<u>How to Estimate for your Forward Hop Contracts</u>

© by Teri Fahrendorf

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Over my 25-year career in the brewing industry: as a Brewmaster for 19 years, as The Road Brewer (gypsy brewing blogger), as a retail beer clerk, on the brewery supply side, and as President of Pink Boots Society, brewers and brewery owners have sought my advice. As a beer professional supportive of education, I have done my best to answer with “How To” articles. One question that has popped up a lot lately is, “How do I predict my future hop needs in order to forward contract?” This article strives to help you answer that question for your brewery.

Due to the stunning shortage of US aroma hops this year (2013), which will also affect breweries in 2014 (2013-crop), this topic is timelier than ever. If you are reading this article prior to July 1, 2013, consider this article your opportunity to adjust your 2014 hop contracts now if the hops you need are still available. Please note that throughout this article I refer to calendar year, not crop year!

Until brewers’ skills at forward hop contracting closely match what they actually use, hop farmers will continue to play “catch up” in trying to match what they grow with what we as brewers want. Matching brewers hop needs to farmer’s hop crops will likely occur once all breweries are forward contracting their hops at least two years out, due to crop growth rates. That means forward contracting your hops is a necessity, if we as an industry ever hope to have hop supply meet hop demand.

If you are not protected with hop contracts, market volatility could affect you and your brewery with massive and sharp spikes (up and down) of both price and supply. Note the current supply crashes (with potential price spikes) for the most popular trademarked hops (such as Amarillo, Simcoe, Citra), and price crashes (and supply gluts) for hops suddenly falling out of favor, like 2009-crop Willamette. Hop contracting protects your price and your supply, which is especially important if your brewery is growing. It also protects the hop farmers, who suffer from volatility as much as we do.

In this article, I will show you a method that is as accurate as I can make it. You could always just ballpark it. Many brewers guess their future hop usages. However I believe accuracy is important, as it could prevent the kind of overbuying we saw in 2008 and 2009.

First of all what is a hop contract? It is a legal document where two promises are made: A brewery promises to take possession of, and pay for, specified volumes and types of hops during a specified period of time, such as calendar year (buy), and a supplier has promised to deliver those hops (sell). Generally, all hop contracts are known as Forward Hop Contracts. This means the hops will be bought and sold during a future calendar year. There are very few Current Year Hop Contracts written, and if written, could have restrictions. For example, depending on vendor, if you sign a hop contract on

December 31st for the following calendar year, you may have a minimum total contract requirement of 88 pounds (mix-and-match, 11-lb minimum of each variety of hop), at a forward contract price.

However, if you sign that same contract the very next day, January 1st of the new year, you may have a decidedly higher price per pound, because overnight it became a current year hop contract. Plus your minimums may have gone from 88 lbs per contract, to 440 lbs per hop variety. Some vendors may not allow current year hop contracts at all, or may stop offering them without notice at any point during the current year. (In 2012 Hop Union stopped contracting for 2013 calendar year on November 1st.) To avoid these issues, please be sure to place and sign your hop contracts well prior to December 31st, in case of snafus that may slow down the process. For example, for best choice of available US aroma hops, during 2013 you should be looking at 2015 or later hop contracts.

What a hop contract is not: It is not a verbal agreement, nor a written request. If your vendor has told you "no problem, we'll still have hops for you then," it is not a hop contract and you are not protected against shortages or price spikes. If you have a hop contract, make sure your copy has your vendor's signature on it, and keep a copy in your safe.

As a contracting brewery, you will need to think hard about your hop contracts twice a year: Once prior to rhizome planting, and once prior to harvest. However, this year, I ask you to think about your hops right now, during the summer, in order to jump-start your hop contracting program.

We will start by assessing your past and current actual hop usage. With those we can extrapolate estimated future hop usage. First, we need an accurate accounting of actual type and quantity of hops you used in the last full year of brewing, in this case, 2012. If you take monthly hop inventory, and you track incoming shipments of hops, this job is a lot easier:

(If you are a young or future brewery, please read the technique and extrapolate what you can.)

Total 2012 usage of each hop stocked =
2012 Beginning of Year Inventory of each hop stocked
Plus all 2012 incoming shipments of each hop stocked
Minus 2012 End of Year Inventory of each hop stocked.

