



## Loftus Ranches: A Hop into the Future

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## **Introduction**

Yakima, Washington is 160 miles from Seattle. Interstates are the quickest route, but meandering, summer-only highways take you through beautiful Mount Rainier National Park. Over the years, Patrick Smith has learned the roads well. As he drives toward Yakima with the last of the boxes from his now-empty Seattle apartment, Patrick is headed to the family farm, Loftus Ranches, for good.

Exiting off I-82 in Yakima, he begins the final stretch. Crossing the Yakima River, he is only a few miles from the farm. As the sun begins to set on this late summer day, Patrick turns onto a smaller county road. Still minutes from the interstate, he comes upon Field 41. He knows the field — all the fields, in fact – but he still looks to the top of the corner trellis to find the white sign that reads “41.”

Momentarily distracted while looking across the rows of hop plants climbing trellises, Patrick nearly misses his turn at the end of Field 41. He quickly slows his car and makes a fast corner. He smiles at the irony of nearly missing this turn: Patrick, Loftus Ranches and Field 41 are each at a metaphoric turning point.

Patrick knew he had several objectives to accomplish during his first few years on the ranch, including his transition into managing the daily operations. He had already been heavily involved in a number of conversations with his family about the transition of the farm’s management and what the roles of his siblings and other family members might be. Loftus Ranches’ strong financial position allows the family to pursue opportunities to grow the business and provide challenging and rewarding roles for the next generation of family members. At the top of the list was the desire by some in the family to establish a craft brewery. Patrick’s mind kept returning to the question: “Was a brewery the right place for Loftus Ranches to invest its capital?”

Patrick parked his truck at the farm’s office, which is fittingly surrounded by hops yards. As he grabbed an armful of boxes to move into his new office, Patrick noticed several unread group text messages. Given the excitement around Patrick’s return to the farm, his siblings were all in town for the weekend and the unofficial, quasi-annual Loftus Ranch Craft Brew Competition was about to begin. Patrick was holding up the activities. The brew competition usually had a dozen entries from one competitor: Patrick’s brother, Kevin. Although Kevin’s early craft brew attempts were dreadful, those days are thankfully behind them. His brews steadily improved over the years, and Patrick was hoping the winner from last year, labeled “Field 41,” would be back again this year.

## **Agriculture in the Yakima Valley**

Water is king in the Yakima Valley. The western edge of the Valley is bordered by the Cascade Mountains. This natural boundary also creates a rain shadow, leaving the region with only 8 inches of average rainfall. While the mountains block the rain, they do provide water in a second way. Snowpack melt from high in the mountains feeds the streams and tributaries of the Yakima River. A system of 90 canals pulls water from the river and distributes irrigation water around

the region. Those who use the water pay between \$90 and \$120 per acre to apply up to 36 inches of water on an acre of land. The fees are paid to an irrigation district that, in turn, manages the waterways and systems that deliver water.

Land is competitive and a management challenge in the valley. Bare land, if available, is typically valued around \$4,500 per acre. But this land often needs significant investments, such as irrigation, before entering production. There are additional investments needed for hops production, including a drip irrigation system with a four-year life and a trellis system that normally lasts about 10 years. These investments cost approximately \$6,000 per acre. Significant establishment costs are common for most specialty crops grown in the valley. Thus, once the land improvement investment has been made, land becomes extremely valuable and somewhat fixed in its future use.

While the Yakima Valley is most known for its wine production, the vineyards are placed in areas with the least amount of water available. Other crops, such as hops and apples, are heavy users of water and require significant water allocations.

Recently, significant buzz and interest surrounding apples has emerged in the valley. The crop requires upfront investments of more than \$30,000 per acre and requires five years to reach full maturity yields. For the next 15 years (years 5-20), the crop returns estimated revenues of \$30,000 per acre. The initial investments and the long return horizon has many people in the valley watching and wondering.

Grapes, on the other hand, require a much lower investment, approaching \$6,000 per acre, with revenue not occurring until year three. Grape production generally becomes cash-flow positive in year four. The lifespan of a vineyard is expected to be 20 years with estimated revenues at full-maturity of \$4,500 per acre.

Perhaps the most unique crop grown in the Yakima valley is hops. As a primary ingredient in all beer, hops provides the bitter flavor needed in beers to offset the sweet taste. In addition, many beers use hops late in the brewing process to provide flavor profiles ranging from citrus to piney, depending on the variety of hops. The irrigated, perennial vine crop is raised in highly organized fields. Trellises set fourteen feet apart support the crop as it grows to around 18 feet high. Complex harvesting equipment is then needed to navigate the maze of trellises and irrigation equipment while capturing the green cones set high in the plant. With annualized production costs around \$7,500 per acre, astute management and planning are critical for generations of hop production.

### *2.1 The Hops Industry*

The United States is a dominant player in the global hops market (Figure 1). While Germany is the largest producer of hops, the United States has experienced steady growth and continues to capture a larger share of global production. In 2013, 39 percent of total world production happened in the United States, up from only 27 percent a decade earlier.

