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Small Winery Investment and Operating Costs

Extension Bulletin

By

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Abstract

Total investment costs for the wineries in this study ranged from \$560,894 for the 2,000 case winery to \$2,339,108 for the 20,000 case winery. Building and land costs account for the largest percentage of total investment costs for all wineries. Cooperage accounts for the second largest percentage of total investment cost.

The highest percent of variable costs for each winery are packaging costs. Full time labor, cooperage, and purchasing of grapes are the next highest operating costs by percentage. Depreciation of capital assets makes up the highest percentage of fixed costs.

Economies of size exist at a decreasing rate among all of the wineries. That is, as the output of the winery increases, the per unit costs of production decline. Average total costs per case decrease from \$154.41 for the 2,000 case winery to \$124.93 for the 20,000 case winery.

The wineries in this study all have the ability to produce positive cash flows by year three, showing that all operating costs and debt obligations can be met. Results show that all wineries have the ability to repay all debt obligations and to operate as self-sustaining entities.

Introduction

The Washington wine industry has experienced rapid and diversified growth. Washington State now maintains the second largest premium table wine industry in the United States. Growth in the Washington wine industry is expected to continue due to the growing recognition of Washington wines as a high end, premium product. The number of wine grape acres planted across Washington State reflects the growth of the industry, along with the increase in number of wineries and wine sales. Wine grape acreage increased from 4,440 prior to 1992 to an estimated 27,000 in 2004. The number of wineries increased from 19 in 1982 to 368 in 2004.

The objective of this study is to develop an accurate depiction of current investment costs of constructing, owning, and operating a winery in the state of Washington. Potential investors and lenders will find this study useful in evaluating the expected profitability, cash flows, and potential risk associated with investing in a winery. The specific objectives include:

- Identify the personnel and capital assets required to construct and operate five wineries of various sizes, ranging from 2,000 to 20,000 annual case production
- Calculate the total dollar investment required to construct each winery
- Estimate the annual operating costs for each winery
- Calculate the annual cash flow for each winery
- Calculate net present value (NPV), internal rate of return (IRR), equity payback, and debt recovery for each size winery

Procedures

An economic-engineering approach was used to gather information on investment and operating costs for wineries with annual case production of 2, 5, 10, 15, and 20 thousand cases (one case is 12 bottles of 750 ml capacity). The economic-engineering approach was used along with Washington winery survey data to develop a standard while avoiding the problem of variation among existing wineries. This approach allowed the models to be developed with general characteristics common to all the wineries, such as using only new equipment and standard accounting systems. Existing wineries also differ with respect to several characteristics including:

- Average yield of juice extracted from each ton of grapes
- Quality of wine to be produced
- Temperatures and length of time of the fermentation process
- Amount of time the wine is aged
- Degree of labor and capital intensity
- Bottling dates
- Marketing method
- Access to grapes

These characteristics, along with many others, influence the capital requirements and total investment and operating costs of a winery. Due to the numerous combinations of these characteristics, a limited number of realistic assumptions about quality, production, and marketing were made so that the investment analysis could be conducted. The product mix and marketing costs were taken from survey of wineries in the state to reflect actual conditions in the industry.

Financial models were developed based upon several assumptions. These assumptions reflect current Washington wine industry standards and characteristics. Due to the lack of historical information and unpredictability of the United States wine industry, a purely empirical approach was avoided due to the variation in the ages of the various existing wineries and the differing accounting systems used in the industry. There were two, very general assumptions made relating to each of the five wineries. The first assumption was the separation between the winery and any vineyard operation. The second assumption was used to help define the type and quality of wine produced by the wineries. Each winery was classified as a premium winery, meaning that wines retail at or above \$8 per bottle. The assumption of a premium winery influences many aspects of the production processes, therefore impacting some of the capital assets required.

The following subsections describe other assumptions that were made in addition to the assumptions above.

Buildings

The winery buildings were considered primarily production facilities, with two-thirds of the square footage dedicated to production and storage. The remainder of the facility served as retail and office space.

Structures were built for operating/production efficiency rather than aesthetics. All of the wineries have 30-foot insulated metal external walls with steel framing, built on concrete slabs. Each building has cat walks, windows, and bay doors and are equipped with standard lighting, electrical, and plumbing facilities. Control of the

temperature throughout the winery was accomplished through commercial glycol air handlers. Other areas, including offices, production, and retail spaces, were assumed to have a standard commercial climate HVAC system. The estimated construction costs and square footage for each winery are reported in Appendix A.

Equipment

Comprehensive equipment lists were developed for each individual winery. The list was compiled using information gathered from surveys taken of wineries of the respective sizes in Washington. The equipment lists include equipment prices plus shipping and installation costs. All equipment was assumed to have been purchased new as there is no standardization for used equipment prices in the wine industry. A detailed list including type, capacity, quantity, price, and features of the equipment are included in the equipment inventory in Appendix A.

All grape presses were assumed to be membrane presses with sizes ranging from one to four tons press capacity per hour. Crush capacity on average yielded 62.5 cases (150 gallons) or 750 bottles of wine per ton of grapes crushed.

General practices in the Washington wine industry include the minimal filtration of wines, especially red wines. Many of the wineries that do filter use a plate and frame filter, rather than multiple filters such as membrane, leaf, or lees filters.

The wineries were assumed to use jacketed stainless steel tanks for fermentation and for storage. Another method for fermentation and storage that has gained increasing popularity in recent years is the use of fermentation bins. Fermentation bins are stainless steel, square, open top fermenters that hold up to 350 gallons of must.

Fermentation tanks range from 450 gallons to 2,500 gallons, while storage tanks range from 250 gallons to 1,000 gallons. Each winery used fermentation bins; however, the bins were utilized more by the smallest wineries. Assumptions regarding tanks included the use of glycol to control the temperature of the tanks during fermentation. Fermentation was 7 days for red wines and 21 days for white wines.

Product Mix

Product mix assumptions were gathered from current Washington winery trends and from surveying the typical boutique wineries in Washington. Current trends include the shift from white to red wine varieties. Significant white wine production is dominant in larger wineries (>50,000 cases annually) with the capabilities of producing more types of wines. Smaller wineries tend to predominantly produce red wines (Table 1).

Total Investment Costs

Total investment cost for all of the wineries ranged from \$560,894 for the 2,000 case winery to \$2,339,108 for the 20,000-case winery (Table 2). As the winery size increases, so does the investment cost. However, the investment costs increase at a decreasing rate. The largest difference among winery sizes was between the 2,000 and the 5,000 case winery. Per case investment costs for the 2,000 case winery were \$280.45. The 5,000 case winery had investment costs of \$162.01, a difference of \$137.84 per case for the two wineries. The smallest difference occurred between the two largest wineries. The 15,000 case winery had a per case investment cost of \$121.52 while the 20,000 case winery had an investment cost of \$116.96, a difference of just \$4.56 per case.

Plant and office equipment represent the majority of a winery's investment costs (Table 3). Investment costs for plant and office equipment range from 49 to 56 percent of total investment.

The reason the plant and office investment cost is much higher than any other costs is because it includes building and land costs.

The second most significant investment cost is cooperage (wooden wine barrels). Cooperage initial investment costs range from 9 to over 22 percent of investment cost for some wineries. Another relatively significant investment cost includes receiving equipment, which ranges from 6 to over 11 percent of a winery's total investment cost.

