

Communicating probabilistic information
using

Experimental Snow Forecast Products

Focus Group Study

Part I.

General Decision Making and Information Needs

Part II.

Experimental Probabilistic Graphics

Winter Storm Warning Example

Winter Storm Warning

URGENT - WINTER WEATHER MESSAGE
National Weather Service Taunton MA
346 AM EDT Mon Mar 13 2017

MAZ017>021-RIZ004>007-131600-
/O.CAN.KBOX.BZ.A.0002.170314T1700Z-170315T0600Z/
/O.EXT.KBOX.WS.W.0005.170314T0900Z-170314T1900Z/
Northern Bristol MA-Western Plymouth MA-Eastern Plymouth MA-
Southern Bristol MA-Southern Plymouth MA-Eastern Kent RI-
Bristol RI-Washington RI-Newport RI-
Including the cities of Taunton, Brockton, Plymouth, Fall River,
New Bedford, Mattapoisett, East Greenwich, Warwick, West Warwick,
Bristol, Narragansett, Westerly, and Newport
346 AM EDT Mon Mar 13 2017

...WINTER STORM WARNING NOW IN EFFECT FROM 5 AM TO 3 PM EDT
TUESDAY...
...BLIZZARD WATCH IS CANCELLED...

The National Weather Service in Taunton has cancelled the
Blizzard Watch.

- * LOCATIONS...Much of Southeast Massachusetts and southern Rhode Island.
- * HAZARD TYPES...Heavy snow and strong winds.
- * ACCUMULATIONS...Snow accumulation of 8 to 12 inches.
- * TIMING...Snow begins between 5 and 7 am Tuesday morning. The snow will quickly become heavy with 2 to 4 inch per hour snowfall rates possible at times through late Tuesday morning. Snow could change to sleet and rain Tuesday afternoon.
- * IMPACTS...Dangerous travel conditions due to poor visibility and snow covered roads, especially Tuesday morning through early Tuesday afternoon. Strong winds may result in scattered power outages.
- * WINDS...Northeast 20 to 30 mph with gusts up to 50 mph.
- * VISIBILITIES...One quarter mile or less at times.

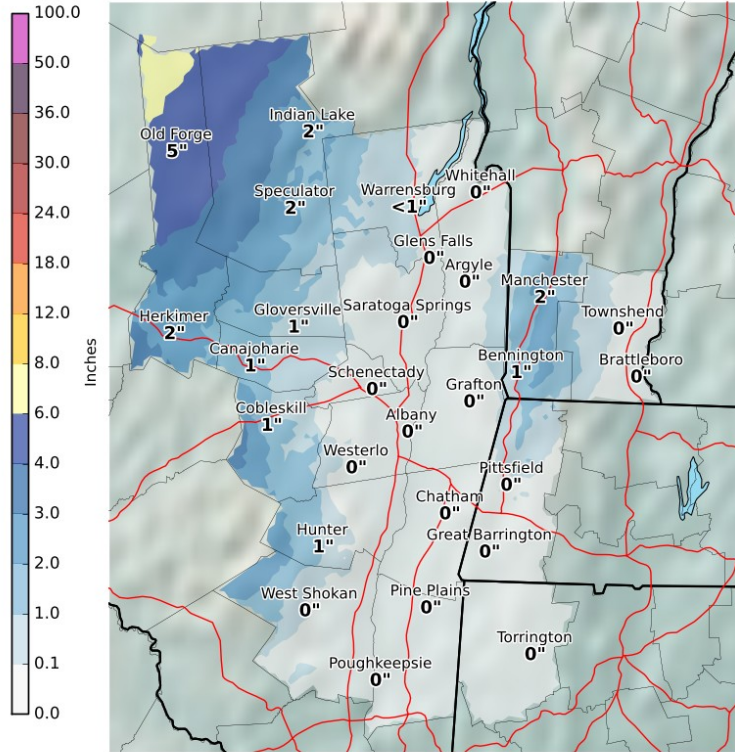
PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Winter Storm Warning means significant amounts of snow are expected. This will make travel very hazardous or impossible.

What do these graphics tell you?

Expect at Least This Much

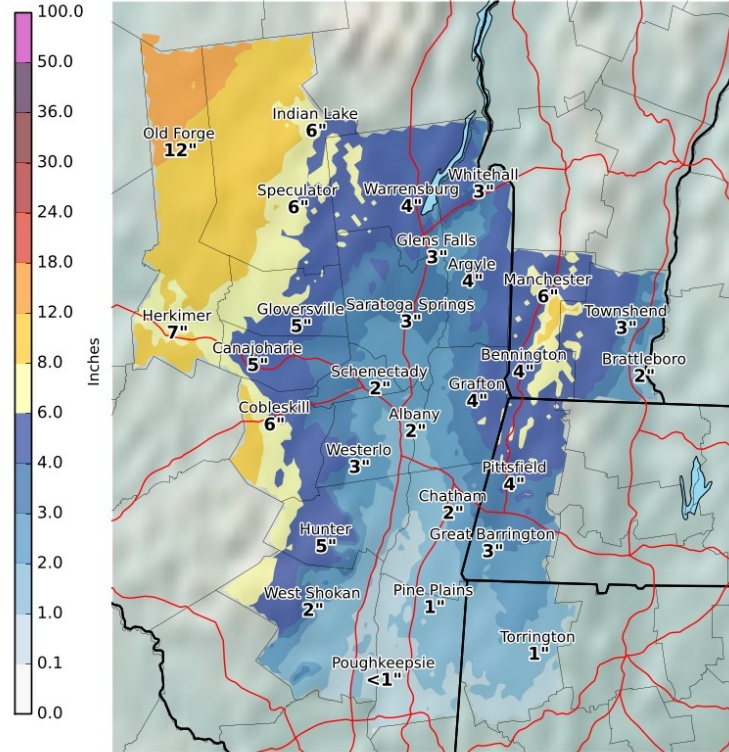
Valid: 11/19/2016 07:00 PM - 11/21/2016 07:00 PM



