

Northeastern CROP - Revised

(NY; VT; NH; ME; & MA)

A Summary of CROP Landscape Analyses Results

Presented by

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Northeastern CROP:

**Center Point: Hanover, NH
75-mi. radius**

- Federal lands
- State lands
- 5 State Depts. of Trans.
- 18 Counties
- 248 townships



2 National Forests: 6 Ranger Districts

- **White Mountain NF**: Androscroggin, Saco, Ampe
- **Green Mountain NF**: Manchester, Rochester, Middlebury

18 Counties:

ME: Cumberland Oxford York

NH: Belknap Carroll Cheshire Coos
Grafton Sullivan Hillsborough Merrimack
Rockingham Strafford

NY: Warren Saratoga Washington Essex
Rensselaer

248 Townships in VT & MA (only 11 townships in 6 VT counties plan resource removal in next 5 years):

VT:

- Addison County** – Starksboro
- Orleans County** – Craftsbury
- Washington County** – Northfield; East Montpelier
- Rutland County** – West Rutland
- Windsor County** – Chester
- Orange County** – Bradford, Fairlee, Chelsen, Randolph, Brookefield

What we asked for:

- Volume (by mmbf, green tons, ccf, etc.)
 - Diameter sizes <4" 4"-7" 7"-9" 9"-12" >12"
 - Species (9 species evaluated for resource flow)
 - Harvest "type": fuel load reduction, timber sale, etc.
 - Location of resource offering
-
- NEPA Phase
 - Road accessibility
- } Federal lands

**So, let's take a look at
the final results . . .**

Overall (next 5 years):

Year	Total Biomass (81,597 gT)	% of 5-yr volume
2006	9,578.7	12%
2007	16,779.5	21%
2008	22,081.5	27%
2009	22,454.7	28%
2010	10,702.7	13%

*Biomass = 11%
(up to 7" dbh)*

Total Small Log (72.58 mmbf)	% of 5-yr volume
11.948	16%
15.477	21%
15.775	22%
16.53	23%
12.848	18%

*Small Logs = 46%
(>7" - 12" dbh)*

Total Large Log (67.875 mmbf)	% of 5-yr volume
11.363	17%
14.983	22%
13.978	21%
14.935	22%
12.616	19%

*Large Logs = 43%
(>12" dbh)*

Who's providing what?

Agency	5-yr total <i>Biomass (gT)</i>	5-yr total <i>Small Log (mmbf)</i>	5-yr total <i>Large Log (mmbf)</i>	% of 5-yr total
White Mtn. NF	27,843	50.114	46.124	65%
Green Mtn. NF	15,000	6.7	8.1	11%
NH DF&L	33,541	11.486	7.989	17%
NH Counties	640.5	.878	1.435	1.5%
MA DFW	450	1.039	.973	1.5%
VT Counties	43.75	.926	1.305	1.5%
MA DCR	1,925	.484	1.392	1.5%
ME IFW	2,154	.952	.556	1%

White Mtn. NF: (*gT= 27,843; Small log = 50.114 mmbf; Large log = 46.124 mmbf*)

Ranger Districts	5-yr total (Biomass = gT)	5-yr total Small log (mmbf)	5-yr total Large log (mmbf)
Androscroggin	6,963	12.529	11.53
Saco	10,302	18.542	17.066
Ampe	10,578	19.043	17.527

Green Mtn. NF: (*gT= 15,000; Small log = 6.7 mmbf; Large log = 8.1 mmbf*)

Ranger Districts	5-yr total (Biomass = gT)	5-yr total Small log (mmbf)	5-yr total Large log (mmbf)
Manchester	11,500	3.8	4.3
Rochester	2,000	1.4	2.8
Middlebury	1,500	1.5	1

New Hampshire (non-federal): (gT= 34,181.5; Small log = 12.369 mmbf; Large log = 9.4245 mmbf)

Agencies	5-yr total (Biomass = gT)	5-yr total Small log (mmbf)	5-yr total Large log (mmbf)
NH DF&L	33.541	16.486	7.989
<u>Counties:</u>			
Sullivan	478	.5736	1.2428
Grafton	162.5	.3043	.19265

Vermont (non-federal): (gT= 43.75; Small log = .926 mmbf; Large log = 1.35 mmbf)

Agencies	5-yr total (Biomass = gT)	5-yr total Small log (mmbf)	5-yr total Large log (mmbf)
DNR	No data provided		
<u>Counties:</u>			
Windsor	0	.09	.21
Rutland	43.75	.04	.10125
Washington	0	.36	.54
Orleans	0	.004	.006
Orange	0	.42	.4
Addison	0	.012	.048

Massachusetts (non-federal): (gT= 2,375; Small log = 1.5239 mmbf;
Large log = 2.3639 mmbf)

Agencies	5-yr total (Biomass = gT)	5-yr total Small log (mmbf)	5-yr total Large log (mmbf)
MA DCR	1,925	.4844	1.391
MA DFW	450	1.0395	.9729

Maine (non-federal): (gT= 2,153.95; Small log = .95238 mmbf; Large log = .5562 mmbf)

Agencies	5-yr total (Biomass = gT)	5-yr total Small log (mmbf)	5-yr total Large log (mmbf)
ME IFW	2,183.95	.95238	.5562



Private lands: No historical data exists for removal patterns.