Operating and Fixed Costs

Variable operating costs were separated into the following eight categories:

- Grapes
- Cooperage
- Packaging
- Bottling
- Taxes and fees (federal excise tax, Washington state excise tax, business and occupations tax, and Washington Wine Commission dues)
- Full- and part-time labor
- Marketing
- Utilities, office supplies, and miscellaneous

Fixed operating costs were separated into the following six categories:

- Insurance
- Property tax
- Maintenance
- Depreciation
- Loan interest expense
- Cost of equity

TABLE 1: Wine Varieties Produced and Percent of Total Output by Winery Size (%)

	2,000 Cases	5,000 Cases	10,000 Cases	15,000 Cases	20,000 Cases
Red					
Cabernet Sauvignon	35	35	30	30	30
Merlot	30	30	25	25	25
Syrah	10	10	20	20	20
TOTAL RED	75	75	75	75	75
White					
Chardonnay	25	25	15	15	15
Riesling	--	--	10	10	10
TOTAL WHITE	25	25	25	25	25

TABLE 2: Total Investment Costs by Equipment Category and Winery Size (\$)

Cost Category	Winery Size (Cases)				
	2,000	5,000	10,000	15,000	20,000
Receiving Equipment	\$58,023.75	\$91,319.75	\$106,932.25	\$122,025.00	\$136,900.00
Cellar Equipment	\$16,623.25	\$16,827.85	\$17,067.85	\$23,612.85	\$24,117.85
Material Handling	\$49,520.00	\$49,520.00	\$49,520.00	\$49,520.00	\$49,800.00
Refrigeration System	\$28,918.57	\$47,978.04	\$80,676.86	\$112,100.29	\$160,248.32
Fermentation & Storage	\$49,800.45	\$74,775.75	\$79,285.50	\$97,240.50	\$186,873.75
Cooperage	\$51,944.00	\$129,800.00	\$259,700.00	\$389,400.00	\$519,200.00
Tasting Room	\$3,675.95	\$3,843.95	\$4,011.95	\$4,107.95	\$4,203.95
Plant & Office	\$302,388.00	\$396,007.00	\$733,501.00	\$1,024,420.00	\$1,257,764.00
TOTAL INVESTMENT	\$560,893.97	\$810,072.34	\$1,330,695.41	\$1,822,426.59	\$2,339,107.87
Per Unit					
\$/Case	\$280.45	\$162.01	\$133.07	\$121.52	\$116.96
\$/Gallon	\$117.83	\$68.07	\$55.91	\$51.06	\$49.14
\$/750 ml	\$23.37	\$13.50	\$11.09	\$10.13	\$9.75

TABLE 3: Percent of Total Investment Costs by Equipment Category and Winery Size (%)

Cost Category	Winery Size (Cases)				
	2,000	5,000	10,000	15,000	20,000
Receiving Equipment	10.34	11.27	8.04	6.70	5.85
Cellar Equipment	2.96	2.08	1.28	1.30	1.03
Material Handling	8.83	6.11	3.72	2.72	2.13
Refrigeration System	5.16	5.92	6.06	6.15	6.85
Fermentation & Storage	8.88	9.23	5.96	5.34	7.99
Cooperage	9.26	16.02	19.52	21.37	22.20
Tasting Room	0.66	0.47	0.30	0.23	0.18
Plant & Office	53.91	48.89	55.12	56.21	53.77

Grape Prices

Grape prices were calculated using a three-year average by variety to reflect recent price levels in the industry. The varietal average was also used to help represent the significant price differences reflected in prices for the different varieties. For the years 2002-2004, the average prices per ton in Washington were as follows:

Chardonnay	\$788
Riesling	\$685
Merlot	\$1,011

Cabernet Sauvignon

\$1,174

Syrah

\$1,201

Cooperage

The percentage of new barrels purchased each year varies by winery and individual wine making practices. It is assumed that each winery would purchase 75 percent of their barrels new each year, except for the first three years, when the wineries will purchase all new oak barrels. Therefore, initially, barrels were considered an investment cost. After the second year, barrels were considered

an operating cost. With the cost of new French Oak barrels upwards of \$800, many wineries, especially smaller wineries, use alternative methods. American Oak is commonly considered an alternative to the classic French Oak. For the purpose of this study we assumed that half of the barrel requirements are met with French Oak and half are American Oak.

Packaging Costs

Packaging costs, including bottles, labels, corks, capsules, and case box materials, were gathered by surveying several suppliers. The lowest quote for the packaging products was used to determine total packaging costs.

Bottling

Mobile bottling services consist of a mobile semi-truck equipped with all the necessary bottling equipment. Mobile bottling outfitters are available for all wineries to reserve during bottling. The service provides one experienced operator while the winery provides the rest of the labor. In year one, bottling occurs only for the White Riesling that is not barrel aged. In the following years, all of the wine is bottled.

Taxes and Fees

Information regarding taxes was gathered from a variety of sources, primarily the Washington Department of Licensing, the Washington State Liquor Control Board, and the Bureau of Alcohol, Tobacco, Firearms, and Explosives. Licensing fees include the master license application fee and, for the Washington State Liquor Control Board, a one-time \$100 application fee, an annual fee of \$100, and a state excise tax of \$0.87 per gallon produced. Federal taxes include a \$1,000 annual tax for proprietors of bonded wine cellars and a federal excise tax of \$1.07 per gallon produced at wineries that produce less than 250,000 gallons.

In addition, there is a business and occupation tax of 0.484 percent of gross receipts. The Washington Wine Commission also charges a fee of \$5.25 per ton of grapes crushed at the winery facility.

Labor

Labor information was gathered from two sources. Information regarding staffing and winery positions was collected directly from wineries in Washington State. Labor requirements were divided into full and part-time employment and increased or decreased to reflect the needs of the individual winery. The part-time wage rate was

based on the average paid within the industry. Salary requirements and averages are from the *Wine Business Monthly's* salary survey. Salaries include all benefits, and taxes paid by the employer (Table 4). Detailed information on labor is presented in Appendix B.

Marketing

Information regarding marketing costs was taken from Drei (1997). Drei found that wineries spend an average of \$4.15 per case for marketing wholesale wine. For this study, the 1997 estimate was adjusted using national inflation rates to be \$4.86 per case in 2004 dollars.

Utilities, Office Supplies, and Miscellaneous

Information regarding the estimation of utilities, office supplies, and miscellaneous was taken from Bales (1999). Utilities, office supplies, and miscellaneous costs for the 2,000, 5,000, and 10,000 case winery were taken directly from the study and adjusted for the rate of inflation. Costs pertaining to the 15,000 and 20,000 case winery were estimated on a percentage basis for the 10,000 and 50,000 case costs from the Bales study.

Insurance and Maintenance

Insurance and maintenance costs were calculated similarly to costs for utilities, office supplies, and miscellaneous items. Costs for insurance and maintenance for the 2,000, 5,000, and 10,000 case wineries were again taken from Bales (1999) and adjusted for the rate of inflation, and costs for the 15,000 and 20,000 case wineries were estimated on a percentage basis.

Property Tax

Property tax rates were found on the Washington State Department of Revenue website. Using Benton County as the location for the winery, property tax rates are approximately \$14.33 per \$1,000 of assessed value. This figure is slightly less than the \$14.80 per \$1,000 assessed value that Bales used in his study. Assessed value includes the value of the land, building, and equipment investment for each size winery.

Depreciation

To calculate depreciation, the Internal Revenue Service's Alternative Depreciation System (ADS) was used. This system is widely accepted for depreciating equipment and buildings for corporations. The straight-line method was used because of its advantages for cash flow.

Interest Expense

Each winery has two different loans, one for equipment and one for land and buildings. The loan for the equipment is amortized over five years at an interest rate of 7.5 percent. The equity requirement for the equipment loan is 15 percent (the remaining 85 percent is financed). A fee of one percent was applied to each loan to cover closing costs in the first year.

The land loan is amortized over 20 years at a 6.5 percent interest rate. The land loan has an equity requirement of 25 percent, with the rest financed by debt. The closing costs for the land loan were estimated at two percent for all wineries. Closing costs includes all appraisal and title fees. Financing information was gathered from members of the banking industry with experience in winery lending.

Cost of Equity

Foregone returns for choosing one investment over another are considered the cost of equity or opportunity cost (the difference between one

choice and the next best alternative). For this study, the cost of equity was 11.3 percent, which is the historical rate of return on common stock, according to the S & P 500.

Average Costs

Total fixed and operating costs were calculated based on the information discussed above (Table 5). Each winery is assumed to produce and sell at maximum capacity. For example, costs associated with operating a 2,000 case winery were based upon the winery producing and selling 2,000 cases of wine annually.

Using total cost figures, costs per case (Table 6) and per 750 ml bottle (Table 7) were determined. Economies of size exist between most of the wineries. The 2,000 case winery has an average total cost per case of \$154.41, while the 5,000 case winery has an average cost of \$137.33, a difference of \$17.08. The difference between the 5,000 and 10,000 case winery is \$10.90, which indicates that as the winery size increases, so do costs, but on a decreasing scale.