Most Likely Snowfall

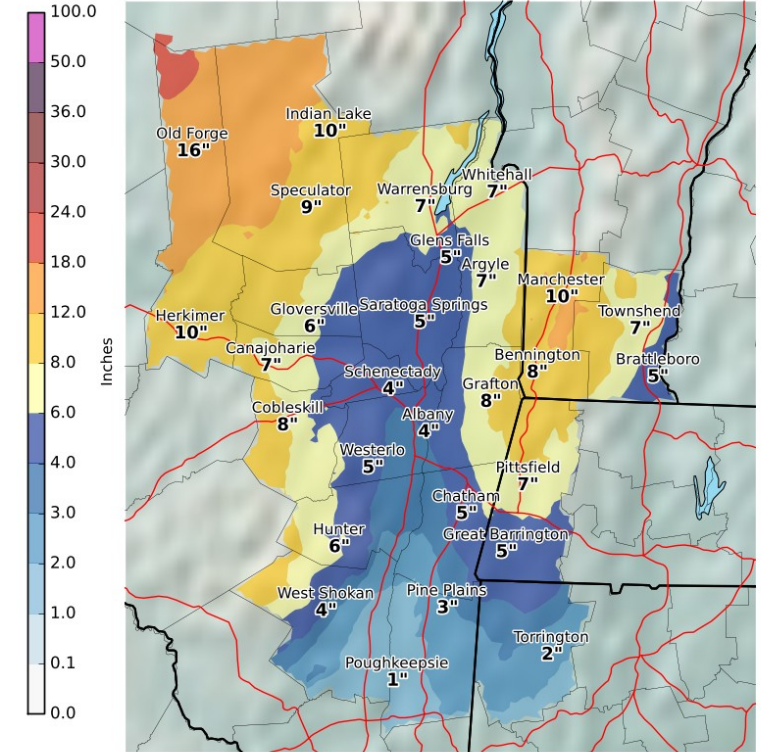
Valid: 11/19/2016 07:00 PM - 11/21/2016 07:00 PM

*Please visit our winter page for full suite of graphics



Potential for This Much

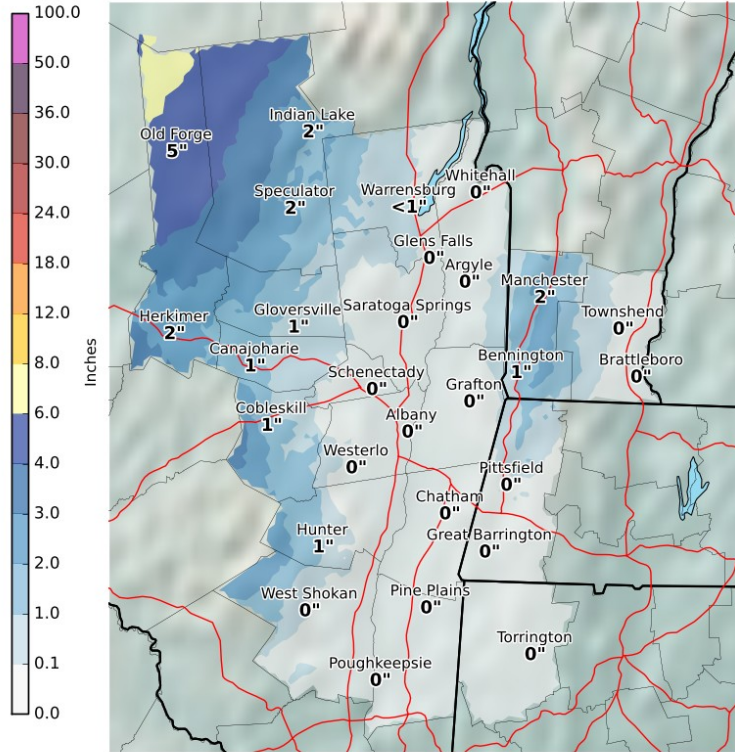
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Timing

Expect at Least This Much

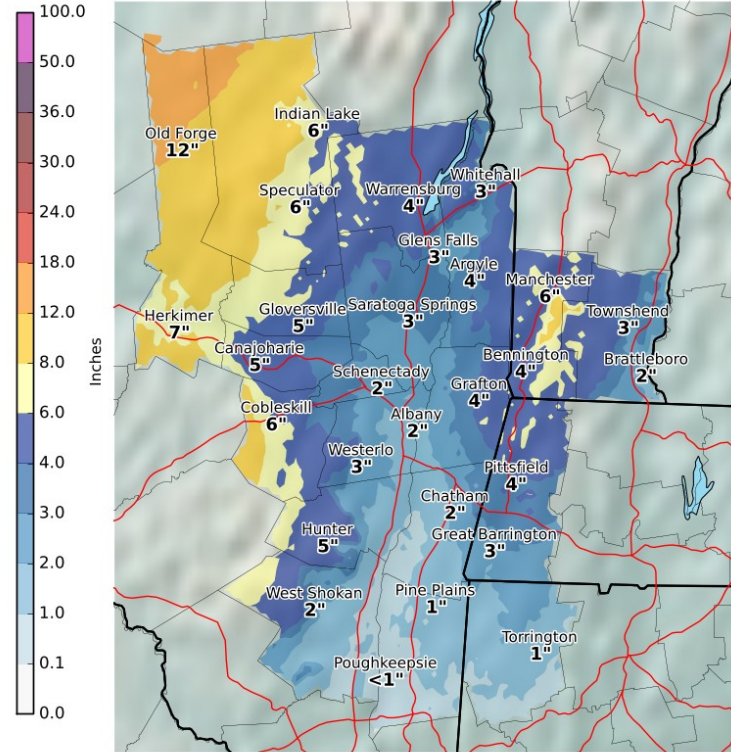
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Most Likely Snowfall

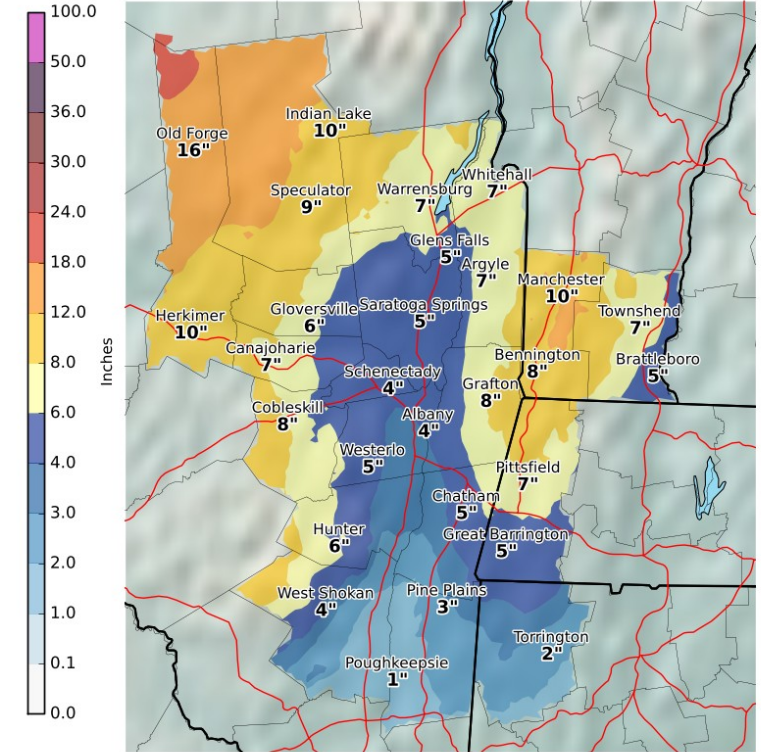
Valid: 11/19/2016 07:00 PM - 11/21/2016 07:00 PM