<i>By Species</i>		5-yr total (Biomass = gT)	5-yr total Small log (mmbf)	5-yr total Large log (mmbf)
Hardwoods (non-specified)	(48% of 5-yr. total)	58,255	55.388	8.596
Softwoods (non-specified)	(13% of 5-yr. total)	7,390	8.838	9.536
Sugar maple	(12% of 5-yr. total)	2,811	1.375	17.284
Yellow birch	(6% of 5-yr. total)	1,800	.87	8.457
Red maple	(6% of 5-yr. total)	3,856	1.935	6.859
White pine	(5% of 5-yr. total)	2,653	2.092	5.385
Beech	(3% of 5-yr. total)	67	.0231	4.398
Paper birch	(3% of 5-yr. total)	1,619	.768	4.098
Spruce species	(3% of 5-yr. total)	3,144	1.289	3.26

Fairly good picture for small log processing as hardwoods (non-specified) & softwoods (non-specified) equals 60% of the total CROP volume & their largest percentages fall within the >7"-12" log strata.

(5-yr total = 62.285 mmbf for >7"- 9"; 10.295 mmbf for >9"- 12")

		% of species volume		
		4"-7"	>7"-9"	>9"-12"
<i>Hardwoods</i>	(48%)	15%	70%	3%
<i>Softwoods</i>	(13%)	7	23	22
<i>Sugar maple</i>	(12%)	3	5	3
<i>Yellow birch</i>	(6%)	4	6	3
<i>Red maple</i>	(6%)	8	13	7
<i>White pine</i>	(5%)	6	8	18
<i>Beech</i>	(3%)	1	1	1
<i>Paper birch</i>	(3%)	6	9	6
<i>Spruce species</i>	(3%)	12	19	5

Resource Offering Maps (ROMS):

Here's what you get for each species . . .

- ✓ Who will supply?
- ✓ When will supply be offered?
- ✓ How much will be offered?
- ✓ What diameter size will it be offered in?
- ✓ Will supply be consistent and levelized over time to invite purchase and investment?

For each species:

- ✓ **Locator map** per specific supplier
- ✓ **Summary sheet**
- ✓ **Detailed supply breakouts** by volume, diameter, and year per supplier

*Let's look at Sugar Maple
as an example . . .*

Northeastern CROP - Revised

Northeastern: *Sugar Maple* CROP offering/removal '06 - '10
(gT = 2,811 / S = 1.375 mmbf / L = 17.284 mmbf)**

ROM # SM 1.1

** VT DNR – no data provided

White Mtn. NF:

- A *Androscroggin RD****
- B *Saco RD*
- C *Ampe RD*

NH DF & L:

- D NH DF & L

Green Mtn. NF:

- E *Manchester RD*
- F *Rochester RD*
- G *Middlebury RD*

MA DCR:

- H *MA DCR*

NH Counties:

- I *Sullivan Co.*
- J *Grafton Co.*

VT Counties:

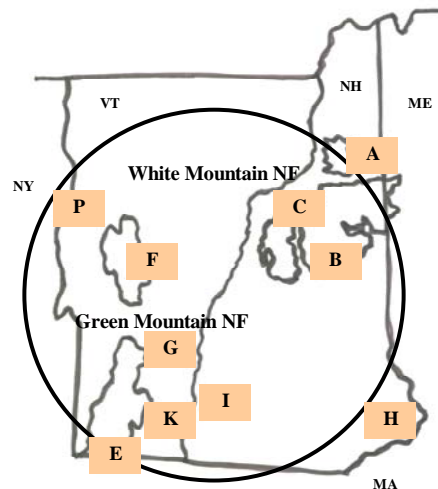
- K *Windsor Co.*
- L *Rutland Co.*
- M *Washington Co.*
- N *Orleans Co.*
- O *Orange Co.*
- P *Addison Co.*

MA DFW:

- Q *MA DFW*

ME IFW:

- R *ME IFW*



Locator map

**italics/bold = species offering in CROP

Summary Sheet

Northeastern CROP - Revised

Northeastern: **Sugar Maple** CROP offering/removal '06 - '10
 (gT = 2,811 / S = 1.375 mmbf / L = 17.284 mmbf)**