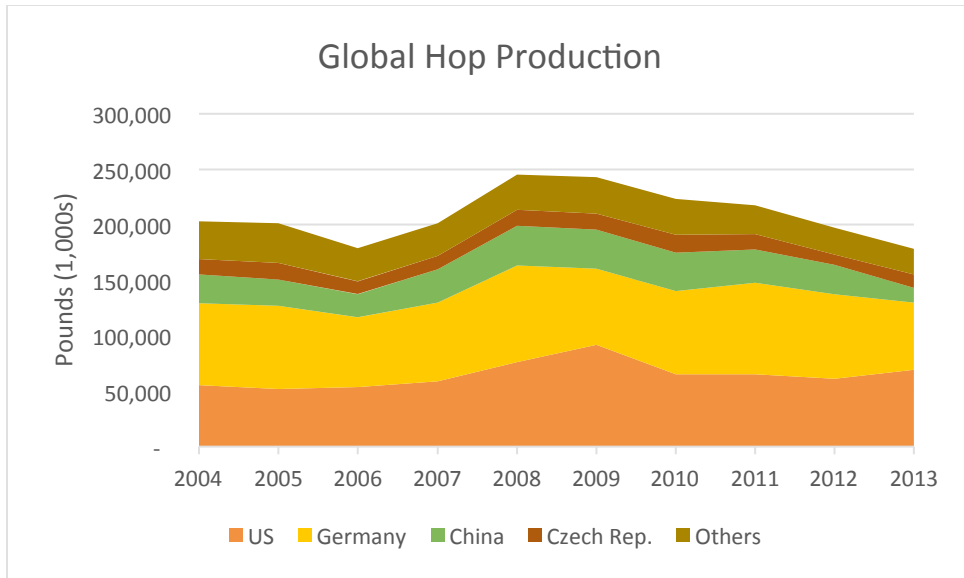


Figure 1. Global Production of Hops. Source: USAHOPS.com

Within the United States, Washington, Idaho and Oregon make up 99 percent of the commercial hops production. Washington alone represents nearly 80 percent of that production, most of which is grown in the Yakima Valley. U.S. production peaked in 2009 at almost 95 million pounds. This boost in production was in response to a rapid rise in prices that saw a peak of \$4.03 per pound in 2008 (Figure 2). In 2008 and 2009 the value of U.S. hops production exceeded \$300 million (Figure 3).

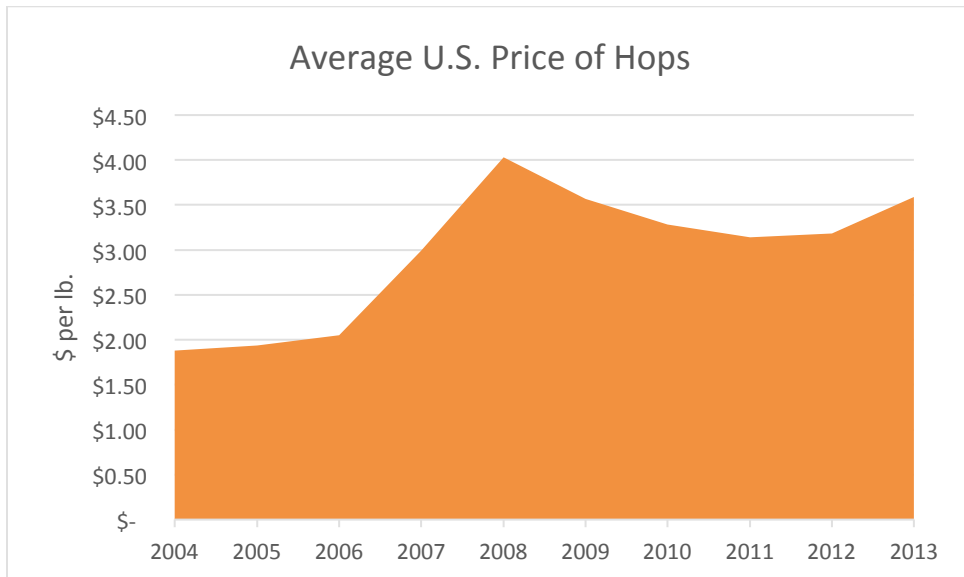


Figure 2. Average U.S. Price of Hops. Source: USAHOPS.com

After the peak production in 2009, prices began to fall and acres left production. The highest plantings occurred in 2009 (Figure 4) at 40,898 acres of hops. By 2011, only 29,787 acres remained—a 27 percent reduction in acres in only two years.