TABLE 4: Summary of Winery Labor Requirements and Annual Costs (\$) by Position and Winery Size

	2,000 Cases	5,000 Cases	10,000 Cases	15,000 Cases	20,000 Cases
Full Time					
General Manager		34,000	49,500	54,450	56,925
Winemaker	32,000	39,600	42,500	46,750	48,875
Assistant Winemaker				33,100	38,065
Cellerman		22,080	27,600	30,360	31,740
Warehouse				22,330	23,345
Public Relations					40,900
Customer Service				31,570	33,005
Sales Manager				47,520	49,680
Office Manager			24,900	27,390	31,970
Clerical					25,300
Total Full-Time Labor	32,000	95,680	144,500	293,470	379,805
Part-Time					
Clerical	9,360	9,360			
Customer Service		9,360	18,720	18,720	28,080
Total Part-Time Labor	9,360	18,720	18,720	18,720	28,080
TOTAL LABOR	41,360	114,400	163,220	312,190	407,885

Financial Analysis

To determine the acceptability of an investment in each winery size, a financial analysis was conducted. This analysis includes the results of the net present value (NPV), the internal rate of return (IRR), equity payback, and debt recovery analysis. Assumptions for calculating cash flow for each winery include:

- The project planning horizon is 10 years.
- All five wineries are regular corporations subject to the regulations outlined in the 2004 IRS Publications 542.
- The inflation rate is two percent (used to estimate the effect of inflation on future cash flows).
- Tasting room sales account for a percentage of premium cases sold.
- In the first year, only the White Riesling was sold; Merlot and Chardonnay were added in the second year; all varieties were sold in the third year.
- Any and all additional injection of capital beyond the initial outlays at time zero are 100 percent equity financed.

A cash flow statement was developed for each winery. This statement compares revenue to operating costs, fixed costs, and income taxes to return a net cash-flow figure. Revenue for the cash flow statement was calculated as the product of per case price and the number of cases sold annually. Prices and quantities varied by winery, and by whether or not the wine was sold wholesale or through the tasting room.

Revenue increases dramatically for all wineries in the first three years. In years one and two, not all wine produced is ready to be sold. For years three through ten, sales were the equivalent of production. The result was an increasing revenue figure, leading to a higher or increasing annual cash flow.

The dramatic increase in revenue was because of two distinct reasons. The first reason is the time lag between production and realization of revenue in the early years of each winery. As more wine became ready for sale, revenues increase proportionally.

Inflation was the secondary cause for changes in revenue. The assumed rate of inflation used to

TABLE 5: Total, Variable, and Fixed Costs by Winery Size

Variable Cost	2,000 Cases	5,000 Cases	10,000 Cases	15,000 Cases	20,000 Cases
Grapes	\$32,959.07	\$82,397.68	\$164,883.95	\$247,325.92	\$329,767.89
Cooperage	\$37,015.09	\$92,537.73	\$185,075.47	\$277,613.20	\$370,150.93
Packaging	\$49,220.56	\$123,051.40	\$246,102.80	\$369,154.20	\$492,205.60
Mobile Bottling	\$8,556.76	\$20,347.18	\$39,796.40	\$58,266.13	\$76,848.56
Taxes and Dues	\$11,581.96	\$27,177.76	\$85,050.50	\$78,348.56	\$103,693.67
Full Time Labor	\$32,000.00	\$95,680.00	\$144,500.00	\$293,470.00	\$379,805.00
Part Time Labor	\$9,360.00	\$18,720.00	\$18,720.00	\$18,720.00	\$28,080.00
Marketing	\$9,104.36	\$14,794.59	\$25,138.67	\$24,023.98	\$22,879.98
Utilities	\$2,700.00	\$5,550.00	\$8,800.00	\$12,300.00	\$15,200.00
Office Supplies	\$740.00	\$1,750.00	\$3,300.00	\$4,896.00	\$6,000.00
Other	\$2,060.00	\$4,450.00	\$8,900.00	\$10,710.00	\$12,800.00
Total Variable Costs	\$195,297.80	\$486,456.34	\$930,267.78	\$1,394,827.99	\$1,837,431.62
Insurance	\$2,300.00	\$5,000.00	\$8,200.00	\$10,500.00	\$12,800.00
Maintenance	\$1,000.00	\$2,650.00	\$4,700.00	\$6,750.00	\$8,600.00
Property Tax	\$7,094.66	\$10,680.24	\$17,619.35	\$24,128.84	\$31,071.11
Depreciation	\$64,258.98	\$128,558.11	\$232,675.14	\$337,306.82	\$448,937.37
Interest	\$17,653.90	\$24,624.61	\$42,217.73	\$58,243.76	\$73,540.45
Cost of Equity	\$21,224.43	\$28,664.21	\$28,664.21	\$67,304.87	\$86,316.66
Total Fixed Costs	\$113,531.97	\$200,177.16	\$334,076.43	\$504,234.29	\$661,265.59
TOTAL COST	\$308,829.77	\$686,633.50	\$1,264,344.21	\$1,899,062.28	\$2,498,697.22

TABLE 6: Average Total, Average Variable, and Average Fixed Operating Costs per Case by Winery Size

Variable Cost	2,000 Cases	5,000 Cases	10,000 Cases	15,000 Cases	20,000 Cases
Grapes	\$16.48	\$16.48	\$16.49	\$16.49	\$16.49
Cooperage	\$18.51	\$18.51	\$18.51	\$18.51	\$18.51
Packaging	\$24.61	\$24.61	\$24.61	\$24.61	\$24.61
Mobile Bottling	\$4.28	\$4.07	\$3.98	\$3.88	\$3.84
Taxes and Dues	\$5.79	\$5.44	\$8.51	\$5.22	\$5.18
Full Time Labor	\$16.00	\$19.14	\$14.45	\$19.56	\$18.99
Part Time Labor	\$4.68	\$3.74	\$1.87	\$1.25	\$1.40
Marketing	\$4.55	\$2.96	\$2.51	\$1.60	\$1.14
Utilities	\$1.35	\$1.11	\$0.88	\$0.82	\$0.76
Office Supplies	\$0.37	\$0.35	\$0.33	\$0.33	\$0.30
Other	\$1.03	\$0.89	\$0.89	\$0.71	\$0.64
Total Average Variable Costs	\$97.65	\$97.29	\$93.03	\$92.99	\$91.87
Insurance	\$1.15	\$1.00	\$0.82	\$0.70	\$0.64
Maintenance	\$0.50	\$0.53	\$0.47	\$0.45	\$0.43
Property Tax	\$3.55	\$2.14	\$1.76	\$1.61	\$1.55
Depreciation	\$32.13	\$25.71	\$23.27	\$22.49	\$22.45
Interest	\$8.83	\$4.92	\$4.22	\$3.88	\$3.68
Cost of Equity	\$10.61	\$5.73	\$2.87	\$4.49	\$4.32
Total Average Fixed Costs	\$56.77	\$40.04	\$33.41	\$33.62	\$33.06
TOTAL COST	\$154.41	\$137.33	\$126.43	\$126.60	\$124.93

TABLE 7: Average Total, Average Variable, and Average Fixed Operating Cost per bottle (750 ml) by Winery Size

Variable Cost	2,000 Cases	5,000 Cases	10,000 Cases	15,000 Cases	20,000 Cases
Grapes	\$1.37	\$1.37	\$1.37	\$1.37	\$1.37
Cooperage	\$1.54	\$1.54	\$1.54	\$1.54	\$1.54
Packaging	\$2.05	\$2.05	\$2.05	\$2.05	\$2.05
Mobile Bottling	\$0.36	\$0.34	\$0.33	\$0.32	\$0.32
Taxes and Dues	\$0.48	\$0.45	\$0.71	\$0.44	\$0.43
Full Time Labor	\$1.33	\$1.59	\$1.20	\$1.63	\$1.58
Part Time Labor	\$0.39	\$0.31	\$0.16	\$0.10	\$0.12
Marketing	\$0.38	\$0.25	\$0.21	\$0.13	\$0.10
Utilities	\$0.11	\$0.09	\$0.07	\$0.07	\$0.06
Office Supplies	\$0.03	\$0.03	\$0.03	\$0.03	\$0.03
Other	\$0.09	\$0.07	\$0.07	\$0.06	\$0.05
Total Average Variable Costs	\$8.14	\$8.11	\$7.75	\$7.75	\$7.66
Insurance	\$0.10	\$0.08	\$0.07	\$0.06	\$0.05
Maintenance	\$0.04	\$0.04	\$0.04	\$0.04	\$0.04
Property Tax	\$0.30	\$0.18	\$0.15	\$0.13	\$0.13
Depreciation	\$2.68	\$2.14	\$1.94	\$1.87	\$1.87
Interest	\$0.74	\$0.41	\$0.35	\$0.32	\$0.31
Cost of Equity	\$0.88	\$0.48	\$0.24	\$0.37	\$0.36
Total Average Fixed Costs	\$4.73	\$3.34	\$2.78	\$2.80	\$2.76
TOTAL COST	\$12.87	\$11.44	\$10.54	\$10.55	\$10.41

calculate future cash flows was two percent. Each year's sales were multiplied by the inflation rate to determine that year's revenue. Following the estimation of revenues, operating costs and fixed costs were calculated. It should be noted that depreciation and interest from the loan payments were estimated as before tax expenses and were included in the fixed costs portion of the cash flow section. Thus, depreciation and loan interest reduces the tax burden of each winery.