ROM # SM 1

** VT DNR - no data provided

gT = green tons (up to <7" dbh)
 S = small log mmbf (>7"-12" dbh)
 L = large log mmbf (>12" dbh)

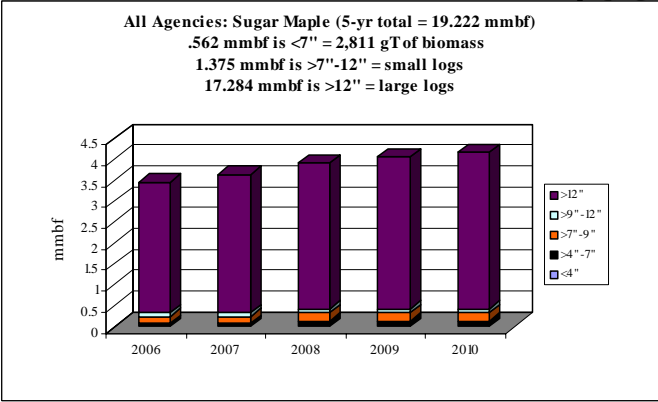
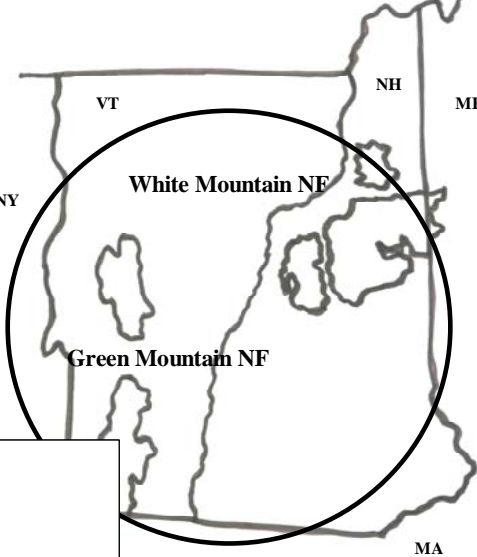
White Mtn. NF: 3 RDs (15.309 mmbf) 80%
 (gT = 0 / S = 0 / L = 15.309)

MA DCR: (.045 mmbf) <1%
 (gT = 38.5 / S = .0097 / L = .0278)

Green Mtn. NF: 3 RDs (3.749 mmbf) 19%
 (gT = 2,760 / S = 1.334 / L = 1.863)

VT Counties: 2 Counties (.069 mmbf) <1%
 (gT = 0 / S = .0165 / L = .0525)

NH Counties: 1 County (.05 mmbf) <1%
 (gT = 12.5 / S = .015 / L = .0325)



	mmbf		
	gT Biomass	Small Log	Large Log
2006	352.7	0.25493766	3.1243671
2007	362.7	0.26693766	3.2943671
2008	697.7	0.28633766	3.4919671
2009	700.2	0.28903766	3.6277671
2010	697.7	0.27793766	3.7463671
Totals	2811	1.3751883	17.2848355
%	3%	7%	90%
mmbf	0.5622		

19.2222238

Northeastern CROP - Revised

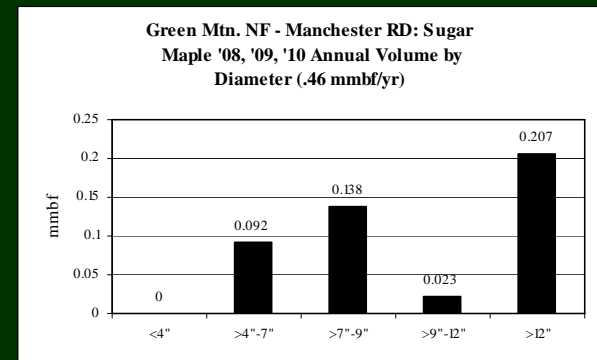
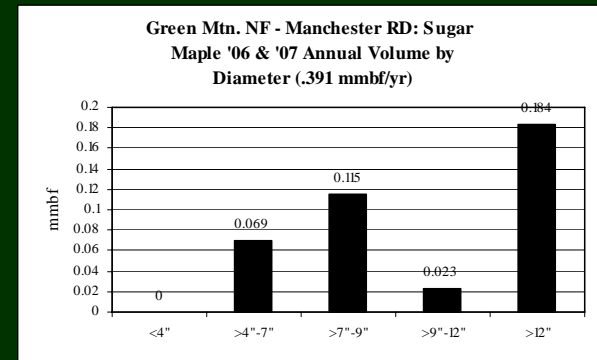
Detailed Breakout by Supplier