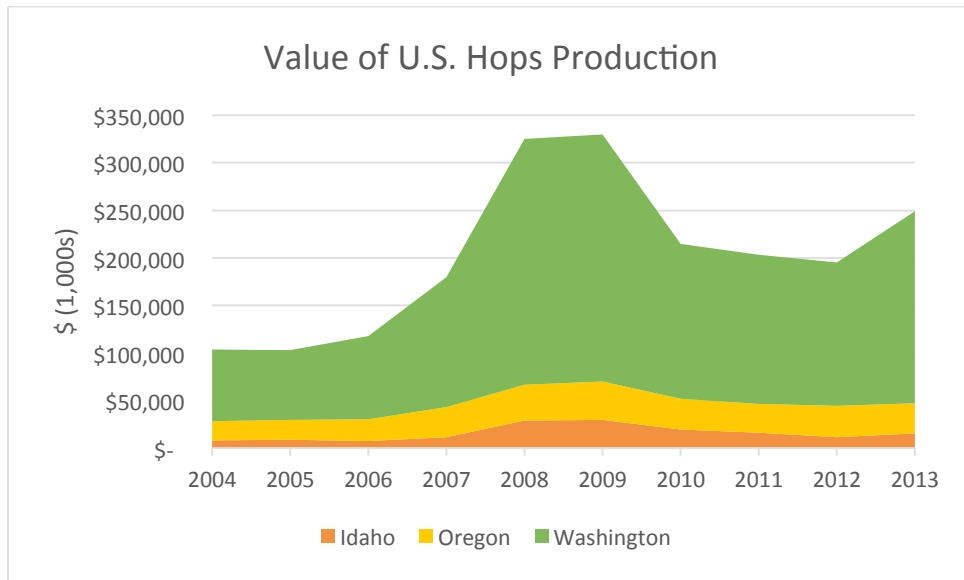


Figure 3. Value of U.S. Hops Production. Source: USAHOPS.com

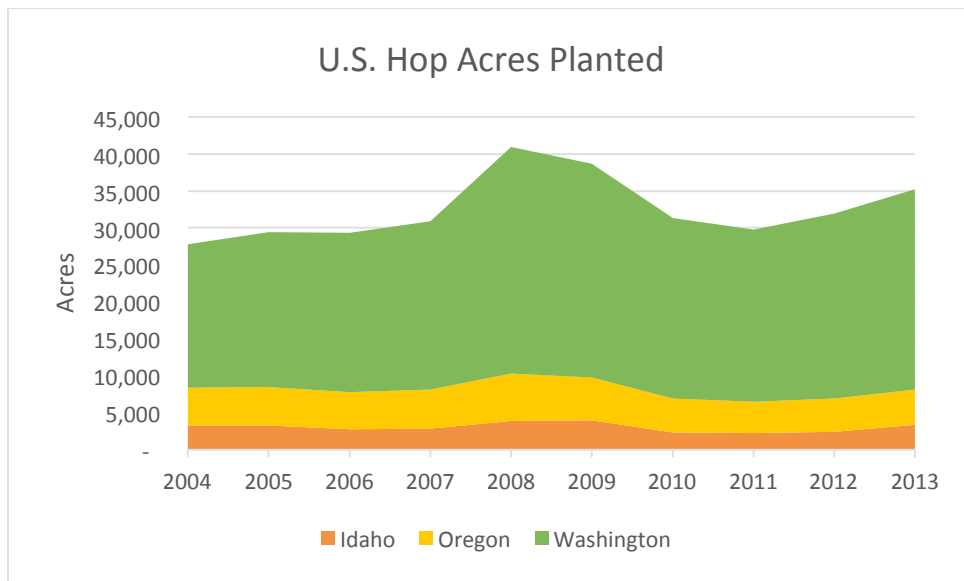


Figure 4. Acres of Hops Planted in the United States.

Booms and busts are a very common feature to the industry, presenting a management challenge some years and an opportunity during others. A bust period from 2001 to 2006 was very difficult but was followed by a strong boom era from 2007 to 2009. According to Patrick, “Unfortunately, the booms are never long enough and everyone wonders how far down the bottom will be.” However, to nearly everyone’s surprise, 2010 through 2012 wasn’t as bad as feared. Patrick

elaborates, saying, “The industry should have returned to the levels it experienced from 2001 to 2006, but it didn’t. The beneficial impacts of the craft-brewing industry took everyone by surprise.”

Overall, there are few hops producers in the Yakima Valley. Across the entire country, there were only 166 in 2012.<sup>1</sup> The average hop farm in the region is about 450 acres.<sup>2</sup> The dry climate, sandy soils and available irrigation water make the Yakima Valley ideal for hops production. Today, more than 70 percent of the hops raised in the United States come from this region.

## *2.2 Marketing Hops*

The marketing of hops has undergone significant, structural changes in recent years. Prior to 2009, the majority of hops were grown under long-term contracts; it was very common for producers to have most of their production under a three-year contract. Often, these contracts were renewed annually—adding terms for another contract year, three years into the future. The balance of production was sold to a hops processor partner. These processors then sold hops to the international, national, regional, or smaller craft brewery markets.

Recently, however, the major national beer manufacturers have changed their contract methods to move away from longer contracts, creating fewer farmer-direct contracts. Furthermore, regional and craft breweries have become extremely popular and have become a significant buyer of hops. In both cases, the hops processors are becoming a critical component of hops marketing as spot-market oriented purchases (as opposed to the traditional three-year contracts) have become more common.

