063,732
	% County Total			2.6%	3.2%
Fredon Township					
	LI	Light Industrial	5.0	61.7	128,257
	TC	Town Center	0.7	50.3	285,060
	Sum			113	413,317
	% County Total			1.5%	1.3%
Green Township					
	AI-10	Agricultural Industrial	10.0	312.5	309,010
	B	Business	1.5	177.3	964,776
	Sum			490	1,273,786
	% County total			6.4%	3.9%
Hamburg Borough					
	BC	Borough Center	0.0	0.3	
	CR	Commercial- Recreation	3.0	7.7	43,516
	HC	Highway Commercial	0.3	7.4	38,946
	I	Light Industrial	1.8	38.3	216,647
	LI	Limited Industrial	1.8	0.3	-14,328
	PC	Planned Commercial	1.8	0.0	0
	Sum			54	284,781
	% County Total			0.7%	0.9%

Municipality	Zone	Zone Name	Minimum Lot Acres	Developable Square Feet	Total Size (Acres)
Hampton Township					
	HC	Highway Commercial	2.0	18.0	49,577
	HC-MFG	Highway-Commercial Manufacturing-Industrial	2.0	124.4	460,600
	HC-R	Highway-Commercial Residential	2.0	29.0	164,339
	HC-RD	Highway-Commercial Research-Development	5.0	56.4	319,408
	Sum			228	993,924
	% County Total			3.0%	3.0%
Hardyston Township					
	B-1	Neighborhood Commercial	0.5	9.5	38,026
	B-2	Highway Business	0.9	5.6	7,863
	C-R	Commercial Recreation	0.1	285.7	870,306
	I-1	Limited Industrial	3.0	384.1	2,070,254
	I-2	Medium Industrial	3.0	179.1	1,014,306
	Sum			864	4,000,755
	% County Total			11.3%	12.2%
Hopatcong Borough					
	B-1	Neighborhood Business	0.3	7.6	38,304
	B-1A	Retail Business Zone	0.5	0.0	0
	B-2	Community Business	0.5	9.4	49,306
	M-1	Light Manufacturing	2.0	47.4	216,108
	M-2	Light Manufacturing And Extraction	2.0	262.1	1,467,022
	Sum			327	1,770,740
	% County Total			4.3%	5.4%
Lafayette Township					
	EI	Extractive Industrial	3.0	63.3	219,579
	HC	Highway Commercial	3.0	103.2	283,829
	LI	Light Industrial	3.0	327.3	958,501
	VC	Village Commercial	1.0	18.4	104,394
	Sum			512	1,576,030
	% County Total			6.7%	4.8%
Montague Township					
	HC	Highway Commercial	1.0	310.5	1,758,327
	NC	Neighborhood Commercial	1.0	72.0	402,219
	Sum			382	2,160,547
	% County Total			5.0%	6.6%

Municipality Zone	Zone Name	Minimum Lot Acres	Developable Square Feet	Total Size (Acres)
Newton				
C-1	Professional & Office	0.2	2.2	6,850
C-2	Retail Service	0.2	0.0	0
C-3	Highway Commercial Retail	0.2	5.0	17,282
C-4	General Commercial	0.2	4.1	14,461
M-1	Limited Industrial	2.0	42.6	189,028
MXD	Mixed Use	5.0	0.0	0
Sum			54	227,620
% County Total			0.7%	0.7%
Ogdensburg Borough				
BC	Borough Center (Commercial)	0.2	1.5	8,390
CR	Commercial/Retail	0.5	6.5	29,059
IC	industrial/Commercial	5.0	35.1	72,946
LI/C	Light Industrial/ Commercial	2.0	15.9	72,547
Sum			59	182,941
% County Total			0.8%	0.6%
Sandyston Township				
CI	Commercial- Industrial	0.0	185.1	1,000,000
CS	Commercial Service	0.0	0.5	2,873
Sum			186	1,002,873
% County Total			2.4%	3.1%
Sparta Township				
C-1	Community Commercial	0.2	6.3	21,427
C-1H	Commercial Historic	0.2	4.3	20,586
C-2	Commercial/Professional	0.5	18.1	98,383
E-D	Economic Development	1.8	330.9	1,650,047
E-D1	Economic Development/ Low & Moderate Cost Income	1.8	30.6	173,338
PCD	Planned Commercial Development	1.0	32.7	185,230
TCC	Town Center Commercial	0.2	9.8	55,439
TCCO	Town Center Commercial Office	0.5	0.7	-93
TCLC	Town Center Limited Commercial	10.0	14.6	82,847
TCLM	Town Center- Lower Main Street Commercial	0.2	2.6	14,893
TCPB	Town Center – Professional Business	10.0	29.6	80,216
Sum			480	2,382,314
% County Total			6.3%	7.3%

Municipality	Zone	Zone Name	Minimum Lot Acres	Developable Square Feet	Total Size (Acres)
Stanhope Borough					
	HC	Highway Commercial	0.3	14.2	68,649
	I	Industrial	1.0	0.5	2,749
	PIC	Planned Light Industrial	5.0	110.5	625,928
	VB	Village Business	0.2	0.1	486
	Sum			125	697,812
	% County Total			1.6%	2.1%
Stillwater Township					
	C	Commercial	3.0	3.3	11,441
	CR	Commercial-Recreation	3.0	92.2	319,465
	NC	Neighborhood Commercial	0.0	17.1	
	Sum			113	330,906
	% County Total			1.5%	1.0%
Sussex Borough					
	A & I	Agriculture & Light Industry	1.8	0.9	4,932
	C-1	Central Business	0.5	0.0	55
	C-2	Redevelopment Area	0.9	0.5	2,698
	C-3	General Commercial	0.5	0.3	1,472
	LI & U	Light Industry and Utility	1.8	0.0	0
	O-R	Office Residential	0.2	0.0	0
	Sum			2	9,157
	% County Total			0.0%	0.0%
Vernon Township					
	C-1	Neighborhood Commercial	0.5	5.1	4,773
	C-2	General Business	0.7	31.9	138,856
	C-3	Office Commercial	0.9	17.3	89,884
	CR	Commercial Recreation	10.0	421.6	1,690,554
	LI	Light Industry	0.9	296.8	1,656,776
	TC	Town Center	0.1	57.8	303,395
	Sum			831	3,884,238
	% County Total			10.8%	11.8%
Wantage Township					
	HC	Highway Commercial	0.9	551.6	3,059,773
	I	Industrial	5.0	76.2	300,656
	LI	Limited Industrial	2.0	6.1	34,633
	NC	Neighborhood Commercial	0.5	71.2	395,064
	Sum			705	3,790,127
	% County Total			9.2%	11.5%
				Grand Total	Grand Total
				7,673	32,873,199

Many municipalities have prepared build-out analyses on a lot-by-lot basis. This approach, coupled with detailed local knowledge will result in a more precise estimate. Upon receipt of any of these municipal efforts, the above will be modified as appropriate.