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Potential for This Much

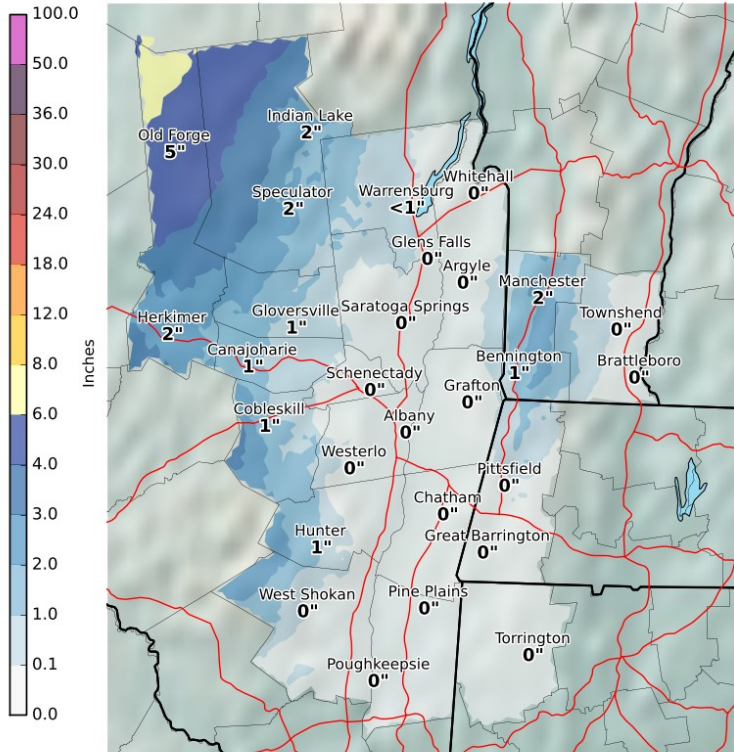
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Usefulness

Expect at Least This Much

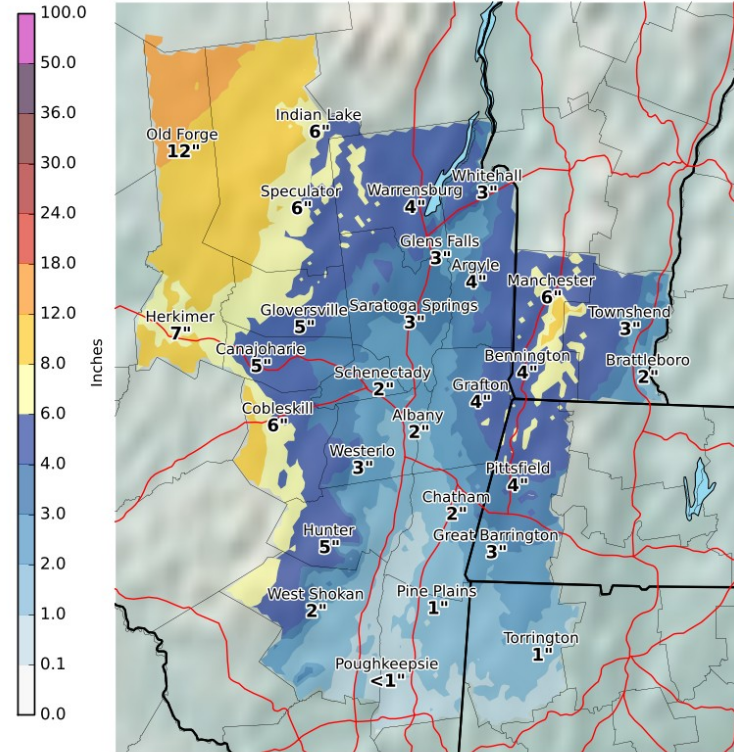
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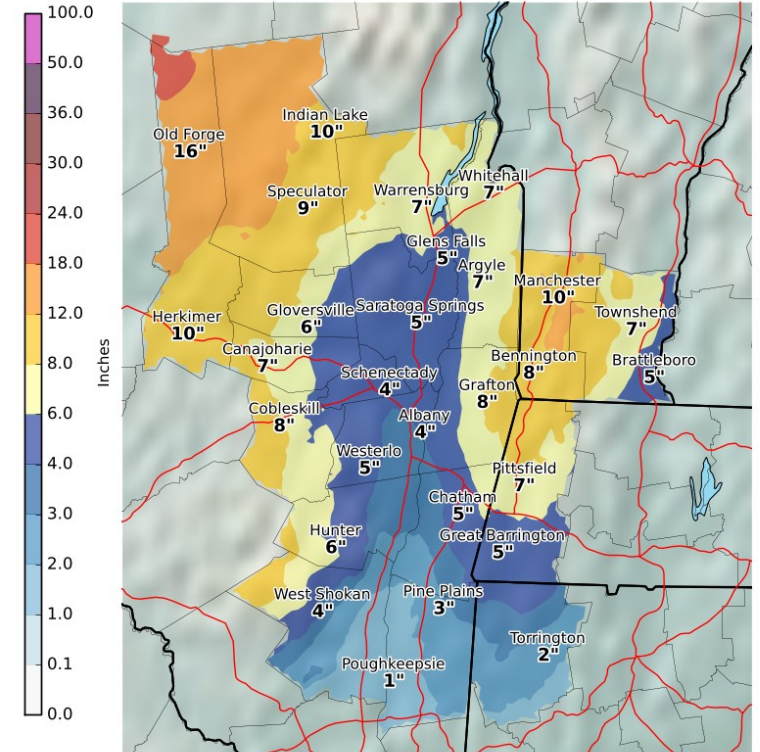
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Potential for This Much

Valid: 11/19/2016 07:00 PM - 11/21/2016 07:00 PM



National Weather Service
Albany, New York
11/18/2016 02:38 PM EST

Follow Us:



weather.gov/Albany/winter



National Weather Service
Albany, New York
11/18/2016 02:37 PM EST

Follow Us:



weather.gov/Albany/winter



National Weather Service
Albany, New York
11/18/2016 02:39 PM EST

Follow Us:

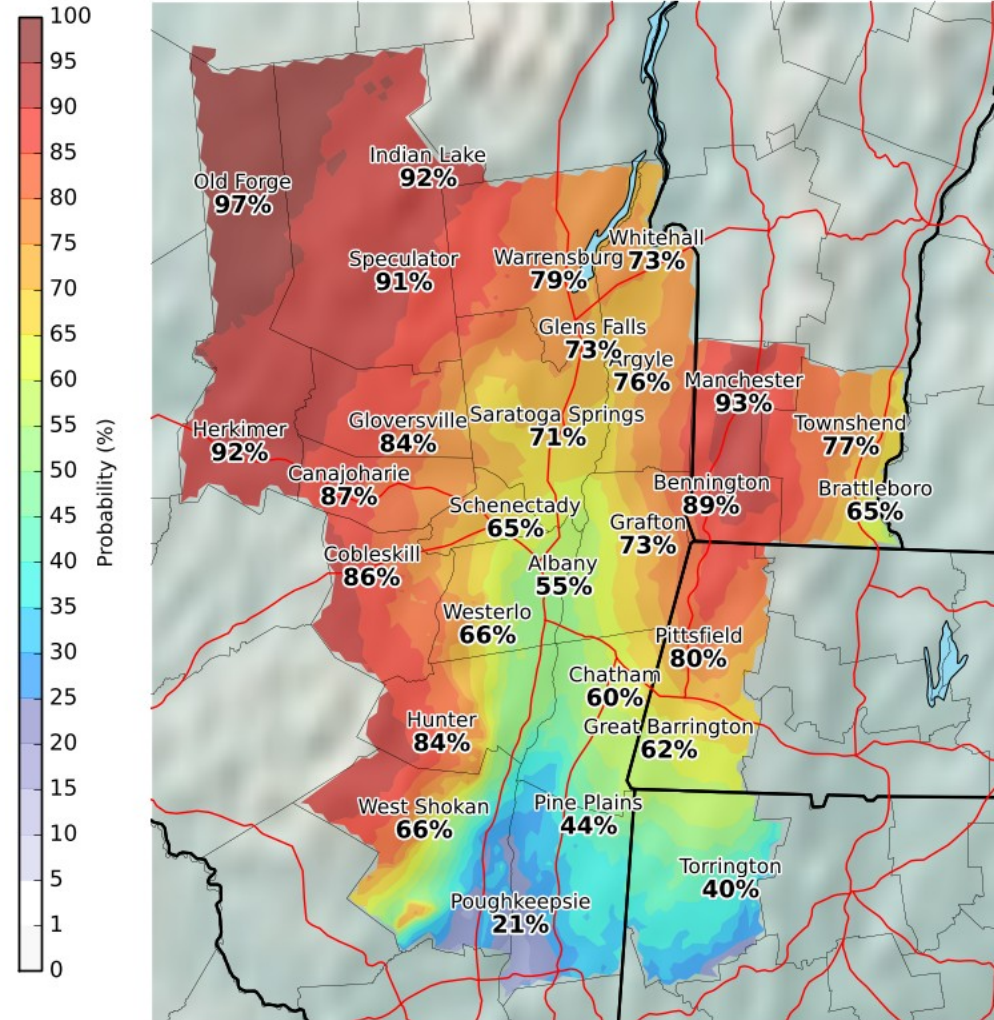


weather.gov/Albany/winter

Percent chance ≥ 1 inch snow

Percent Chance of 1" Snow or More

Valid: 11/19/2016 07:00 PM - 11/21/2016 07:00 PM



National Weather Service

Albany, New York

11/18/2016 02:39 PM EST

Follow Us:

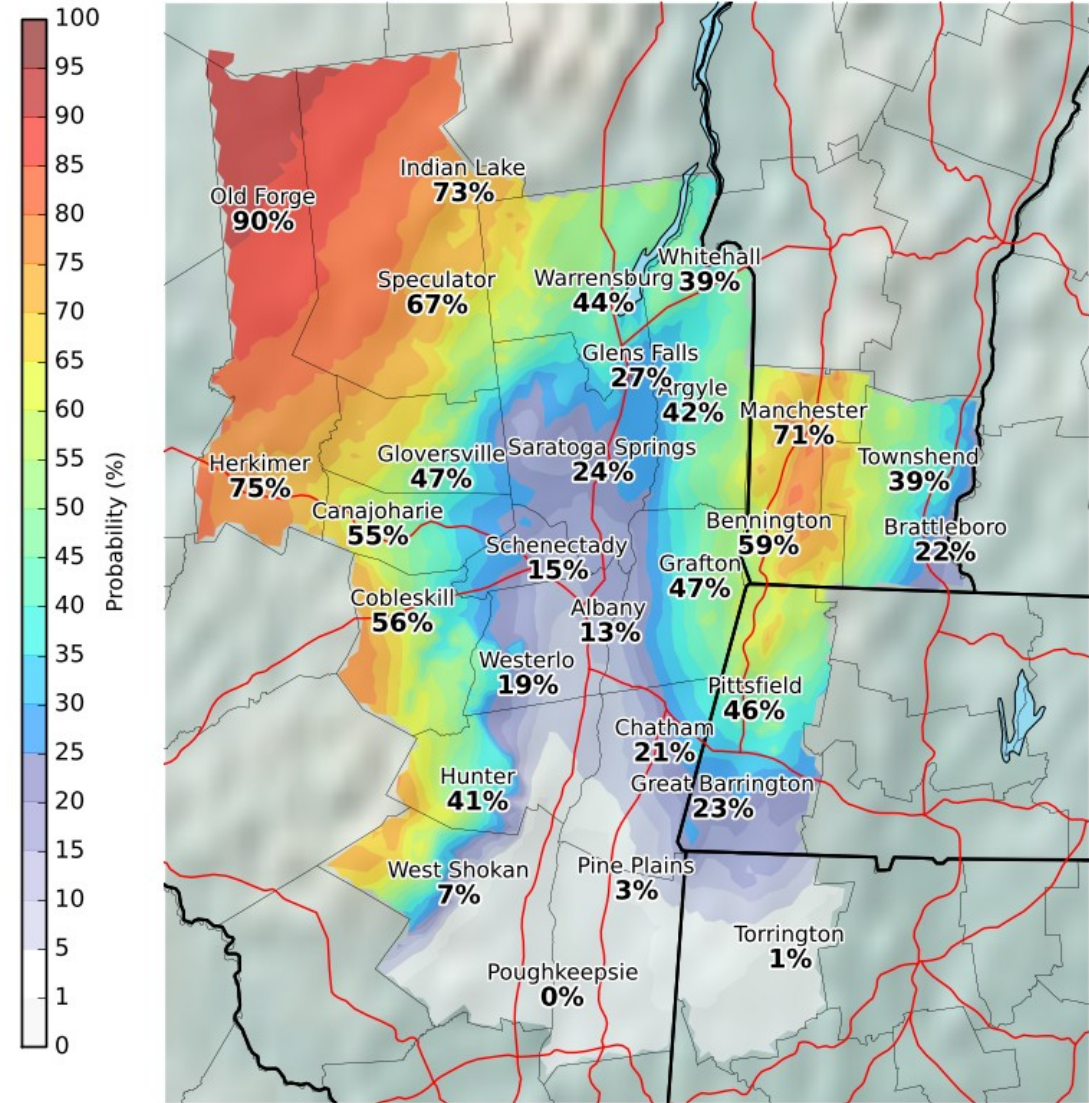


weather.gov/Albany/winter

Percent
chance ≥ 4
inch snow

Percent Chance of 4" Snow or More

Valid: 11/19/2016 07:00 PM - 11/21/2016 07:00 PM



National Weather Service
Albany, New York

11/18/2016 02:40 PM EST

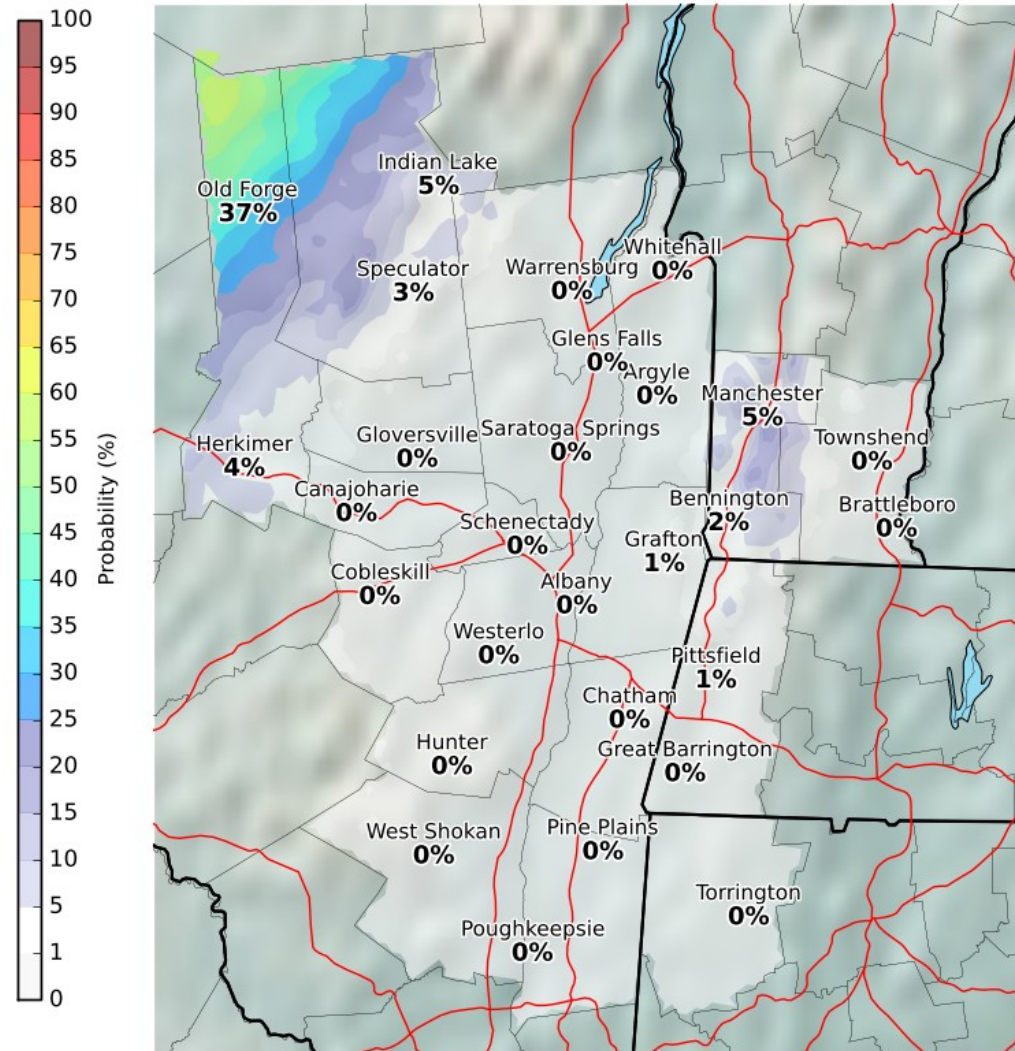
Follow Us:   

weather.gov/Albany/winter

Percent chance \geq 12 inch snow

Percent Chance of 12" Snow or More

Valid: 11/19/2016 07:00 PM - 11/21/2016 07:00 PM



National Weather Service

Albany, New York

11/18/2016 02:41 PM EST

Follow Us:

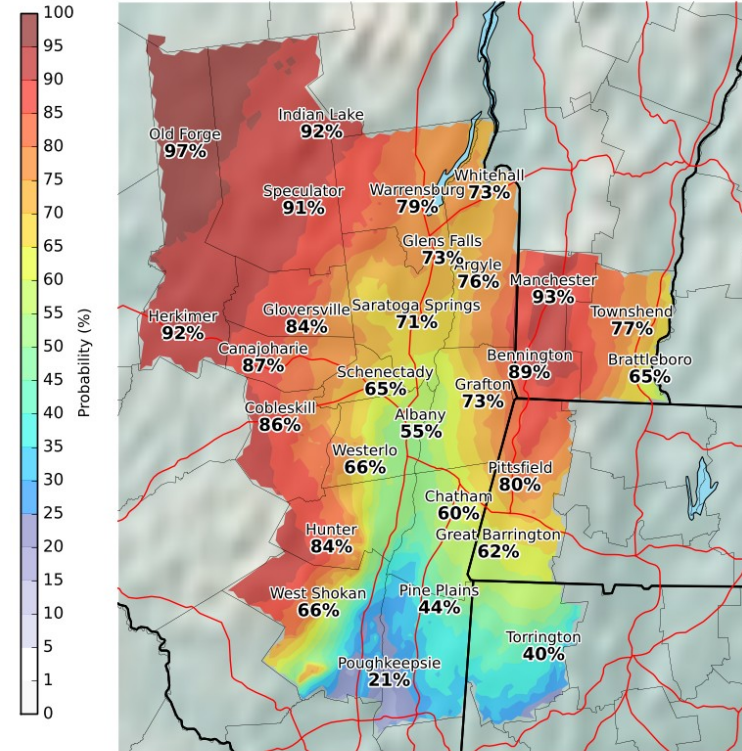


weather.gov/Albany/winter

Percent Chance Greater Than

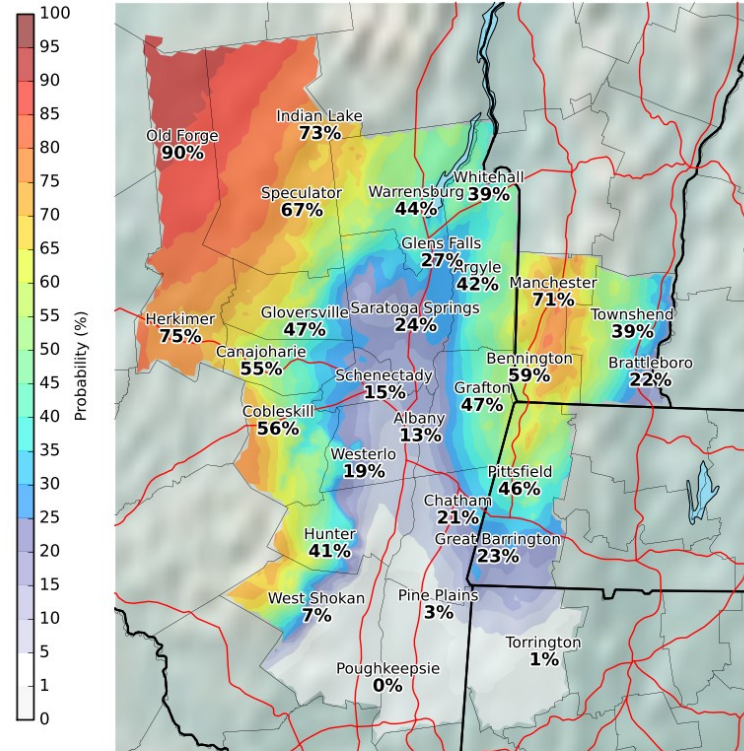
Percent Chance of 1" Snow or More

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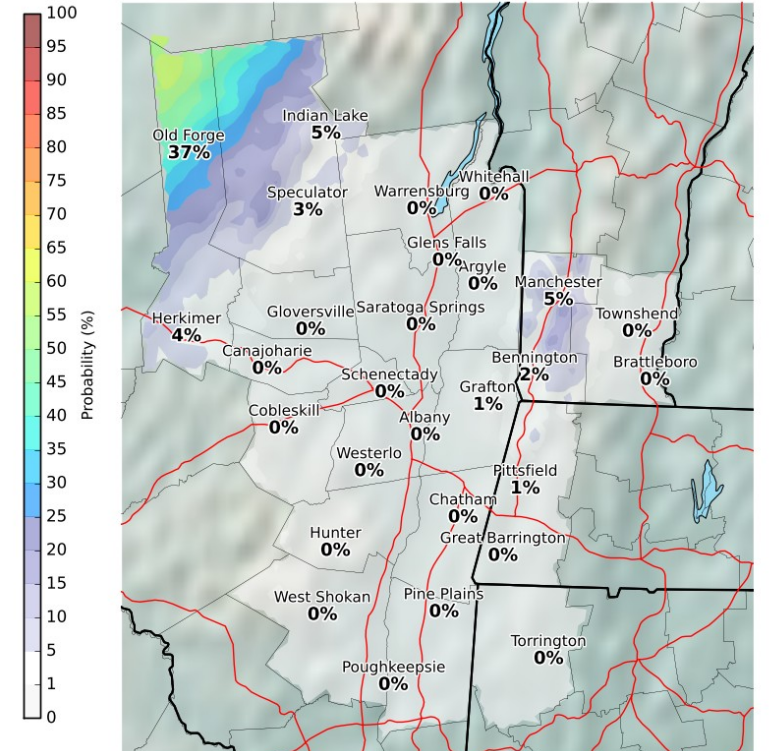
Percent Chance of 4" Snow or More