Another trend in the hops market is the consolidation of the major buyers with a boom of smaller buyers. A U.S. market that consisted of three major players (Anheuser-Busch, Miller and Coors) has now been consolidated into two (MillerCoors and Anheuser-InBev), with Anheuser-InBev having a global market presence and influence. At the same time, craft breweries have taken off, resulting in significantly more, albeit much lower quantity, buyers.

Before 2010, 60 percent of the hops from Loftus Ranches were sold for exports, while the remaining 40 percent were sold to the major, national brewers. Today, only 20 percent of their production is going to major, national brewers with the balance being split among the export market and the thousands of smaller craft breweries.

There have been several inquiries from craft brewers about using hops directly from Loftus Ranches, but the craft brewers are often sourcing numerous varieties of hops to create unique flavor profiles. Furthermore, craft brewers are often searching for small quantities of hops. A barrel of craft beer, or 31 gallons, only requires around 1.4 pounds of hops. With yields in excess of 2,000 pounds per acre for hops, an acre of hops can produce enough flavor for more than 44,000 gallons of beer.

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<sup>1</sup>

[http://www.agcensus.usda.gov/Publications/2012/Full\\_Report/Volume\\_1,\\_Chapter\\_2\\_US\\_State\\_Level/st99\\_2\\_027\\_027.pdf](http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_US_State_Level/st99_2_027_027.pdf)

<sup>2</sup> [http://www.usahops.org/index.cfm?fuseaction=hops\\_farming&pageID=13](http://www.usahops.org/index.cfm?fuseaction=hops_farming&pageID=13)

## **Loftus Ranches**

In 1932, Patrick's great-grandparents settled in the Yakima Valley, just a few miles east of Yakima to pursue work with the railroads. An entrepreneurial spirit led his ancestors to also pursue agricultural production. With the mountains in the background, Loftus Ranches was started with five acres of hops. Over time the farm has become a leading business in the Yakima Valley and one of the largest hops farms for the craft brewing industry. Today, Loftus Ranches consists of 1,700 total acres of crop production with 1,000 acres in hops, 500 acres in apples, and 200 acres in other products. The family also raises a unique breed of Devon cattle.

The entrepreneurial spirit that led Patrick's ancestors to the Yakima Valley has become central to the family and the business. Patrick often accuses his father of being a serial entrepreneur. While the family's focus has centered on hops production, there have been several efforts to identify and capture opportunities that leveraged their hops operation and experience within the industry.

As an example of their entrepreneurial spirit and response to industry opportunities, Loftus Ranches also has ownership in Select Botanicals Group and the Hop Breeding Company. Both of these businesses focus on identifying and developing hop varieties that have superior quality and flavor profiles. The Ranch raises significant acreage of the trademarked varieties they and their partners have produced, including: Simcoe®, Citra®, Palisade®, Mosaic®, Warrior® and Tomahawk® varieties, in addition to several experimental varieties. The quality aspects of these varieties, mainly the alpha acid and oil content, is what has drawn increased interest from craft brewers all over the U.S. and in other regions of the world. The demand for these trademarked varieties has exceeded what Loftus and the other partner-producers can raise on their own farms. In response to the strong demand, they have started to license the planting of these varieties to other producers in the region. The royalties from these varieties planted on other farms has become a significant source of revenue.

Loftus Ranches, along with 12 other hop producers, partnered several years ago to form Yakima Chief-Hopunion LLC or YCH, in an effort to manage the spot-market nature of the small export market for hops. As the industry shifted away from contract production, the spot-market and YCH became much more critical. Furthermore, YCH has played a vital role in serving the small craft brewers, which now accounts for almost 80 percent of Loftus Ranches' hop production.

## **Bale Breaker Brewery**

Hops are arguably the most important ingredient of beer because they create the bitter and bold flavors. Given the Loftus family's enthusiasm for raising quality hops it would stand to reason they would also be beer enthusiasts. For several years, members of the family have been micro-brewing beer in their basements and garages. Patrick's brother, Kevin, is especially passionate about his craft beers. After starting to brew in his garage, Kevin has spent the past two years working at a Seattle brewery honing his brewing skills.

Kevin has argued, "Who better to make beer than those who know the most about hops—the most important ingredient?" Thinking about the idea from a high level, Bale Breaker Brewery—

named after the bales that hops are placed into for storage and shipping—could convert the Loftus family hops into an entirely new business venture. If good beer starts with the hops, then a good brewery would also have to get its start in the hop fields: Field 41 to be precise.

### 3.1 Craft Brew Industry

The craft beer industry represents breweries with less than 6 million barrels of annual production. There are several sub-categories within craft beers, including microbrewery, brewpub, regional craft brewery and contract brewing company.



Figure 5. Number of Brewers

While there has been significant attention and excitement for craft beers in recent years, the craft brew industry has a very long history (Figure 5). According to the Brewers Association, the industry spent the majority of the past 126 years in decline. At the end of Prohibition, 703 craft breweries existed. The industry’s low point was in the late 1970s with only 89 craft breweries, but tremendous growth has occurred since the 1980s. In 2013, an estimated 2,538 craft breweries were in operation—the most in 126 years.