Taxable income was calculated by subtracting total expenses from total revenue for each year. To calculate the gross cash flow, the calculated income tax was deducted from the taxable income. Because depreciation is a non-cash expense, it was then added back into the gross-cash flow. Principal payments for the loans were then deducted from the gross cash flow to obtain the net cash flow for the year. Carry forward losses and their impacts on taxable income were included in this analysis.

Projected Cash Flow

Table 8 details the estimated cash flow for each winery for the planning horizon of ten years. Unlike Bales' study, this study accounted for carryover losses that greatly affected the cash flows of each winery. Detailed cash flow figures can be found in Appendix C. Negative cash flows occurred because each winery produces at full capacity for the first several years, but does not sell at full capacity until year three.

Cash flow for each winery was subjected to the following set of assumptions:

- Net present value and internal rate of return figures were based upon a ten-year planning horizon. Cash flows extending beyond the ten-year period were not considered in this study. Equipment salvage value was assumed to be zero.
- A discount rate of 11.3 percent was used, equivalent to the historical rate of return on common stock.
- Two types of loans were used to construct the wineries. The equipment loan was amortized over a five-year period at a 7 percent interest rate. The loan had an 85:15 debt to equity ratio and was charged a one percent loan origination fee. The real estate loan was amortized over a 20-year period with a 6.5 percent interest rate. A debt to equity ratio of 75:25 was required, and a two percent loan origination fee was also incurred. Wineries were assumed to continue to operate beyond the planning horizon; therefore the real estate loan was not paid off within the 10-year period. Table 9 details equipment and real estate loan amounts.

Net Present Value and Internal Rate of Return Results

Table 10 summarizes net present value, internal rate of return, equity payback, and debt recovery periods for each size winery. Results were used to determine which size winery was the most

TABLE 8: Cash Flow Projections by Winery Size and Year (\$)

Year	2,000 Cases	5,000 Cases	10,000 Cases	15,000 Cases	20,000 Cases
1	(\$211,701.87)	(\$455,614.72)	(\$644,015.64)	(\$1,007,012.91)	(\$1,336,218.07)
2	(\$82,146.79)	(\$142,627.87)	(\$260,548.17)	(\$471,575.58)	(\$671,170.75)
3	\$47,287.86	\$171,045.06	\$417,761.69	\$504,658.49	\$578,969.30
4	\$62,609.42	\$208,354.68	\$449,506.81	\$613,295.81	\$721,883.52
5	\$65,791.88	\$215,406.79	\$462,671.22	\$631,248.66	\$743,868.36
6	\$125,463.12	\$312,375.07	\$525,603.29	\$824,195.83	\$1,002,053.46
7	\$128,297.17	\$291,775.12	\$490,150.41	\$696,609.56	\$1,016,097.16
8	\$130,753.75	\$260,272.10	\$490,765.33	\$674,980.96	\$834,098.07
9	\$112,738.86	\$256,508.65	\$490,622.35	\$675,943.24	\$833,473.79
10	\$114,973.82	\$261,737.36	\$501,079.01	\$690,682.39	\$851,743.61

TABLE 9: Loan Amount (Principal plus Interest) by Loan Type and Winery Size (\$)

Winery	Real Estate Loan	Equipment Loan
2,000 Cases	\$219,000	\$228,560
5,000 Cases	\$286,500	\$363,861
10,000 Cases	\$531,000	\$529,291
15,000 Cases	\$741,750	\$708,412
20,000 Cases	\$910,500	\$956,342

financially feasible investment. Feasibility is determined by whether or not the NPV is positive or negative, and whether or not the IRR is greater than or less than the discount rate.

The most profitable winery is the 10,000-case winery, which had a NPV of \$867,076 and the highest IRR of 25.66 percent. The next most profitable winery was the 15,000-case winery, with the second highest NPV of \$999,767 and the second highest IRR of 22.33 percent. All of the other wineries were also profitable, but not to the same extent as these wineries. The smallest winery also had a positive NPV and an IRR greater than the cost of capital.

There appeared to be no connection between winery size and profitability. The mid-sized wineries (10,000, 15,000, and 20,000 cases) were the more profitable ventures using the measures of NPV and IRR. The assumption of profitability was based solely upon the NPV and IRR calculations. Profitability was determined to be the project's ability to generate cash flows at a rate greater than the discount rate of the next best alternative investment.

Equity Payback Period

Equity payback calculations were used to determine which project posed the least risk. Projects were deemed less risky if positive cash

flows come earlier rather than later: a short equity payback period was considered a less risky project than one with a long payback period. A project with a short equity payback period relies less on long-term future cash flows. The four largest wineries presented the least risk, with equity payback periods of approximately three years, while the smallest winery had a longer equity payback period of 4.15 years. All wineries had the ability to pay investors back within the 10-year planning horizon.

Debt Recovery Period

The debt recovery period was calculated for two reasons. The first was used to determine the firm's liquidity, or how soon assets could be converted to cash, or in this study's case, debt into equity. The second reason for calculating the debt recovery period was to determine if the wineries had the ability to meet their loan repayment obligations.

Each winery had the ability to repay its debt obligations within the specified time frame (Table 10). The 10,000 and 15,000 case wineries had the shortest recovery periods of 3.53 and 3.62 years, respectively. The 2,000 case winery had the longest debt recovery period of 5.08 years. All of the wineries were able to repay their debt based on the assumptions used in this study.

Summary and Conclusions

Total investment costs for the wineries ranged from \$560,894 for the smallest winery to \$2,339,108 for the largest winery. Investment costs included all of the initial costs to construct and operate a winery, including equipment costs, construction costs, and land costs. For all wineries constructed, the plant and office costs were the highest percentage of total investment costs. The 10,000 case winery's investment costs had 55.12

TABLE 10: Net Present Value (NPV), Internal Rate of Return (IRR), Equity Payback Period, and Debt Recovery Period by Winery Size with Base Level Assumptions

Winery	NPV (\$)	IRR (%)	Equity Payback (yrs)	Debt Recovery (yrs)
2,000 Cases	\$1,686.34	11.39%	4.15	5.08
5,000 Cases	\$292,732.26	19.13%	2.99	3.86
10,000 Cases	\$867,076.07	25.66%	2.69	3.53
15,000 Cases	\$999,766.66	22.33%	2.78	3.62
20,000 Cases	\$1,055,056.12	20.17%	2.86	3.71

percent in plant and office costs. Cooperage accounted for the second largest investment cost. The 10,000 case winery had the largest percentage of cooperage costs at 22.20 percent, while the 2,000 case winery had the smallest at 9.26 percent.

Analyzing the per unit investment costs showed that economies of size existed among the wineries. The largest difference was between the 2,000 case winery and the 5,000 case winery, where per case cost was \$280.45 and \$162.01 respectively, a difference of \$118.44. The 5,000 case winery had 2.5 times the output of the smallest winery, while the investment costs were only 1.4 times as much. The equipment capacity between the 2,000 and 5,000 case wineries was fairly similar. Therefore, expansion from the smaller winery to the larger winery would be fairly easy. The smallest difference existed between the two largest wineries where there was a per case cost difference of \$4.56. This implies that construction costs for the larger wineries resulted in a reduced total investment cost per unit, but that savings among winery production sizes may be small and insignificant.

On average, packaging accounted for the highest level of variable costs. Grapes also accounted for a significant part of the variable cost along with cooperage and full time labor. Average costs showed that economies of size existed among all wineries studied.