Valid: 11/19/2016 07:00 PM - 11/21/2016 07:00 PM



Percent Chance of 12" Snow or More

Valid: 11/19/2016 07:00 PM - 11/21/2016 07:00 PM



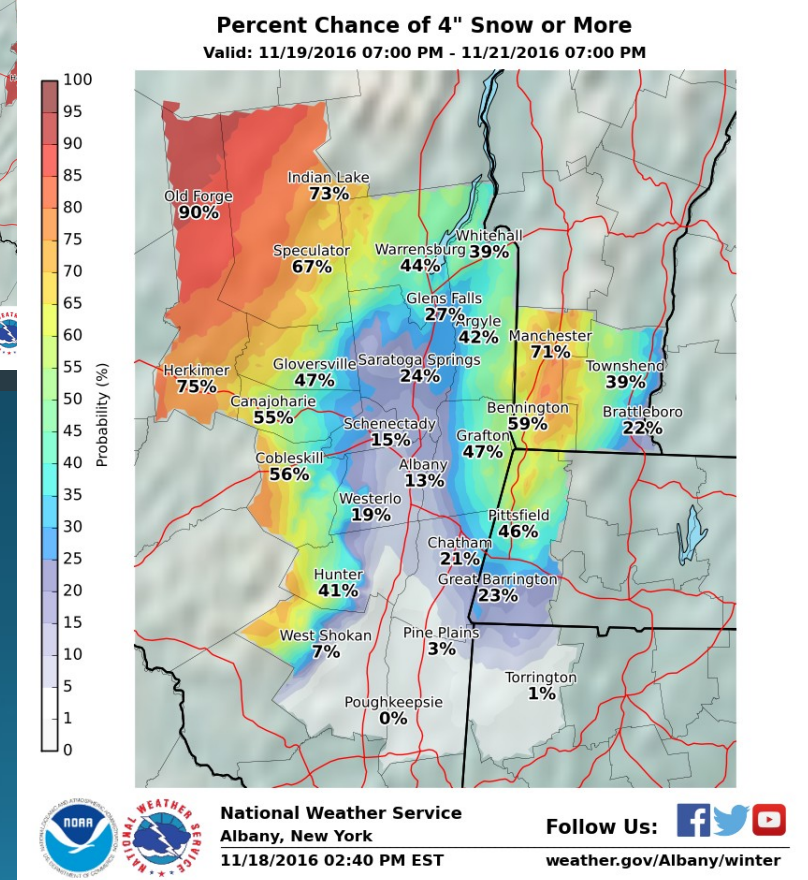
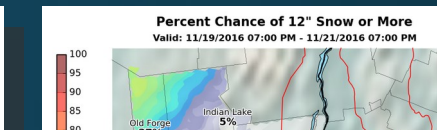
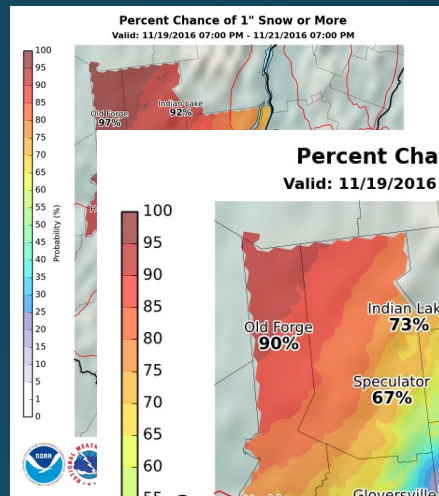
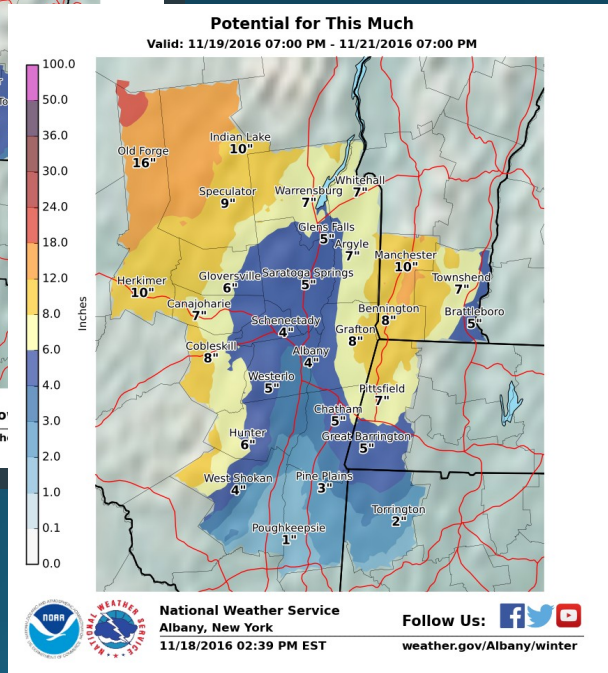
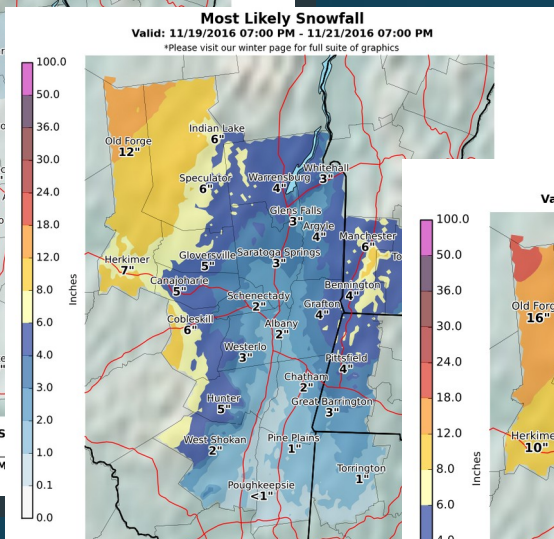
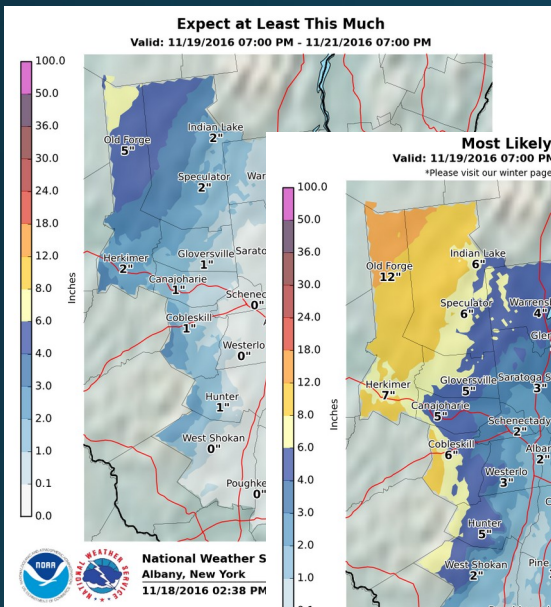
Set A

“Expect/most/potential”

vs.

Set A

Probability greater than



What does this table communicate to you?

Chance of Snow Accumulation												
Experimental - Leave feedback												
11/19/2016 0700PM to 11/21/2016 0700PM												
What's this?												
County: <input type="text" value="All"/>												
Location	At least	Likely	Potential for	>=0.1"	>=1"	>=2"	>=4"	>=6"	>=8"	>=12"	>=18"	
Albany, NY	0	2	4	68%	55%	39%	13%	2%	0%	0%	0%	
Altamont, NY	0	3	5	78%	66%	50%	17%	2%	0%	0%	0%	
Amsterdam, NY	<1	4	5	87%	78%	64%	29%	5%	0%	0%	0%	
Atwell, NY	5	11	14	98%	97%	95%	88%	78%	62%	25%	1%	
Ballston Spa, NY	0	3	5	81%	70%	55%	21%	3%	0%	0%	0%	
Bennington, VT	1	4	9	94%	89%	81%	59%	36%	17%	2%	0%	
Brattleboro, VT	0	2	5	77%	65%	50%	22%	6%	1%	0%	0%	
Catskill, NY	0	<1	3	65%	46%	25%	4%	0%	0%	0%	0%	
Chatham, NY	0	2	5	70%	58%	44%	17%	4%	0%	0%	0%	
Cobleskill, NY	1	6	8	91%	86%	78%	56%	29%	9%	0%	0%	
Delanson, NY	0	3	5	84%	74%	60%	27%	5%	0%	0%	0%	
Glens Falls, NY	0	3	5	83%	73%	59%	27%	7%	1%	0%	0%	
Gloversville, NY	1	5	6	91%	84%	75%	47%	15%	2%	0%	0%	
Great Barrington, MA	0	3	5	72%	62%	49%	23%	6%	1%	0%	0%	
Hoosick Falls, NY	<1	4	8	88%	82%	74%	52%	29%	12%	1%	0%	
Hudson Falls, NY	0	3	6	82%	72%	58%	29%	9%	2%	0%	0%	
Hudson, NY	0	<1	3	65%	47%	29%	7%	1%	0%	0%	0%	
Hunter, NY	1	5	6	90%	84%	73%	44%	11%	0%	0%	0%	
Ilion, NY	3	7	11	96%	93%	90%	77%	58%	36%	5%	0%	

What does this table communicate to you?