Northeastern: Sugar Maple CROP offering/removal
'06 - '10 (by agency)

ROM # SM 1.4

gT = green tons (up to <7" dbh)
S = small log mmbf (>7"-12" dbh)
L = large log mmbf (>12" dbh)

Sugar Maple Green Mtn. NF: Manchester RD	5-yr = 2.162 mmbf
	<ul style="list-style-type: none"> Fairly level supply from year to year
gT = 2,070	<ul style="list-style-type: none"> <4" = 0% (0 mmbf) >4"-7" = 19% (.414 mmbf)
S = .759	<ul style="list-style-type: none"> >7"-9" = 30% (.644 mmbf) >9"-12" = 5% (.115 mmbf)
L = .989	<ul style="list-style-type: none"> >12" = 46% (.989 mmbf)



SO . . . with CROP, we're able to look at:

- *performance between different public agencies* to identify needed coordination of supply; and
- *performance between ranger districts in a single NF* to see where coordination of supply offering might be needed.

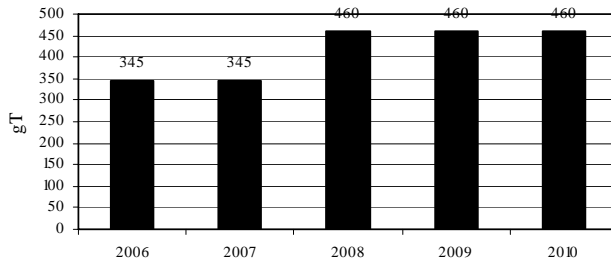
Let's take a look ...

Northeastern CROP - Revised

Sugar Maple: Green Mtn. NF - 3 RDs – biomass offerings

Manchester RD

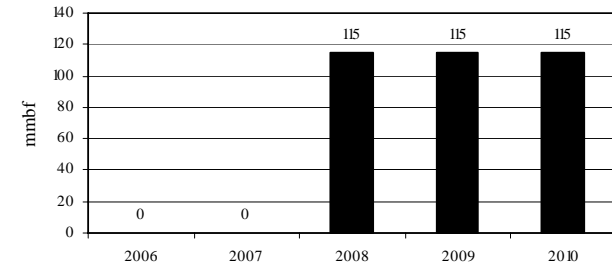
Green Mtn. NF - Manchester RD: Sugar Maple Total 5-yr Biomass (up to 7" dbh) by Specie (2,070 gT)



75%

Middlebury RD

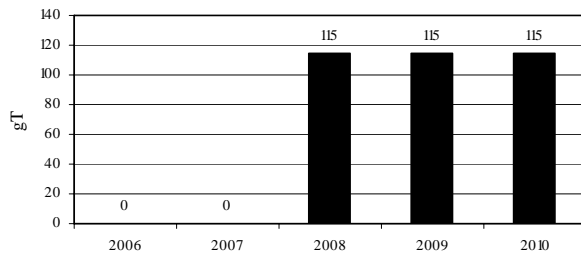
Green Mtn. NF - Middlebury RD: Sugar Maple Total 5-yr Biomass (up to 7" dbh) by Specie (345 gT)



12.5%

Rochester RD

Green Mtn. NF - Rochester RD: Sugar Maple Total 5-yr Biomass (up to 7" dbh) by Specie (345 gT)



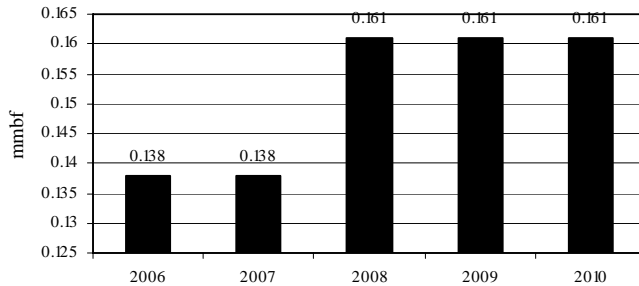
12.5%

Fairly levelized 5-year supply in only one RD: levelized supply in all RD's beginning in 2008.