Financial analyses were conducted to help determine which winery investment would be the most feasible and successful for an investor seeking financial backing. Financial measurements used to determine the feasibility of the projects were NPV, IRR, equity payback, and debt recovery period. Initial cash flow assessments indicated that all five of the wineries had a positive cash flow starting in year three.

The 10,000 case winery was deemed to be the most successful project. The 10,000 case winery had a NPV of \$867,076, the highest for all wineries, and an IRR of 25.66 percent, again the highest for all of the wineries. The equity payback period was relatively short, and in line with all of the other wineries, and the debt recovery period was the shortest amongst all wineries studied.

Following the 10,000 case winery, the 15,000 case winery seemed to be the next best choice, with the second highest NPV of \$999,767 and the second highest IRR of 22.33 percent. The 5,000 and 20,000 case wineries were also profitable and had good returns. The least likely investment project would seem to be the 2,000 case winery which had a low NPV and IRR and a much longer timeframe for the equity payback and debt recovery periods.

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APPENDIX A

**Equipment Lists, Prices, Construction Costs,
and Investment Costs by Winery Size**

**Exhibit A.1: 2,000 Case Winery
Equipment List and Total Investment Cost**

	Units	Cost	Ship/Install	Total	Description
Receiving Equipment					
Picking Bins	40	\$300.00	\$15.00	\$12,600.00	240 gallon T-Bin
Hopper	1	\$11,000.00	\$550.00	\$11,550.00	1/2 ton elevated
Stemmer/Crusher	1	\$7,995.00	\$399.75	\$8,394.75	1-3 ton per hour
Membrane Press	1	\$14,000.00	\$700.00	\$14,700.00	Air bladder 1 ton per hour
Must Pump	1	\$10,000.00	\$500.00	\$10,500.00	5-50 gpm positive displacement
Must Lines	60	\$3.85	\$0.80	\$279.00	3" plastic flex
			Total	\$58,023.75	
Cellar Equipment					
Tank Mixer	1	\$850.00	\$42.50	\$892.50	1 horse power with fittings
Transfer Pump	1	\$4,995.00	\$249.75	\$5,244.75	0-130 gpm positive displacement
Transfer Hose	180	\$2.03	\$0.50	\$455.40	2" plastic flex
Barrel Washer	1	\$1,000.00	\$50.00	\$1,050.00	non-automated
Plate & Frame Filter	1	\$4,500.00	\$300.00	\$4,800.00	40 cm, 40 plates
Air Compressor	1	\$269.00		\$269.00	
Pressure Washer	1	\$500.00		\$500.00	
Laboratory Equipment	misc	\$2,000.00		\$2,000.00	
Misc. Supplies		\$1,411.60		\$1,411.60	
			Total	\$16,623.25	
Materials Handling					
Pallet Jack	1	\$240.00		\$240.00	
Hand Cart	1	\$20.00		\$20.00	
Fork Lift	1	\$22,500.00		\$22,500.00	5,000 lb, pneumatic, propane forklift
Rotator Attachment	1	\$4,200.00		\$4,200.00	Cascade attachment 360
Pickup	1	\$22,560.00		\$22,560.00	
			Total	\$49,520.00	
Refrigeration					
System	1	\$28,918.57		\$28,918.57	5 tons glycol, plus piping, chiller, and heater
			Total	\$28,918.57	
Fermentation/Storage					
Fermentation Tanks	1	\$9,004.00	\$450.20	\$9,454.20	2,500 gallons, stainless steel, jacketed, bottom and side ports
Storage Tanks	3	\$3,495.00	\$174.75	\$11,009.25	1,000 gallons, stainless steel storage tanks
Bins	15	\$1,495.00	\$74.75	\$23,546.25	350 gallon square open top fermenters
Tank Stands	7	\$145.00	\$7.25	\$1,065.75	
Tank Washer	1	\$4,500.00	\$225.00	\$4,725.00	
			Total	\$49,800.45	

Exhibit A.1: (continued)

	Units	Cost	Ship/Install	Total	Description
Cooperage					
Barrels	80	\$560.00	\$20.00	\$46,400.00	60.4 gallon oak
Racks	80	\$60.00	\$3.00	\$5,040.00	
Silicone Bungs	80	\$3.00	\$0.15	\$252.00	
Fermentation Bungs	80	\$3.00	\$0.15	\$252.00	
			Total	\$51,944.00	
Tasting Room					
Refrigerator	1	\$349.00		\$349.00	
Wine Cooler	1	\$199.00		\$199.00	
Commercial Dishwasher	1	\$2,659.00	\$132.95	\$2,791.95	
Stemware	96	\$3.50		\$336.00	
			Total	\$3,675.95	
Plant and Office					
Computers	2	\$469.00		\$938.00	
Office Furnishings				\$2,700.00	
				\$6,750.00	
Land	2	\$11,000.00		\$22,000.00	
Building	3,000	\$90.00		\$270,000.00	
			Total	\$302,388.00	
TOTAL INVESTMENT				\$560,893.97	

**Exhibit A.2: 5,000 Case Winery
Equipment List and Total Investment Cost**

	Units	Cost	Ship/Install	Total	Description
Receiving Equipment					
Picking Bins	50	\$300.00	\$15.00	\$15,750.00	240 gallon T-Bin
Hopper	1	\$11,000.00	\$550.00	\$11,550.00	1/2 ton elevated
Stemmer/Crusher	1	\$7,995.00	\$399.75	\$8,394.75	1–3 ton per hour
Membrane Press	1	\$24,500.00	\$1,225.00	\$25,725.00	Air Bladder, 2 tons per hour
Must Pump	1	\$10,000.00	\$500.00	\$10,500.00	5–50 gpm positive displacement
Must Lines	100	\$4.00	\$1.00	\$500.00	3" plastic flex
Pomace & Stem Conveyor	1	\$18,000.00	\$900.00	<u>\$18,900.00</u>	
			Total	\$91,319.75	
Cellar Equipment					
Tank Mixer	1	\$850.00	\$42.50	\$892.50	1 horse power with fittings
Transfer Pump	1	\$4,995.00	\$249.75	\$5,244.75	0–130 gpm positive displacement
Transfer Hose	220	\$2.00	\$1.00	\$660.00	
Barrel Washer	1	\$1,000.00	\$50.00	\$1,050.00	non-automated
Plate & Frame Filter	1	\$4,500.00	\$300.00	\$4,800.00	40 cm, 40 plates
Air Compressor	1	\$269.00		\$269.00	
Pressure Washer	1	\$500.00		\$500.00	
Laboratory Equipment	misc	\$2,000.00		\$2,000.00	
Misc. Supplies		\$1,411.60		<u>\$1,411.60</u>	
			Total	\$16,827.85	
Materials Handling					
Pallet Jack	1	\$240.00		\$240.00	
Hand Cart	1	\$20.00		\$20.00	
Fork Lift	1	\$22,500.00		\$22,500.00	5,000 lb, pneumatic, propane forklift
Rotator Implement	1	\$4,200.00		\$4,200.00	Cascade attachment 360
Pickup	1	\$22,560.00		<u>\$22,560.00</u>	
			Total	\$49,520.00	
Refrigeration					
System	1	\$47,978.04		\$47,978.04	8.5 tons glycol, plus piping, chiller, heater
			Total	\$47,978.04	

Exhibit A.2: (continued)

	Units	Cost	Ship/Install	Total	Description
Fermentation/Storage					
Fermentation Tanks	3	\$6,800.00	\$340.00	\$21,420.00	1,700 gallons stainless steel, jacketed, bottom and side ports, red fermenters
	3	\$6,200.00	\$310.00	\$19,530.00	1,000 gallons stainless steel, jacketed, bottom and side ports, red fermenters
Storage Tanks	3	\$1,080.00	\$54.00	\$3,402.00	520 gallons stainless steel storage tanks
	1	\$600.00	\$30.00	\$630.00	250 gallons stainless steel storage tanks
Fermentation Bins	15	\$1,495.00	\$74.75	\$23,546.25	Square open top, stainless fermenter
Tank Stands	10	\$145.00	\$7.25	\$1,522.50	
Tank Washer	1	\$4,500.00	\$225.00	\$4,725.00	
			Total	\$74,775.75	
Cooperage					
Barrels	200	\$560.00	\$20.00	\$116,000.00	60.4 gallon oak
Racks	200	\$60.00	\$3.00	\$12,600.00	
Silicone Bungs	200	\$3.00		\$600.00	
Fermentation Bungs	200	\$3.00		\$600.00	
			Total	\$129,800.00	
Tasting Room					
Refrigerator	1	\$349.00		\$349.00	
Wine Cooler	1	\$199.00		\$199.00	
Commercial Dishwasher	1	\$2,659.00	\$132.95	\$2,791.95	
Stemware	144	\$3.50		\$504.00	
			Total	\$3,843.95	
Plant and Office					
Computers	3	\$469.00		\$1,407.00	
Office				\$3,600.00	
Furnishings				\$9,000.00	
Land	2	\$11,000.00		\$22,000.00	
Building	4,000	\$90.00		\$360,000.00	
			Total	\$396,007.00	
TOTAL INVESTMENT				\$810,072.34	