In 2009, Craft beer represented 4.4 percent of the total beer market (Figure 6). By 2013, the segment represented 7.8 percent of total beer sales. Not only were craft beer sales a larger portion of the total market, but they were also increasing in absolute terms with an average annualized growth rate of 16.6 percent.



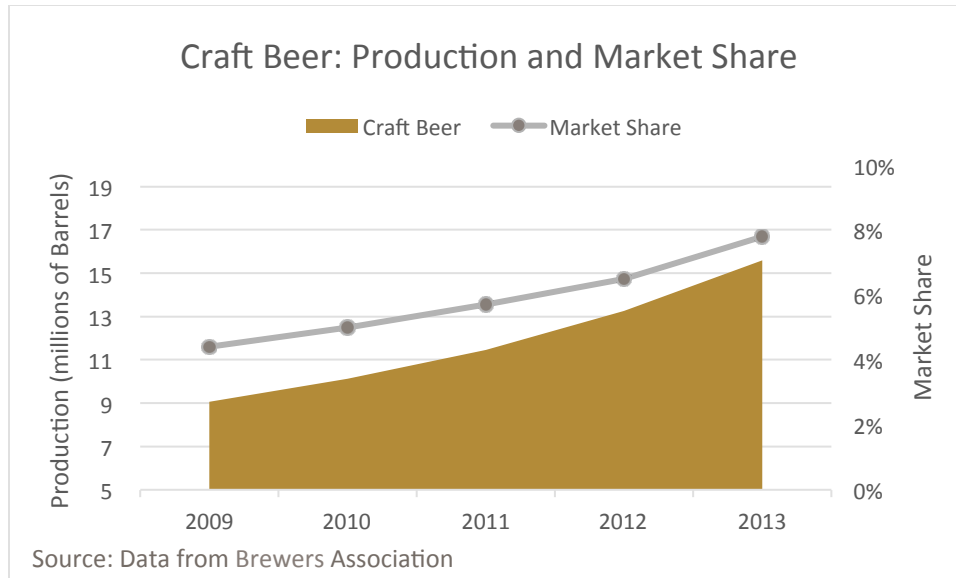


Figure 6. Craft Beer Production and Market Share.

While craft beer has experienced market growth in recent years, the overall beer industry has not been so fortunate. With the exception of 2012, the total beer industry has been in a decline since 2009. Over that period, the industry has contracted at an annualized rate of 0.76 percent. After the trend-reverse in 2012, a sharp, 2.0 percent contraction happened in 2013.

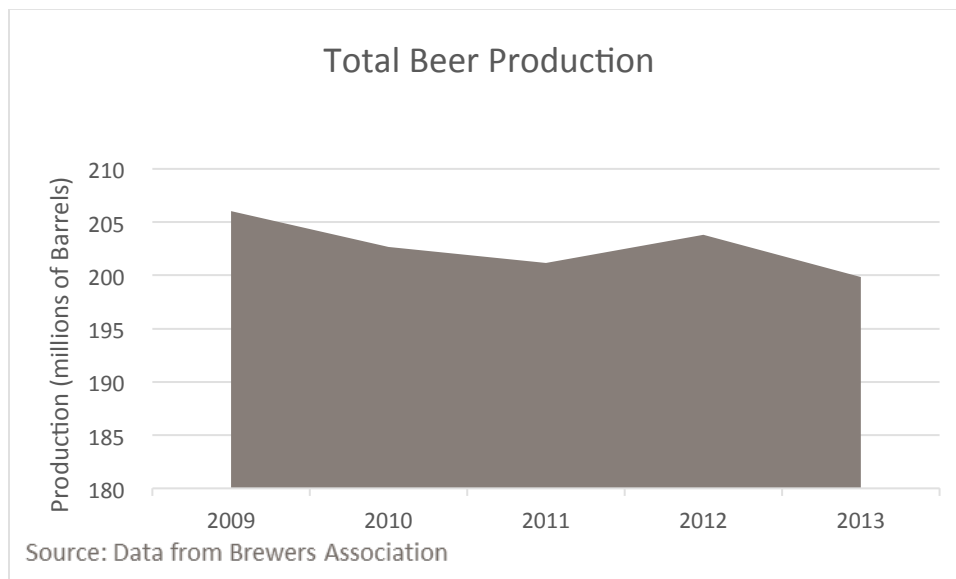


Figure 7. Total U.S. Beer Production

### 3.2 Managing the Business

Patrick, his parents and his siblings would ultimately make a decision on the investment in their role on the board of directors. The details of the Bale Breaker Brewery would rely heavily on Patrick’s planning. If Bale Breaker is to become a reality, Patrick’s brother, sister, and brother-in-law, Kevin Quinn, will serve as the brewery’s backbone.

Meghann Quinn, Patrick's sister, would serve as Bale Breaker's operating and financing officer. Her degree in finance and current management role at a winery in Idaho makes her an ideal operations leader. Marketing, logistics, accounting and information technology are all within her capabilities.