Sugar Maple: Green Mtn. NF – 3 RDs – small log offerings

Manchester RD

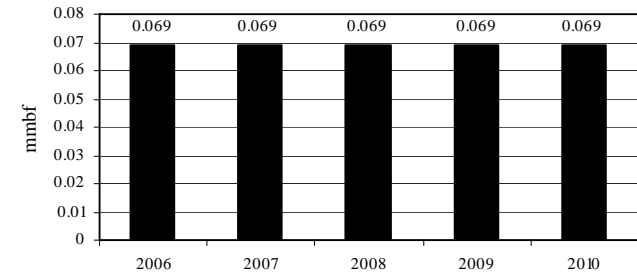
Green Mtn. NF - Manchester RD: Sugar Maple Total 5-yr Small Log (>7"-12" dbh) by Specie (.759 mmbf)



57%

Middlebury RD

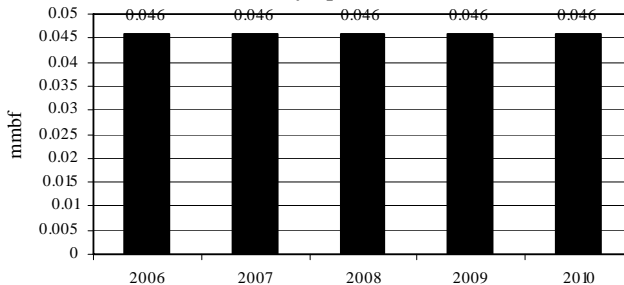
Green Mtn. NF - Middlebury RD: Sugar Maple Total 5-yr Small Log (>7"-12" dbh) by Specie (.345 mmbf)



26%

Rochester RD

Green Mtn. NF - Rochester RD: Sugar Maple Total 5-yr Small Log (>7"-12" dbh) by Specie (.23 mmbf)



17%

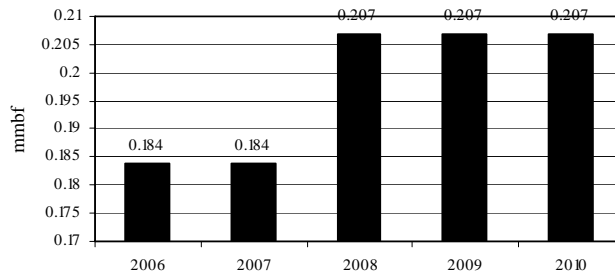
2 out of 3 RD's provide levelized supply for all five years.

Northeastern CROP - Revised

Sugar Maple: Green Mtn. NF – 3 RDs – large log offerings

Manchester RD

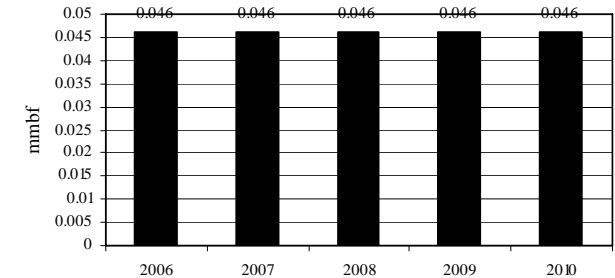
Green Mtn. NF - Manchester RD: Sugar
Maple Total 5-yr Large Log
(>7"-12" dbh) by Specie (.989 mmbf)



53%

Middlebury RD

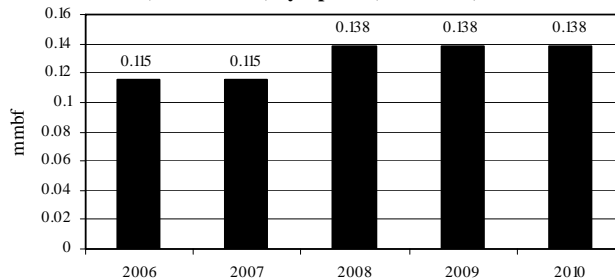
Green Mtn. NF - Middlebury RD: Sugar
Maple Total 5-yr Large Log
(>7"-12" dbh) by Specie (.23 mmbf)



12%

Rochester RD

Green Mtn. NF - Rochester RD: Sugar
Maple Total 5-yr Large Log
(>7"-12" dbh) by Specie (.644 mmbf)



35%

**2 out of 3 RD's provide
levelized supply for all five
years.**

Let's look at species Summary Sheets for the other top Northeastern CROP species . . .

Northeastern CROP - Revised

Northeastern: Hardwoods* CROP offering/removal '06 - '10
 (gT = 58,255 / S = 55.388 mmbf / L = 8.596 mmbf) **

ROM # HWD 1

* Black Cherry, Hickory, Poplar, Oaks (Black, Red, White),
 White Ash, White & Yellow Birch, Aspen

gT = green tons (up to <7" dbh)
 S = small log mmbf (>7"-12" dbh)
 L = large log mmbf (>12" dbh)

** VT DNR - no data provided

White Mtn. NF: 3 RDs (55.564 mmbf) 73%
 (gT = 25,899 / S = 46.607 / L = 3.777)

NH DF&L: (15.676 mmbf) 21%
 (gT = 29,538 / S = 7.177 / L = 2.59)

Green Mtn. NF: 3 RDs (3.097 mmbf) 4%
 (gT = 2,280 / S = 1.102 / L = 1.539)