**Exhibit A.3: 10,000 Case Winery
Equipment List and Total Investment Cost**

	Units	Cost	Ship/Install	Total	Description
Receiving Equipment					
Picking Bin	65	\$300.00	\$15.00	\$20,475.00	240 gallon T-Bin
Hopper	1	\$13,750.00	\$687.50	\$14,437.50	1 ton elevated
Stemmer/Crusher	1	\$7,995.00	\$399.75	\$8,394.75	6–8 tons per hour
Membrane Press	1	\$32,000.00	\$1,600.00	\$33,600.00	Air Bladder, 3 tons per hour
Must Pump	1	\$10,000.00	\$500.00	\$10,500.00	5–50 gpm positive displacement
Must Lines	125	\$4.00	\$1.00	\$625.00	3" plastic flex
Pomace & Stem Conveyor	1	\$18,000.00	\$900.00	\$18,900.00	
			Total	\$106,932.25	
Cellar Equipment					
Tank Mixer	1	\$850.00	\$42.50	\$892.50	1 horse power with fittings
Transfer Pump	1	\$4,995.00	\$249.75	\$5,244.75	0–130 gpm positive displacement
Transfer Hose	300	\$2.00	\$1.00	\$900.00	
Barrel Washer	1	\$1,000.00	\$50.00	\$1,050.00	non-automated
Plate & Frame Filter	1	\$4,500.00	\$300.00	\$4,800.00	40 cm, 40 plates
Air Compressor	1	\$269.00		\$269.00	
Pressure Washer	1	\$500.00		\$500.00	
Laboratory Equipment	misc	\$2,000.00		\$2,000.00	
Misc. Supplies		\$1,411.60		\$1,411.60	
			Total	\$17,067.85	
Materials Handling					
Pallet Jack	1	\$240.00		\$240.00	
Hand Cart	1	\$20.00		\$20.00	
Fork Lift	1	\$22,500.00		\$22,500.00	5,000 lb, pneumatic, propane forklift
Rotator Implement	1	\$4,200.00		\$4,200.00	Cascade attachment 360
Pickup	1	\$22,560.00		\$22,560.00	
			Total	\$49,520.00	
Refrigeration					
System	1	\$80,676.86		\$80,676.86	16 tons glycol, plus piping, chiller, and heater
			Total	\$80,676.86	
Fermentation/Storage					
Fermentation Tanks	3	\$6,800.00	\$340.00	\$21,420.00	1,700 gallons, stainless steel, jacketed, bottom and side ports

Exhibit A.3: (continued)

	Units	Cost	Ship/Install	Total	Description
Fermentation/Storage					
Fermentation Tanks	4	\$6,200.00	\$310.00	\$26,040.00	1,000 gallons, stainless steel, jacketed, bottom and side ports
	2	\$1,800.00	\$90.00	\$3,780.00	450 gallons, stainless steel, jacketed, bottom and side ports
Storage Tanks	2	\$2,360.00	\$118.00	\$4,956.00	840 gallons, stainless steel, jacketed, bottom and side ports
	1	\$800.00	\$40.00	\$840.00	450 gallons, stainless steel, jacketed, bottom and side ports
Fermentation Bins	10	\$1,495.00	\$74.75	\$15,698.50	350 gallon, square open top, stainless
Tank Stands	12	\$145.00	\$7.25	\$1,827.00	
Tank Washer	1	\$4,500.00	\$225.00	\$4,725.00	
			Total	\$79,285.50	
Cooperage					
Barrels	400	\$560.00	\$20.00	\$232,000.00	60.4 gallon oak
Racks	400	\$60.00	\$3.00	\$25,200.00	
Silicone Bungs	400	\$3.00		\$1,200.00	
Fermentation Bungs	400	\$3.25		\$1,300.00	
			Total	\$259,700.00	
Tasting Room					
Refrigerator	1	\$349.00		\$349.00	
Wine Cooler	1	\$199.00		\$199.00	
Commercial Dishwasher	1	\$2,659.00	\$132.95	\$2,791.95	
Stemware	168	\$4.00		\$672.00	
			Total	\$4,011.95	
Plant and Office					
Computers	4	\$469.00		\$1,876.00	
Office Furnishings				\$6,750.00	
				\$16,875.00	
Land	3	\$11,000.00		\$33,000.00	
Building	7,500	\$90.00		\$675,000.00	
			Total	\$733,501.00	
TOTAL INVESTMENT				\$1,330,695.41	

**Exhibit A.4: 15,000 Case Winery
Equipment List and Total Investment Cost**

	Units	Cost	Ship/Install	Total	Description
Receiving Equipment					
Picking Bin	80	\$300.00	\$15.00	\$25,200.00	240 gallon T-Bin
Hopper	1	\$16,500.00	\$825.00	\$17,325.00	1.5 ton elevated
Stemmer/Crusher	1	\$15,000.00	\$750.00	\$15,750.00	10 ton per hour
Membrane Press	1	\$32,000.00	\$1,600.00	\$33,600.00	Air Bladder, 3 tons per hour
Must Pump	1	\$10,000.00	\$500.00	\$10,500.00	5–50 gpm positive displacement
Must Lines	150	\$4.00	\$1.00	\$750.00	3" plastic flex
Pomace & Stem Conveyor	1	\$18,000.00	\$900.00	\$18,900.00	
			Total	\$122,025.00	
Cellar Equipment					
Tank Mixer	1	\$850.00	\$42.50	\$892.50	1 horse power with fittings
Transfer Pump	1	\$5,300.00	\$265.00	\$5,565.00	5–50 gpm flexible impeller
Transfer Pump	1	\$4,995.00	\$249.75	\$5,244.75	0–130 gpm positive displacement
Transfer Hose	350	\$2.00	\$1.00	\$1,050.00	
Barrel Washer	1	\$1,000.00	\$50.00	\$1,050.00	non-automated
Plate & Frame Filter	1	\$4,500.00	\$300.00	\$4,800.00	40 cm, 40 plates
Air Compressor	1	\$269.00	\$300.00	\$569.00	
Pressure Washer	1	\$500.00		\$500.00	
Laboratory Equipment	misc	\$2,000.00		\$2,000.00	
Misc. Supplies		\$1,941.60		\$1,941.60	
			Total	\$23,612.85	
Materials Handling					
Pallet Jack	1	\$240.00		\$240.00	
Hand Cart	1	\$20.00		\$20.00	
Fork Lift	1	\$22,500.00		\$22,500.00	5,000 lb, pneumatic, propane forklift
Rotator Implement	1	\$4,200.00		\$4,200.00	Cascade attachment 360
Pickup	1	\$22,560.00		\$22,560.00	
			Total	\$49,520.00	
Refrigeration					
System	1	\$112,100.29		\$112,100.29	24 tons glycol, plus piping, chiller, and heater
			Total	\$112,100.29	

Exhibit A.4: (continued)