Kevin Smith, Patrick's brother, would serve as Bale Breaker's brew master. He is currently the assistant brewer at a Seattle craft brewery and has experience with the brew house operations, recipe design, quality control, and production scheduling. Kevin's current employer is also a recent start-up brewery, which has provided a lot of insights into challenges that might arise during Bale Breaker's start-up period.

Kevin Quinn, Meghann's husband, would lead the brewery's sales activities. Currently working as the director of franchise development for a fast-growing restaurant chain, his industry sales experience will be heavily leveraged.

In Patrick's mind, the management team for Bale Breaker was the easy part.

### *3.3 The Details*

In the weeks leading up to Patrick's move back to the farm he had spent several hours collecting data and pulling together information about the investment potential. Patrick shared the information with the family through a series of emails and meetings so they could start to dig into the investment. His first email with details was sent two weeks before his return:

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**From:** Smith, Patrick  
**Sent:** Two Weeks ago, 10:54 PM  
**To:** 'Mom'; 'Dad'; 'Kevin'; 'Meghann'; 'Kevin Quinn'  
**Subject:** Bale Breaker Materials for Friday's Meeting

All,

First, thank you for your patience. This has taken me substantially longer than I originally anticipated. The final product, I think, reflects the additional quality and details I've been able to incorporate.

Second, I appreciate the hours of phone calls you have each spent with me getting the plan to where it is today. Please view this as a working plan and I hope we can collect feedback and adjust or build from here.

Here is the investment to consider:

- 10,000 Barrels per year capacity: Initial investment projection of \$3,750,000
  - Land: \$250,000
  - Building: \$1,250,000
  - Brewing Equipment: \$1,250,000
  - General Start-up Expenses: \$1,000,000

A key decision that needs to be made is the marketing strategy. The two options are:

- Exclusive Marketing Strategy: I like to call this the “keg” strategy. For this strategy, we’ll focus on getting our brews on tap at as many pubs and premier locations as possible. Kegs have a lower cost of production and get better prices per barrel of beer produced—both of these lead to a higher margin! The trade-off comes at volumes. The Exclusive Marketing Strategy is a high-margin, low-volume business model. With the exclusive marketing strategy, our first-year volume is estimated at 1,200 barrels. Our revenue per barrel is estimated at \$413 per barrel.
- Broad Marketing Strategy: If the first strategy is “kegs,” this strategy would best be known as “cans.” In this strategy, we will focus on sales through cans and a broad marketing strategy, such as retail locations and liquor stores. Cans cost a bit more and our revenue per barrel will be reduced. Our first year estimate for production with this strategy, however, is considerably more at 2,200 barrels with an estimated price point of \$344 per barrel. This strategy is a low-margin, high-volume business model.

After significant analysis and conversations with Kevin, other craft brewery owners and Carson, the consultant Kevin put me in contact with, it seems that the brewery’s success will be driven by our ability to strongly position our brand relative to competing craft brewers and the multinational brands. In addition, success will also depend on long-term growth rate for the craft brew industry. While the industry’s growth has been strong, some wonder if it is sustainable or a fad. Of course, other factors matter as well—input prices, beer prices, overhead costs, etc.—but the two key unknowns are our brand position and the industry growth rate.

- Brand Position: I looked at two possibilities for our brand position. With a strong brand position, I assume our initial sales growth would increase by an estimated 50 percent annually. With a moderate brand position, I assume our initial sales growth would increase by an estimated 35 percent annually.
- Long-Term Craft Beer Growth Rates: I see two possibilities. The first is a continuation of the current rapid growth rate at 10 percent annually over the next five years. The second possibilities ponders a fad market where growth would contract 10 percent annually.

In the attachment (see Appendix I and Appendix II) are the key decisions, key uncertainties and their associated probabilities, and assumptions about the impacts of these decisions and uncertainties for estimated gross margin, net margin, production margin and the estimated NPV for a ten-year NPV analysis, from the different market share and long-term growth outcomes.

See you Friday ... Patrick

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### *3.4 Even More Decisions*

Following Patrick’s email, the family held a long, but successful web meeting. As if the initial decision wasn’t complicated enough, the family created more options to analyze and consider. Patrick’s brother was keeping the notes and shared the highlights in an email later that evening.

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**From:** Smith, Kevin

**Sent:** Last Week, 8:31 PM

**To:** 'Patrick'; 'Dad'; 'Mom'; 'Meghann'; 'Kevin Quinn'

**Subject:** Bale Breaker Meeting Notes

All,

A giant thanks to Patrick for putting all the materials together. Here are my notes from today's meeting.

- It was agreed that, if the project is approved, Bale Breaker would be built on three acres of Field 41. One of the brewery's flagship brews, a pale ale, would bear the field's name.
- For what it's worth, the family agreed that it was likely (70 percent probability) that a strong brand position would be achieved and the brews would be popular. Also, it was agreed that it was likely (60 percent probability) that the industry growth would continue to grow, a 40 percent chance of contraction moving forward.
- Mom asked if it would be possible to wait before making the investment. Her suggestion was that, potentially, we could know more about our market share potential by brewing some of our beers and building awareness in the local beer festivals. It would then give us an idea of how popular our products might be. It was agreed that knowing that the brands would be popular would be helpful, signaling a strong year-five market share.
- My consultant friend, Carson, has suggested we consider a co-packing scenario. With this we would find a business partner (Carson says he knows a current customer of YCH that's looking to expand) to go in on the venture with us. Patrick will look into the financial implications, but this option seems to provide us with an opportunity to mitigate the losses in a bad scenario and capture most of the returns from a good scenario.