If you don't take Year End inventories, and if your recipes change a lot, and you have a lot of one-off beers, this exercise will encourage you to begin recording inventories! What you'll have to do is go through your recipe logs one-by-one, and write down exactly how much of each hop you used, and add up all the totals for the year. Good luck!

Once you have accurate numbers for 2012, we will work on 2013. Since you are reading this in summer of 2013, you should have numbers for ½ of 2013, through 2nd Quarter or June 30, 2013. As above, using your monthly inventory, calculate what you actually used:

½ of 2013 usage of each hop stocked=

2013 Beginning of Year Inventory of each hop stocked
Plus incoming shipments of each hop stocked through June 30th
Minus June 30th Month-End Inventory of each hop stocked

Take the above numbers for each hop, and multiply by 2.3. That will get you very close to the total of what you will use in 2013. (You can verify this against real numbers after December 31st, and then use the factor you determine in future mid-year hop usage calculations.)

Now compare the above two full year numbers. To calculate the percentage of growth for each hop stocked, you have to do the calculation for each hop! Some of your beers (and thus their hops) may have grown in popularity at different rates. For each hop:

Percentage of growth for each hop variety stocked=

2013 hop usage
Divided by 2012 hop usage
Minus 1

For example, if you used 110 lbs of Simcoe in 2013 and you used 100 lb of Simcoe in 2012, your calculation would be: ((110 ÷ 100)-1) = .10 or 10%. Other hops <u>will</u> vary, and you need to be accurate to write an accurate contract and not over- or under-estimate your hop needs.

Therefore, do this exercise for each hop. You will end up with 3 columns at this point, as follows:

Names of all hops used. (Alphabetically top-to-bottom of column works well.)
2012 Total year usage of each hop.
Year-over-year increase (or decrease) of each hop as a percentage.

Your spreadsheet will look something like this:

Hop Name	*2012 Actual*	*2013 increase %*	*Potential 2014 Contract*			
Citra	1,500 lbs	+ 7.6%	1,614			
Simcoe	1,000 lbs	+ 10%	1,100			

Now comes the subjective part. If you believe that your rate of year-over-year percent increase will continue into 2014, then go with that number. If not, adjust the number. This is especially important if you made, or are planning to make recipe changes. Perhaps you have just doubled the amount of Simcoe you use for dry-hopping your IPA, and your customers love it, and you'll keep it that way. Any hop changes you made in 2013 (compared to 2012) should have shown up as a severe change in the percentage of growth, however if you feel the percent shown does not accurately reflect those changes, you should adjust the percent.

Your percentage growth for each hop will not likely match the Brewers Association's annual Craft Beer volume increase of 15% for 2012. (Up from 11% for 2010 and 13% for 2011). In fact, so many craft brewers are tossing more hops in their beers that the increase in annual craft brewery usage of certain hops is far and away beyond the annual production rate numbers. Your *EOY* (End of Year) *2013 Estimated* hop usage is calculated by multiplying *2012 Actual* by *Corrected % Growth* for 2013. This will reflect recent increases in hop usage, so may not equal your actual 2013 EOY usage. So now your spreadsheet will look like:

Hop Name	*2012 Actual*	*2013 increase %*	*Corrected % Growth*	*EOY 2013 Estimated*	*Potential 2014 Contract*	
Citra	1,500 lbs	+ 7.6%	+ 6%	1,590 lbs	Same	
Simcoe	1,000 lbs	+ 10%	+ 12%	1,120 lbs	Same	

With any luck you are already contracted for 2014 hops at nearly the numbers you calculated for *EOY 2013 Estimated*. If you analyze your 2014 hop contract(s), and find you are not contracted anywhere near this *EOY 2013 Estimated* number, then now is a good time to recalculate your 2014 needs (see below), and cover what you are missing with an additional 2014 hop contract. If you are reading this article in January or later, you may want to try to write a Current Year Hop Contract, or quickly buy enough spot hops to cover your 2014 needs!

The next step is also subjective. If you are growing at a steady pace, you could reliably use the same percentage for 2014 growth. However an astute brewer is aware of their raw material price trends. Considering hops are very reasonably priced at this point, I assume they could go up. One reason to contract is to lock in current hop prices.