Chance of Snow Accumulation

Experimental - Leave feedback

11/19/2016 0700PM to 11/21/2016 0700PM

[What's this?](#)

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Catskill, NY	0	<1	3	35%	19%	21%	21%	4%	0%	0%	0%	0%
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Hudson Falls, NY	0	3	6	18%	10%	14%	29%	20%	7%	2%	0%	0%
Hudson, NY	0	<1	3	35%	18%	18%	22%	6%	1%	0%	0%	0%
Hunter, NY	1	5	6	10%	6%	11%	29%	33%	11%	0%	0%	0%
Ilion, NY	3	7	11	4%	3%	3%	13%	19%	22%	31%	5%	0%

Exceedance

vs.

Range

Chance of Snow Accumulation

Experimental - Leave feedback
11/19/2016 0700PM to 11/21/2016 0700PM
[What's this?](#)

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Chance of Snow Accumulation

Experimental - Leave feedback
11/19/2016 0700PM to 11/21/2016 0700PM
[What's this?](#)

County:

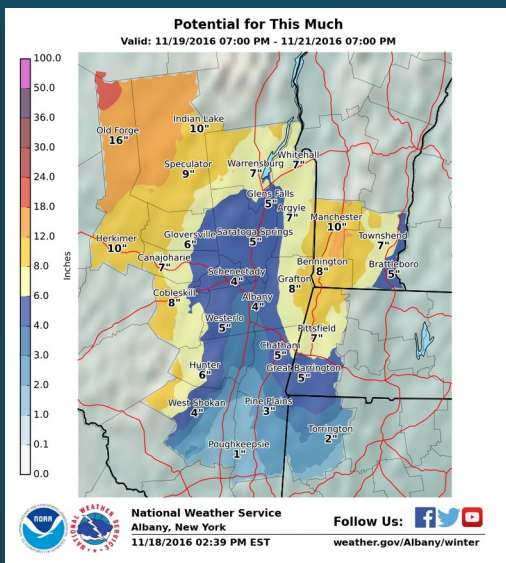
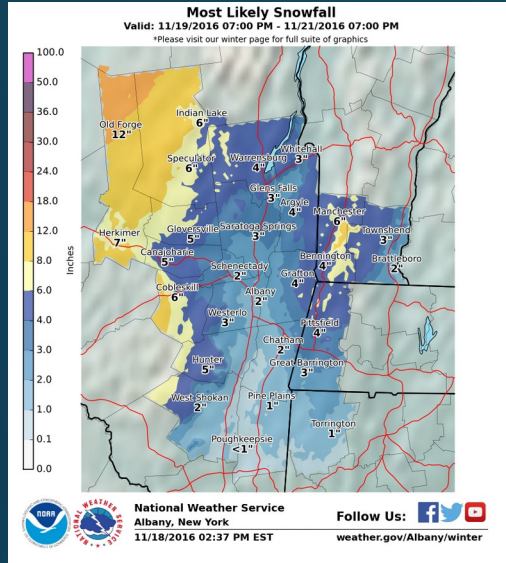
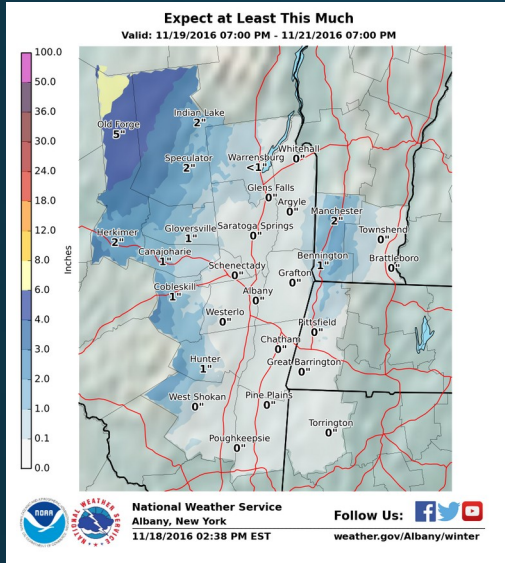
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Preference?

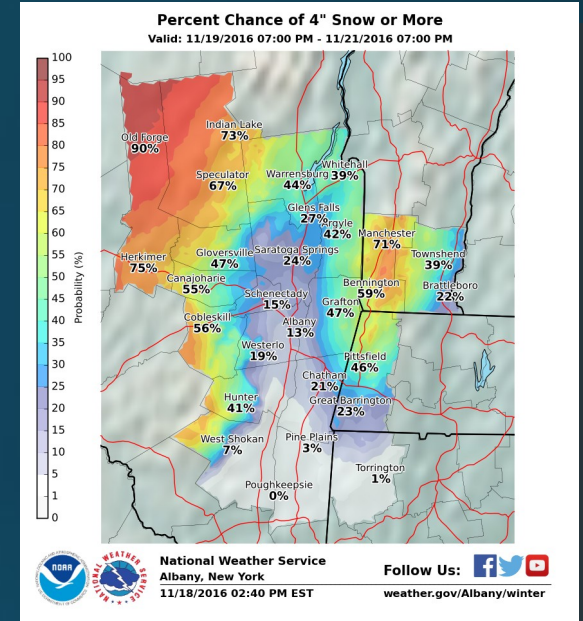
Useful in decision making?
How?

Any changes?

Set A. "Expect/most/potential"



Set B. Probability greater than



Set C. Chance of snow tables

Chance of Snow Accumulation

Experimental - Leave feedback

11/19/2016 0700PM to 11/21/2016 0700PM

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Chance of Snow Accumulation

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Brattleboro, VT	0	2	5	23%	12%	15%	28%	16%	5%	1%	0%
Catskill, NY	0	<1	3	35%	19%	21%	21%	4%	0%	0%	0%

Final thoughts



Disseminati on

file format, image
resolution for TV or
web text size/style?



Accessibilit y

Color blindness, low
visibility, non-
English speaking
customers?



Improveme nts

Any other changes
to improve the three
products?