We look forward to Patrick's findings and recommendations!

KS

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A follow-up phone call with Carson led to the possibility of a co-packing situation. A brewer in Northern California was interested in doubling their capacity by adding another 7,500 barrels of production, but wouldn't be able to do so at their current location for a number of years due to zoning changes. Patrick and Carson believed Bale Breaker could build a 15,000-barrel plant on the Field 41 site for about \$4.3 million, including the value of the land.

The land and start-up expenses would still be fully realized by Bale Breaker, but they would only have to invest 60 percent of the \$3.05 million in building and brewing equipment. If they decided, in five years, that they wanted to have the full capacity for themselves, they could buy out the other half of capacity for \$1.22 million. Based on this scenario, Patrick had put together a table of financial assumptions around the Joint Venture idea (Appendix I). Now he was beginning to think about how he would evaluate the value in his mother's suggestion of waiting.

### 3.5 Reflection

As Patrick got back into his truck and headed to visit with his family, he kept replaying all the investment decisions in his mind. The project initially had started with three options to choose from (no investment, invest with a broad marketing strategy, or invest with an exclusive marketing strategy) and eight potential outcomes. He was now up to five decision options (no investment, invest with a broad marketing strategy, invest with an exclusive marketing strategy, wait a year, or invest with a real option) and a total of 16 potential outcomes.

On one hand, Patrick felt relieved that everyone seemed overwhelmingly excited about the project. On the other, he was beginning to worry that things were becoming too complicated. How would he sort through all the possibilities? Once he got everything sorted out, how would he share this information with the family to influence their decision? The realities of the decision were setting in. What started as a capital investment a few weeks ago is now also holding three family members' salary and careers in the balance.

Bale Breaker could be the first commercial craft brewery in the U.S. started by hop producers. His family is passionate about their hops and beer, but how does Patrick sort through and structure the decisions and make sense of it all?

He knows the sweat and tears his family has placed into the Ranch and raising quality hops. He knows the passion his family has for the potential of Bale Breaker Brewery.

#### **Questions:**

- Should Loftus Ranches Invest in the Bale Breaker Brewery?
  - What are the economic reasons for your recommendation
  - How does the brewery align with market conditions?
  - What core competencies would Loftus Ranches leverage in a brewery investment?
- If Loftus Ranches does invest in the brewery, what advice would you provide them on their go-to-market strategy?
  - Should they make this investment now, or wait?
  - Should they consider an exclusive or broad distribution strategy?
  - Should they consider a joint venture for production?
- What are the alternative ways Patrick and the family might consider growing the Loftus Ranches' business, outside of the brewery investment?
  - How do these alternatives align with market conditions?
  - What core competencies would Loftus' ranches leverage in these opportunities?
  - Given the limited available data on alternatives, which alternative would you recommend they explore further? Defend your answer.