So, based on malt and hop price trends, if you had to pass on a price increase to your customers, how would that affect your sales? Perhaps you think your growth in each hop could drop a tiny bit because of that. If so, your spreadsheet could look like this:

Hop Name	*2012 Actual*	*2013 increase %*	*Corrected % Growth*	*EOY 2013 Estimated*	*Est.2014 % Growth*	
Citra	1,500 lbs	+ 7.6%	+ 6%	1,590 lbs	+ 5%	
Simcoe	1,000 lbs	+ 10%	+ 12%	1,120 lbs	+ 10%	

Estimated 2014 % Growth is shown as dropping in value because this established brewpub is not growing at the BA industry average, and anticipates a decrease in sales growth due to an upcoming increase in pint prices.

Now you just do the math. Please note in the below: *2014 Hop Needs* are calculated by multiplying *EOY 2013 Estimated* x *Estimated 2014 Growth*.

Then you need to convert your estimated *2014 Hop Needs* to a number divisible by 11- or 44-lb boxes, depending on which you prefer. In this example I rounded up to get the *2014 Contract* number, which is divisible by 44. When doing your own calculations, you will want to contract for 100% of your 2014 hop needs now.

Hop Name	*2012 Actual*	*EOY 2013 Estimated*	*Est.2014 Growth*	*2014 Hop Needs*	*100% 2014 Contract*	
Citra	1,500 lbs	1,590 lbs	+ 5%	1,670	**1,672**	
Simcoe	1,000 lbs	1,120 lbs	+ 10%	1,232	**1,232**	

Okay, now you know your *2014 Hop Needs* and what you want for your *2014 Contract* quantities for each of your hops. What do you do next?

You know you need to tell the farmers what types and quantities of hops you need, and you do that through contracting, but what if you change a recipe? And what happens beyond next year (2012)? How do you write hop contracts for that kind of unknown?

You follow these basic Guidelines: You contract 100% of current (or upcoming) year, 75% of the next year, 50% of the year beyond that, and 25% for the year beyond that. Then you look at your contracts twice per year: January and July. (Beginning of Q1, and beginning of Q3.) And you do that every year. Now let's walk through the exercise of choosing contract amounts for your 2014 through 2016 Forward Hop Quotes.

First, decide if you need to augment your 2014 year hop contracts. In the above exercise, did you decide you need more hops to augment your 2014 hop contracts? If so, start a new spreadsheet and mark down what you will need for current year to get you to 100% of hop needs. Be sure your numbers are divisible by either 11 or 44, depending on what size box you prefer. Round up if you expect growth.

For this exercise, we'll use *2014 Hop Needs*, and pop in 75% for 2015, and 50% for 2016, rounding up to the nearest 11- or 44-lb box.

If you are looking at this again in January (and I hope you will each January), then you will have actual EOY hop usage numbers, and you only have to factor in your actual % growth or decline of each hop's usage as shown above. If your July estimates were not on target, this is your chance to adjust those contracts before the hop farmers have completed rhizome planting! This is important: It takes a few years for hops to reach full harvest maturity. Developing new hop fields takes a lot of time and money. In a crop year like 2012, with a cold wet summer, the "baby" hops produce nothing their first year. And it takes time to grow the hop starts in the hot house to field planting size, and your hop farmers need to put in their rhizome/baby hop orders in advance.

So therefore, even if you do this exercise today (in summer 2013), and secure 100% of your 2014 hop needs via forward contract now, please look at your EOY numbers in January and do it again, so that the hop farmers have a running chance to get the hops we all need into the ground in time to make a difference!

Please note the highlighted contract amounts below have all been rounded up to the nearest 44-lb box.

Hop Name	*2014 Hop Needs*	*Current 2014 Contracts*	*2014 Augment Contract*	*75% for 2015 Contract*	*50% for 2016 Contract*
Citra	1,670	1,540	**132**	**1,276**	**836**
Simcoe	1,232	1,012	**220**	**924**	**616**

If you are past this initial exercise, and you are looking at this in July 2014 (and I hope you will look at it each July), recalculate your current year needs in order to “top up” with mid-year contracts. You can do the same exercise as above, and calculate your mid-year growth rate January-June 2013 vs. January-June 2014. Top up 2014 with a current year hop contract (if you can get one) or augment with spot hops to get you through the end of the current year. Then adjust your future year contracts as follows: In July 2013 your 2014 contracted hops should be augmented with additional contracts to 100%, and 2015 contracts should jump to 75%, and you should add a 2016 contract at 50% of current usage if you haven’t already.