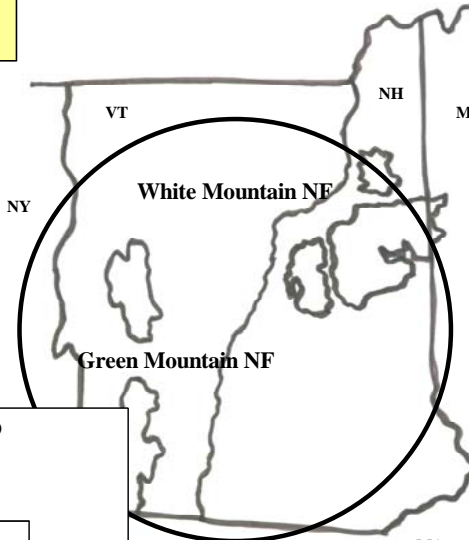
NH Counties: 2 Counties (.817 mmbf) 1%
 (gT = 226 / S = .352 / L = .419)

MA DCR: (.303 mmbf) <1%
 (gT = 258 / S = .0649 / L = .186)

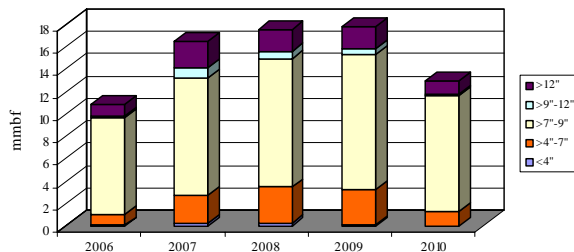
VT Counties: 3 Counties (.117 mmbf) <1%
 (gT = 0 / S = .052 / L = .065)

MA DFW: (.0204 mmbf) <1%
 (gT = 0 / S = .0133 / L = .0071)

ME IFW: (.0405 mmbf) <1%
 (gT = 54 / S = .0198 / L = .0099)



All Agencies: Hardwoods (5-yr total = 75.635 mmbf)
 11.651 mmbf is <7" = 58,255 gT of biomass
 55.388 mmbf is >7"-12" = small logs
 8.596 mmbf is >12" = large logs



MA	gT			mmbf		
	Biomass	Small Log	Large Log	Biomass	Small Log	Large Log
2006	5096.09	8.746392321	1.071739571			
2007	13292.00186	11.48076381	2.366179571			
2008	17136.09	12.15578232	1.998199571			
2009	16428.84	12.54698232	1.915149571			
2010	6302.59	10.45858232	1.244699571			
Totals	58255.61186	55.3885031	8.595967853			
%	15%	73%	11%			
mmbf	11.65112237					

75.63559332

Northeastern CROP - Revised

Northeastern: **Softwoods* CROP** offering/removal '06 - '10
 (gT = 7,390 / S = 8.838 mmbf / L = 9.536 mmbf)**

ROM # SWD 1

* Eastern Hemlock, Austrian Pine, Pitch Pine, Red Pine, Scots Pine, White Pine, Spruce/Fir, Balsam Fir

gT = green tons (up to <7" dbh)
 S = small log mmbf (>7"-12" dbh)
 L = large log mmbf (>12" dbh)

** VT DNR - no data provided

White Mtn. NF: 3 RDs (7.287 mmbf) 37%
 (gT = 0 / S = 3.247 / L = 2.826)

NH DF&L: (10.508 mmbf) 53%
 (gT = 4,003 / S = 4.309 / L = 5.398)

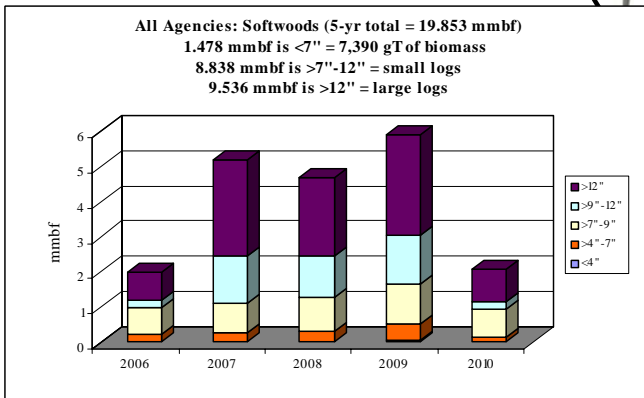
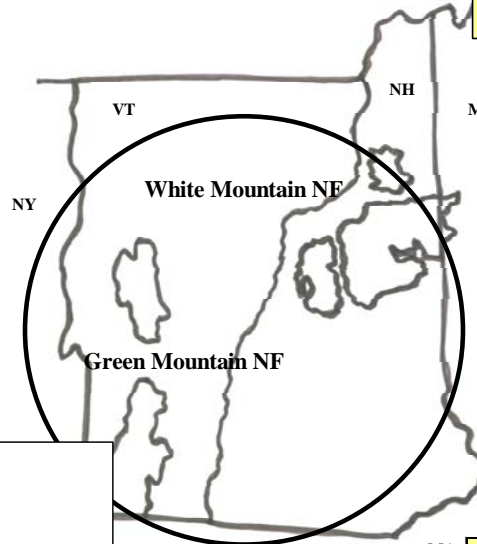
NH Counties: 2 Counties (.086 mmbf) <1%
 (gT = 22.7 / S = .031 / L = .051)