## Appendix I. Summary Table of Parameters and NPVs for Loftus Ranches' Decision Set

Summary Table of Loftus Ranches' Full Decision Set

1st Decision	2nd Decision	Event 1	Event 2	3rd Decision	Volume (1000 Gal.)	Gross Margin	Profit Margin	Capacity (1000 Gal.)	NPV (\$1000's)	Comments
Full Ownership	Exclusive	Strong Brand	Fast Growth	None	9.71	56%	28.9%	10	<b>2,340</b>	Pride and Joy!
Full Ownership	Exclusive	Strong Brand	Decline	None	3.59	66%	31.5%	10	<b>126</b>	Just missed the wave
Full Ownership	Exclusive	Average Brand	Fast Growth	None	6.42	55%	16.1%	10	<b>(1,132)</b>	We need better beer
Full Ownership	Exclusive	Average Brand	Decline	None	2.35	56%	14.1%	10	<b>(2,198)</b>	Is this a fun hobby?
Full Ownership	Broad	Strong Brand	Fast Growth	None	10.00	61%	28.2%	10	<b>2,401</b>	Ride the wave!!!
Full Ownership	Broad	Strong Brand	Decline	None	5.91	60%	21.6%	10	<b>282</b>	Where did the market go?
Full Ownership	Broad	Average Brand	Fast Growth	None	10.00	46%	9.3%	10	<b>(1,554)</b>	Too many breweries
Full Ownership	Broad	Average Brand	Decline	None	5.91	60%	5.5%	10	<b>(2,627)</b>	Houston we have a problem
Joint Venture	Exclusive	Strong Brand	Fast Growth	Exercise	9.78	65%	31.5%	15	<b>2,821</b>	Now we are talking!
Joint Venture	Exclusive	Strong Brand	Fast Growth	No Exercise	7.50	65%	28.0%	7.5	<b>2,759</b>	Its working
Joint Venture	Exclusive	Strong Brand	Decline	Exercise	3.59	66%	30.0%	15	<b>(57)</b>	almost
Joint Venture	Exclusive	Strong Brand	Decline	No Exercise	3.59	66%	29.3%	7.5	<b>473</b>	Could have been worse
Joint Venture	Exclusive	Average Brand	Fast Growth	Exercise	6.42	55%	16.8%	15	<b>(1,064)</b>	Need to use partner recipes!
Joint Venture	Exclusive	Average Brand	Fast Growth	No Exercise	6.42	55%	16.3%	7.5	<b>(534)</b>	Option helped
Joint Venture	Exclusive	Average Brand	Decline	Exercise	2.35	56%	15.3%	15	<b>(2,130)</b>	Dumb decision
Joint Venture	Exclusive	Average Brand	Decline	No Exercise	2.35	56%	14.3%	7.5	<b>(1,600)</b>	At least we had the option
Joint Venture	Broad	Strong Brand	Fast Growth	Exercise	12.08	59%	25.3%	15	<b>2,090</b>	Glad we had the option
Joint Venture	Broad	Strong Brand	Fast Growth	No Exercise	7.50	60%	26.1%	7.5	<b>1,508</b>	Need to say good by to partner
Joint Venture	Broad	Strong Brand	Decline	Exercise	4.43	61%	18.1%	15	<b>(311)</b>	Don't need the capacity
Joint Venture	Broad	Strong Brand	Decline	No Exercise	4.32	61%	17.6%	7.5	<b>219</b>	Shared capacity a good thing
Joint Venture	Broad	Average Brand	Fast Growth	Exercise	11.77	46%	10.3%	15	<b>(1,203)</b>	More capacity for bad beer??
Joint Venture	Broad	Average Brand	Fast Growth	No Exercise	7.50	47%	10.2%	7.5	<b>(1,122)</b>	get better then get bigger
Joint Venture	Broad	Average Brand	Decline	Exercise	4.32	48%	8.9%	15	<b>(2,259)</b>	Really dumb decision
Joint Venture	Broad	Average Brand	Decline	No Exercise	4.32	48%	8.3%	7.5	<b>(1,729)</b>	Better than the alternative, I guess.

### Definitions

Full Ownership --Bale Breaker owns 100% of the 10,000 barrel brewery

Joint Venture -- Enter into a JV with another brewer for a 15,000 gallon brewery with 65 percent upfront investment by Bale Breaker for the right to use 50% of capacity (\$3.03 million).

Bale Breaker has the right to purchase the remaining 50 percent of the capacity after 5 years for \$1.22 million. Capacity available Year 6.

Exclusive -- Invest in a brewery with exclusive distribution through bars and tasting room.

Broad -- Invest in a brewery with broad distribution through retail channels using cans

Strong Brand -- Bale Breaker has a Strong Brand position relative to competitor brands. Probability of occurring: 70%.

Average Brand -- Bale Breaker has a Average Brand Position relative to competitor brands Probability of occurring: 30%.

Fast Growth -- The overall market for craft beer is expected to grow 10% per year (Year 1 -5). Probability of occurring: 60%.

Slow Growth -- The overall market for craft beer is expected to decline 10% per year (Year 6 -10). Probability of occurring: 40%.

Exercise -- Bale Breaker decided to exercise the option to acquire the other half of the JV brewery for \$1.22 Million

No Exercise -- Bale Breaker decides to not exercise the option and maintains 50% capacity ownership in the brewery

Capacity -- Estimated Capacity in Year 10.

Gross Margin -- (Total Revenue Less Cost of Goods Sold)/ (Total Revenue). Average over the 10 years.

Profit Margin -- (Net Income)/(Total Revenue). Average over the 10 years.

## Appendix II

### Investment Assumptions

<b><u>Volume</u></b>	
Annual Growth (Year 1-5):	35% with weak brand recognition; 50% with strong brand recognition.
Annual Growth (Year 6-10):	10% with fast industry growth; -10% with industry decline.
<b><u>Revenue</u></b>	
	\$344/barrel for broad strategy.
	\$413/barrel with exclusive strategy.
<b><u>Capacity</u></b>	10,000 gallons with Full Ownership.
	7,500 gallons with Joint Venture (option not exercised).
	15,000 gallons with Joint Venture, option exercised (Year 6 - 10)
<b><u>Investment</u></b>	Full Ownership: \$3.75 million
	Joint Venture: \$3.08 million; 1.22 million to exercise option (pay in year 5)
<b><u>Investment Discount Rate (hurdle rate)</u></b>	15%
<b><u>Terminal Valuation Rate</u></b>	10%
<b><u>Analysis Assumptions</u></b>	A 10 year NPV was conducted. To calculate the residual value of the company beyond year 10, a terminate valuation rate of 10% of year 10 earning was used. It is also assumed the initial investment and the first year of production will both occur in year 1.