What if your brewery is definitely on a fast growth track? Will this schedule of contracting 100% -- 75% -- 50% --25% of your hop needs be enough?

Nearly every brewery plans to grow fast, but some are more likely to actually do so. Positive indicators of potential growth can be directly attributed to high levels of: previous brewery or business experience, marketing skill, beer industry distribution contacts, large size of current brewing system, and start-up capital and access to additional capital.

If you know you are seriously on the fast-track, then in January 2014, contracting 75% of estimated 2014 year needs for 2015 contract, 50% for year after that, and 25% for year after that possibly won’t be enough hops. In that case, please contract for 100% of your current year hop usage for each Forward Hop Contract, out as many years as your vendor will let you contract. Just remember, if you are only wishful thinking, you’ll be on the hook for all those hops, and you’ll be keeping good hops out of the hands of other worthy brewers (and everybody will hate you for being a hop hog, including your banker). Then be sure to revisit your current hop usage, and adjust your Forward Hop Contracts as usual, each January and July.

Beware one of the indicators above… size of current brewing system is listed, not future brewing system. This is an important point. Many breweries got into trouble in 2007-2008 when they contracted hops for breweries that weren’t built yet. When those building projects fell through, those brewers were obligated to take their contracted hops. Some of them are still trying to use up those old hops. Yet in 2007-2008, many worthy breweries went without hops because of those potential-only brewery’s hop contracts! Please be realistic about your growth and expansion plans. Don’t be a Hop Hog.

As I revise this article, 2014 calendar year (2013-crop) Ahtanum, Citra, US Fuggle, Simcoe, GM Saphir, GM Spalt, and (2014-crop) AU Galaxy, NZ Nelson Sauvin and NZ Pacific Jade are completely contracted out. Doing this work twice each year could save you a big headache. By contracting 100% of your current/next year's needs each July, you should stay ahead of the curve.

However, stay on top of current trends! Think of your supplier as your strategic partner, and keep the dialog open. If you hear in April that one of the above trademarked hops is contracted out, assume the rest will follow and book your July contracts a bit early. Until we are all contracting at least two years out, American hop farmers are playing "catch up." This may be the case for the next two or more years.

So now you are ready to write your hop contracts for at least 2014-2016, and you know next July is when you'll bump them up to the next 25% increased contract level, and when you'll add a 2017 contract. And you'll revisit this article in January to make sure you've got it all correct before the hop farmers plant their new hops.

To summarize, in July 2013 at a minimum you should be contracted for current year and three years out as follows:

100% of current year (2013) and next year's (2014) hop needs
75% of 2015 hop needs (based on adjusted 2013 actual/estimated 2014 hop usage)
50% of 2016 hop needs
25% of 2017 hop needs

All rounded off to the nearest 11- or 44-lb box.

In conclusion, you now have the tools to accurately predict your current and future hop needs. If you are not in the habit of taking year-end and month-end hop inventory, I hope you will begin the practice. Predicting your own growth and future hop requirements needn't be something you have to sweat when a hop crisis is upon you. If you follow the step-by-step examples above, you'll take most of the guesswork out, you'll sidestep future hop crises, and you'll have confidence in the forward hop contracts you'll be signing.

Best wishes, and happy brewing!

QUIZ: Think you got it down? From the above examples, what are these numbers?
(a) 1,672
(b) 132
(c) 1,276
(d) 836

ANSWERS (on a different page):
(a) 1,672 pounds of Citra hops to be contracted now (summer) for 100% of calendar year 2014 needs, where no previous 2014 contract had been written, rounded up to the nearest 44-lb box.
(b) 132 pounds of Citra hops to be contracted now (summer) for calendar year 2014, to augment an existing contract, rounded up to the nearest 44-lb box.
(c) 1,276 pounds of Citra hops to be contracted between now and the end of January for 75% of projected 2015 needs (based on actual 2013 numbers), rounded to the nearest 44-lb box.

(d) 836 pounds of Citra hops to be contracted between now and the end of January for 50% of projected 2016 needs, rounded to the nearest 44-lb box.

*** THE END ***

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