	Units	Cost	Ship/Install	Total	Description
Fermentation/Storage					
Fermentation Tanks	5	\$6,800.00	\$340.00	\$35,700.00	1,700 gallons, stainless steel, jacketed, bottom and side ports
	5	\$6,200.00	\$310.00	\$32,550.00	1,000 gallons, stainless steel, jacketed, bottom and side ports
	2	\$1,800.00	\$90.00	\$3,780.00	450 gallons, stainless steel, jacketed, bottom and side ports
Storage Tanks	2	\$2,360.00	\$118.00	\$4,956.00	840 gallons, stainless steel storage tanks
	1	\$800.00	\$40.00	\$840.00	450 gallons, stainless steel, storage tanks
Fermentation Bins	8	\$1,495.00	\$74.75	\$12,558.00	350 gallons, square open top, stainless
Tank Stands	14	\$145.00	\$7.25	\$2,131.50	
Tank Washer	1	\$4,500.00	\$225.00	\$4,725.00	
			Total	\$97,240.50	
Cooperage					
Barrels	600	\$560.00	\$20.00	\$348,000.00	60.4 Gallon Oak
Racks	600	\$60.00	\$3.00	\$37,800.00	
Silicone Bungs	600	\$3.00		\$1,800.00	
Fermentation Bungs	600	\$3.00		\$1,800.00	
			Total	\$389,400.00	
Tasting Room					
Refrigerator	1	\$349.00		\$349.00	
Wine Cooler	1	\$199.00		\$199.00	
Commercial Dishwasher	1	\$2,659.00	\$132.95	\$2,791.95	
Stemware	192	\$4.00		\$768.00	
			Total	\$4,107.95	
Plant and Office					
Computers	5	\$469.00		\$2,345.00	
Office Furnishings				\$9,450.00	
				\$23,625.00	
Land	4	\$11,000.00		\$44,000.00	
Building	10,500	\$90.00		\$945,000.00	
			Total	\$1,024,420.00	
TOTAL INVESTMENT				\$1,822,426.59	

**Exhibit A.5: 20,000 Case Winery
Equipment List and Total Investment Cost**

	Units	Cost	Ship/Install	Total	Description
Receiving Equipment					
Picking Bin	100	\$300.00	\$5.00	\$30,500.00	240 gallon T-BinHopper
	1	\$16,500.00	\$825.00	\$17,325.00	1.5 ton elevated
Stemmer/Crusher	1	\$17,000.00	\$850.00	\$17,850.00	12 ton per hour
Membrane Press	1	\$39,000.00	\$1,950.00	\$40,950.00	Air Bladder, 4 tons per hour
Must Pump	1	\$10,000.00	\$500.00	\$10,500.00	5–50 gpm positive displacement
Must Lines	175	\$4.00	\$1.00	\$875.00	3" plastic flex
Pomace & Stem Conveyor	1	\$18,000.00	\$900.00	\$18,900.00	
			Total	\$136,900.00	
Cellar Equipment					
Tank Mixer	1	\$850.00	\$42.50	\$892.50	1 horse power with fittings
Transfer Pump	1	\$4,995.00	\$249.75	\$5,244.75	0–130 gpm positive displacement
Transfer Pump	1	\$5,300.00	\$265.00	\$5,565.00	5–50 gpm flexible impeller
Transfer Hose	375	\$2.00	\$1.00	\$1,125.00	
Barrel Washer	1	\$1,000.00	\$50.00	\$1,050.00	non-automated
Plate & Frame Filter	1	\$5,200.00	\$260.00	\$5,460.00	40 cm, 60 plates
Air Compressor	1	\$269.00		\$269.00	
Pressure Washer	1	\$500.00		\$500.00	
Laboratory Equipment	misc	\$2,000.00		\$2,000.00	
Misc. Supplies		\$2,011.60		\$2,011.60	
			Total	\$24,117.85	
Materials Handling					
Pallet Jack	2	\$240.00		\$480.00	
Hand Cart	3	\$20.00		\$60.00	
Fork Lift	1	\$22,500.00		\$22,500.00	5,000 lb, pneumatic, propane forklift
Rotator Implement	1	\$4,200.00		\$4,200.00	Cascade attachment 360
Pickup	1	\$22,560.00		\$22,560.00	
			Total	\$49,800.00	
Refrigeration					
System	1	\$160,248.32		\$160,248.32	30 tons glycol, plus piping, chiller, and heater
			Total	\$160,248.32	

Exhibit A.5: (continued)

	Units	Cost	Ship/Install	Total	Description
Fermentation/Storage					
Fermentation Tanks	6	\$8,000.00	\$400.00	\$50,400.00	2,000 gallons, stainless steel, jacketed, bottom and side ports
	8	\$6,800.00	\$340.00	\$57,120.00	1,700 gallons, stainless steel, jacketed, bottom and side ports
	6	\$6,200.00	\$310.00	\$39,060.00	1,000 gallons, stainless steel, jacketed, bottom and side ports
Storage Tanks	5	\$3,495.00	\$174.75	\$18,348.75	1,000 gallons, stainless steel storage
	2	\$2,360.00	\$118.00	\$4,956.00	840 gallons, stainless steel storage
Fermentation Bins	5	\$1,495.00	\$74.75	\$7,848.75	Square open top, stainless fermenter
Tank Stands	29	\$145.00	\$7.25	\$4,415.25	
Tank Washer	1	\$4,500.00	\$225.00	\$4,725.00	
			Total	\$186,873.75	
Cooperage					
Barrels	800	\$560.00	\$20.00	\$464,000.00	60.4 Gallon Oak
Racks	800	\$60.00	\$3.00	\$50,400.00	
Silicone Bungs	800	\$3.00		\$2,400.00	
Fermentation Bungs	800	\$3.00		\$2,400.00	
			Total	\$519,200.00	
Tasting Room					
Refrigerator	1	\$349.00		\$349.00	
Wine Cooler	1	\$199.00		\$199.00	
Commercial Dishwasher	1	\$2,659.00	\$132.95	\$2,791.95	
Stemware	216	\$4.00		\$864.00	
			Total	\$4,203.95	
Plant and Office					
Computers	6	\$469.00		\$2,814.00	
Office Furnishings				\$11,700.00	
				\$29,250.00	
Land	4	\$11,000.00		\$44,000.00	
Building	13,000	\$90.00		\$1,170,000.00	
			Total	\$1,257,764.00	
TOTAL INVESTMENT				\$2,339,107.87	

APPENDIX B

Labor Requirements and Costs By Winery Size

**Exhibit B.1: Labor Requirements, Positions Descriptions,
and Annual Labor Cost for a 2,000 Case Winery**

Full-Time Position	Quantity	Job Description	Annual Cost
General Manager/Winemaker	1	Coordinate winery operation and maintenance, sales, marketing, financial record keeping, and staffing.	\$32,000
Total Full-Time Labor	1		\$32,000
Part-Time Position	Quantity	Cost Per Hour and Hours Per Year	Annual Cost
Clerical	1	\$9/hr @ 1040 hrs/year	\$9,360
Total Part-Time Labor	1		\$9,360
TOTAL ANNUAL LABOR COST			\$41,360

*Annual cost includes all salary, benefits, and taxes experienced by the employer.

**Exhibit B.2: Labor Requirements, Positions Descriptions,
and Annual Labor Cost for a 5,000 Case Winery**

Full-Time Position	Quantity	Job Description	Annual Cost
General Manager	1	Coordinate winery operation and maintenance, sales, marketing, financial record keeping, and staffing.	\$34,000
Winemaker	1	Wine production, lab management, and quality control.	\$39,600
Cellerman	1	Assist Winemaker & General Manager with wine production, quality control, winery operation and maintenance, and warehousing.	\$22,080
Total Full-Time Labor	3		\$95,680
Part-Time Position	Quantity	Cost Per Hour and Hours Per Year	Annual Cost
Clerical	1	\$9/hr @ 1040 hrs/year	\$9,360
Customer Service	1	\$9/hr @ 1040 hrs/year	\$9,360
Total Part-Time Labor	2		\$18,720
TOTAL ANNUAL LABOR COST			\$114,400

*Annual cost includes all salary, benefits, and taxes experienced by the employer.

**Exhibit B.3: Labor Requirements, Positions Descriptions,
and Annual Labor Cost for a 10,000 Case Winery**

Full-Time Position	Quantity	Job Description	Annual Cost
General Manager	1	Coordinate winery operation and maintenance, sales, marketing, financial recordkeeping, and staffing.	\$49,500
Winemaker	1	Wine production, lab management, and quality control.	\$42,500
Cellerman	1	Assist Winemaker & General Manager with wine production, quality control, winery operation and maintenance, and warehousing.	\$27,600
Office Manager	1	Assist General Manager with all financial recordkeeping and general office duties.	\$24,900
Total Full-Time Labor	4		\$144,500
Part-Time Position	Quantity	Cost Per Hour and Hours Per Year	Annual Cost
Customer Service	2	\$9/hr @ 1040 hrs/year	\$18,720
Total Part-Time Labor	2		\$18,720
TOTAL ANNUAL LABOR COST			\$163,220

*Annual cost includes all salary, benefits, and taxes experienced by the employer.