MA DCR: (.607 mmbf) 3%
 (gT = 516.8 / S = .13 / L = .374)

VT Counties: 3 Counties (.427 mmbf) 2%
 (gT = 43.75 / S = .247 / L = .171)

MA DFW: (.664 mmbf) 4%
 (gT = 225 / S = .501 / L = .1182)

ME IFW: (.273 mmbf) 1%
 (gT = 635 / S = .114 / L = .032)



MA	gT	mmbf	
	Biomass	Small Log	Large Log
2006	1137.5725	0.974283086	0.791548318
2007	1356.28216	2.198974814	2.732485318
2008	1655.4225	2.129163086	2.220938318
2009	2607.3725	2.503113086	2.854338318
2010	633.6225	1.032913086	0.936788318
Totals	7390.27216	8.838447158	9.53609859
%	7%	45%	48%
mmbf	1.478054432		

19.85260018



How levelized will the supply be for all species?

Let's take a look . . .

Levelized supply for five years?

(R = relatively)

	gT Biomass		Small Logs		Large Logs	
	yes	no	yes	no	yes	no
Hardwoods (48%)		✓	R		R	
Softwoods (13%)		✓		✓		✓
Sugar Maple (12%)		✓	R		R	
Yellow Birch (6%)		✓	✓		R	
Red Maple (6%)		✓	R		R	
White Pine (5%)		✓		✓		✓
Beech (3%)	✓		R			✓
Paper Birch (3%)		✓	R			✓
Spruce Species (3%)	R			✓		✓

Looking at the *Sugar Maple* . . .

- ✓ There will be an *unlevel supply of green tonnage biomass*, but that will impact only 5% of the total biomass volume over the next 5 years.
- ✓ There will be a *level supply of small logs in this specie* but this will impact ~1% of the total CROP small log supply.
- ✓ There will be a *level supply of large logs*, but this will impact over ~24% of the total 5-yr volume.

Here's how it looks on an agency-by-agency basis . . .

Levelized Annual Supply?

(Total 5-yr volume)

Not a bad picture for small & large log volumes due to the RD's in both National Forests. But biomass volumes still highly fluctuating.

<i>R = relatively</i>		<i>Sugar Maple</i> (19.222 mmbf; includes gT)		
		<i>yes</i>	<i>no</i>	<i>Comments</i>
<i>White Mtn. NF</i>	(80% of 5-yr vol.)			
	Androscroggin	R		Average ~ .765 mmbf/yr
	Saco	R		Average ~ 1.133 mmbf/yr
	Ampe	R		Average ~ 1.163 mmbf/yr
<i>Green Mtn. NF</i>	(19% of 5-yr vol.)			
	Manchester	R		From .39 mmbf to .46 mmbf/yr
	Rochester	R		From .16 mmbf to .2 mmbf/yr
	Middlebury	R		From .115 mmbf to .138 mmbf/yr
<i>MA DCR</i>	(<1% of 5-yr vol.)	✓		.009 mmbf/yr
<i>VT Counties</i>	(<1% of 5-yr vol.)		✓	Only offered in '09
<i>NH Counties</i>	(<1% of 5-yr vol.)		✓	From .01 mmbf to .04 mmbf/yr

Overall . . . *better coordination* of resource, particularly in the softwood offering for all three log stratum, & hardwood & softwood biomass offering will likely be preferred to help:

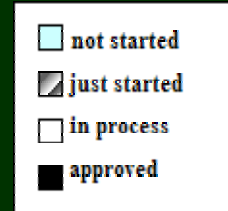
- **Reduce investor risk**
- **Increase purchaser confidence**
- **Achieve fuel load reduction goals**
- **Achieve forest restoration goals**

What about NEPA?
It's important to know!

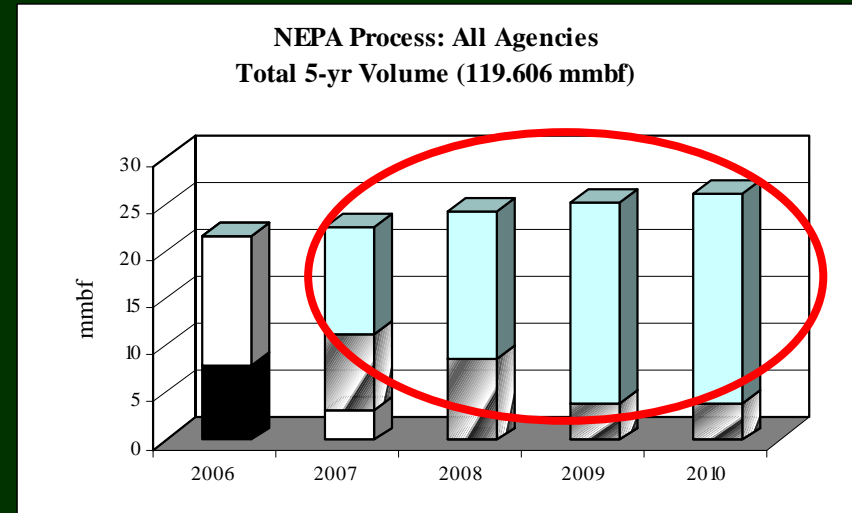
... here's how it looks

NEPA Picture for CROP Landscape

All NF lands:
 74% of 5-yr total = (119.606 mmbf; includes gT as mmbf)



	<i>mmbf</i>	<i>% of total</i>
<i>Approved</i>	7.967	7%
<i>In process</i>	16.874	14%
<i>Just started</i>	24.258	20%
<i>Not started</i>	70.507	59%



Over 50% of CROP resource offering not started in the NEPA process! High risk scenario!



... but story best told on agency-by-agency basis.

NEPA Risk Rating

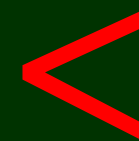
1 Lowest	2 Low	3 Medium	4 <i>High</i>	5 <i>Highest</i>
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For low risk rating, 3 key desired attributes:

- ✓ Volume *approved* in first 2 years, followed by *in-process*.
- ✓ Consistency in supply; no dramatic gaps from year to year (eg: *approved/not started/in-process*).
- ✓ Overall – no major emphasis on *just started* or *not started*.

NEPA Risk Rating Summary:

	mmbf affected	% of 5-yr total
lowest	0	0%
low	0	0%
medium	0	0%
high	43.25	36%
highest	76.34	64%



100% in high risk designation

NEPA Risk Rating Summary:

White Mtn. NF	Total 5-yr volume	NEPA Risk Rating
Androscroggin	25.45 mmbf	<i>high</i>
Saco	37.66 mmbf	<i>highest</i>
Ampe	38.68 mmbf	<i>highest</i>

Green Mtn. NF	Total 5-yr volume	NEPA Risk Rating
Manchester	10.4 mmbf	<i>high</i>
Rochester	4.6 mmbf	<i>high</i>
Middlebury	2.8 mmbf	<i>high</i>

What about road access to supply? Here's how it looks . . .

Agency	5-yr total volume	Affected by No Current Road Access		
	mmbf	mmbf	% of total volume with no road access	Species affected
MA DCR	2.26119	.226119	10%	RM, BE, PB, HWD, WP, SM, Spruce Sp., SWD
NH Counties	2.44149	0	0%	
ME IFW	1.93937	.0639	3%	WP, PB (White Birch)
VT Counties	2.24	0	0%	
NH DF&L	26.184555	0	0%	
MA-DFW	2.1024	0	0%	
Green Mtn. NF	17.8	0	0%	
White Mtn. NF	101.806	0	0%	
Total	156.775	.290019	<1%	

*Conclusions for the Northeastern CROP . . .
 . . .not an attractive picture for investors . . .*

For all volume:

- The NEPA risk for all offerings likely trumps all other analyses factors, with much of the anticipated volume in high risk designation.

Conclusions for the Northeastern CROP (continued)

For *biomass*:

- The unlevelized supply of all biomass (<7”) may serve as a deterrent to investment in the region.
- There is a notably lower offering in this resource volume. Even if offered on a levelized supply basis, the annual volumes in this log stratum may not be sufficient to invite new biomass-to-energy investment to the CROP region.

Conclusions for the Northeastern CROP (continued)

For solid wood processing (*hardwoods*):

- The volumes identified for offering in the *hardwood* classification for small log processing may offer investment opportunity for a dedicated small log hardwood mill.
- A risk factor is the heavy concentration of volume in the >7"-9" dbh range, but anticipated annual offerings fall within acceptable production ranges to invite investor interest.

Conclusions for the Northeastern CROP (continued)

For solid wood processing (*softwoods*):

- The volumes identified for *softwood* offering may be too small to attract new manufacturing interest to the region, but could be welcomed additions to existing milling operations for both small & large log volumes.

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