**Exhibit B.4: Labor Requirements, Positions Descriptions,
and Annual Labor Cost for a 15,000 Case Winery**

Full-Time Position	Quantity	Job Description	Annual Cost
General Manager	1	Coordinate winery operation and maintenance, sales, marketing, financial record keeping, and staffing.	\$54,450
Winemaker	1	Wine production, lab management, and quality control.	\$46,750
Assistant Winemaker	1	Assist winemaker in lab duties, quality control, wine production, and inventory management.	\$33,100
Cellerman	1	Responsible for winery maintenance, warehousing, receiving and shipping.	\$30,360
Warehouse	1	Conducts all storage and shipping functions.	\$22,330
Customer Service	1	Operates tasting room.	\$31,570
Sales Manager	1	Direct all marketing and sales efforts.	\$47,520
Office Manager	1	Financial record keeping and general office duties.	\$27,390
Total Full-Time Labor	8		\$293,470
Part-Time Position	Quantity	Cost Per Hour and Hours Per Year	Annual Cost
Customer Service	2	\$9/hr @ 1040 hrs/year	\$18,720
Total Part-Time Labor	2		\$18,720
TOTAL ANNUAL LABOR COST			\$312,190

*Annual cost includes all salary, benefits, and taxes experienced by the employer.

**Exhibit B.5: Labor Requirements, Positions Descriptions,
and Annual Labor Cost for a 20,000 Case Winery**

Full-Time Position	Quantity	Job Description	Annual Cost
General Manager	1	Coordinate winery operation and maintenance, sales, marketing, financial record keeping, and staffing.	\$56,925
Winemaker	1	Wine production, lab management, and quality control.	\$48,875
Assistant Winemaker	1	Assist winemaker in lab duties, quality control, wine production, and inventory management.	\$38,065
Cellerman	1	Responsible for winery maintenance, warehousing, receiving and shipping.	\$31,740
Warehouse	1	Conducts all storage and shipping functions.	\$23,345
Public Relations	1	Media and public communications, promotes industry issues, winery tours.	\$40,900
Customer Service	1	Operates tasting room.	\$33,005
Sales Manager	1	Direct all marketing and sales efforts.	\$49,680
Office Manager	1	Financial record keeping and general office duties.	\$31,970
Clerical	1	Assists office manager with all record keeping, filing, answering phones, and other general office duties.	\$25,300
Total Full-Time Labor	10		\$379,805
Part-Time Position	Quantity	Cost Per Hour and Hours Per Year	Annual Cost
Customer Service	3	\$9/hr @ 1040 hrs/year	\$28,080
Total Part-Time Labor	3		\$28,080
TOTAL ANNUAL LABOR COST			\$407,885

*Annual cost includes all salary, benefits, and taxes experienced by the employer.

APPENDIX C

Base Level Cash Flow Data By Winery Size

**Exhibit C.1: Cash Flow Projections
2,000 Case Winery***

Period	1	2	3	4	5	6	7	8	9	10
Tasting Room Price	\$180	\$184	\$187	\$191	\$195	\$199	\$203	\$207	\$211	\$215
Wholesale Price	\$120	\$122	\$125	\$127	\$130	\$132	\$135	\$138	\$141	\$143
REVENUE:										
Tasting Room Sales	\$0	\$165,240	\$280,908	\$286,526	\$292,257	\$298,102	\$304,064	\$310,145	\$316,348	\$322,675
Whsl Premium Sales	\$0	\$36,720	\$62,424	\$63,672	\$64,946	\$66,245	\$67,570	\$68,921	\$70,300	\$71,706
Total Revenue	\$0	\$201,960	\$343,332	\$350,199	\$357,203	\$364,347	\$371,634	\$379,066	\$386,648	\$394,381
EXPENSES:										
OPERATING COSTS										
Grapes	\$32,959	\$33,618	\$34,291	\$34,976	\$35,676	\$36,389	\$37,117	\$37,860	\$38,617	\$39,389
Cooperage	\$0	\$47,328	\$48,275	\$36,930	\$37,669	\$38,422	\$39,190	\$39,974	\$40,774	\$41,589
Packaging	\$44,951	\$45,850	\$46,767	\$47,703	\$48,657	\$49,630	\$50,623	\$51,635	\$52,668	\$53,721
Mobile Bottling	\$0	\$8,772	\$8,947	\$9,126	\$9,309	\$9,495	\$9,685	\$9,879	\$10,076	\$10,278
Excise Tax (Fed)	\$0	\$4,164	\$6,274	\$6,399	\$6,527	\$6,658	\$6,791	\$6,927	\$7,065	\$7,206
Excise Tax (State)	\$0	\$2,713	\$4,428	\$4,516	\$4,607	\$4,699	\$4,793	\$4,889	\$4,987	\$5,086
B & O Taxes	\$0	\$977	\$1,662	\$1,695	\$1,729	\$1,763	\$1,799	\$1,835	\$1,871	\$1,909
Wine Commission	\$169	\$173	\$176	\$179	\$183	\$187	\$190	\$194	\$198	\$202
Full-Time Labor	\$32,000	\$32,640	\$33,293	\$33,959	\$34,638	\$35,331	\$36,037	\$36,758	\$37,493	\$38,243
Part-Time Labor	\$9,360	\$9,547	\$9,738	\$9,933	\$10,132	\$10,334	\$10,541	\$10,752	\$10,967	\$11,186
Marketing	\$0	\$5,949	\$9,914	\$10,113	\$10,315	\$10,521	\$10,732	\$10,946	\$11,165	\$11,389
Utilities	\$2,700	\$2,754	\$2,809	\$2,865	\$2,923	\$2,981	\$3,041	\$3,101	\$3,163	\$3,227
Office Supplies	\$740	\$755	\$770	\$785	\$801	\$817	\$833	\$850	\$867	\$884
Miscellaneous	\$2,060	\$2,101	\$2,143	\$2,186	\$2,230	\$2,274	\$2,320	\$2,366	\$2,414	\$2,462
Total Operating Costs	\$124,940	\$197,341	\$209,487	\$201,367	\$205,394	\$209,502	\$213,692	\$217,966	\$222,325	\$226,771

Exhibit C.1: (continued)

Period	1	2	3	4	5	6	7	8	9	10
<i>FIXED COSTS</i>										
Insurance	\$2,300	\$2,346	\$2,393	\$2,441	\$2,490	\$2,539	\$2,590	\$2,642	\$2,695	\$2,749
Maintenance	\$1,000	\$1,020	\$1,040	\$1,061	\$1,082	\$1,104	\$1,126	\$1,149	\$1,172	\$1,195
Property Tax	\$7,095	\$7,032	\$6,756	\$6,353	\$6,077	\$5,863	\$6,053	\$6,246	\$6,451	\$6,653
Depreciation	\$28,064	\$64,016	\$79,949	\$85,883	\$82,161	\$76,559	\$72,944	\$59,720	\$45,993	\$47,302
Interest Payments	\$31,377	\$28,059	\$24,496	\$20,670	\$16,560	\$12,147	\$11,645	\$11,110	\$10,540	\$9,934
Total Fixed Costs	\$69,835	\$102,473	\$114,635	\$116,408	\$108,370	\$98,212	\$94,358	\$80,867	\$66,852	\$67,833
Total Expenses	\$194,775	\$299,814	\$324,122	\$317,774	\$313,764	\$307,714	\$308,050	\$298,832	\$289,176	\$294,604
Earnings Before Taxes	(\$194,775)	(\$97,854)	\$19,210	\$32,425	\$43,438	\$56,632	\$63,584	\$80,234	\$97,471	\$99,776
Carryover Loss	\$0	(\$194,775)	(\$292,629)	(\$273,419)	(\$240,994)	(\$197,556)	(\$140,924)	(\$77,340)	\$0	\$0
Taxable Income	(\$194,775)	(\$292,629)	(\$273,419)	(\$240,994)	(\$197,556)	(\$140,924)	(\$77,340)	\$2,894	\$97,471	\$99,776
Income Tax	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$434	\$21,390	\$22,163
Gross Cash-Flow	(\$194,775)	(\$97,854)	\$19,210	\$32,425	\$43,438	\$56,632	\$63,584	\$79,800	\$76,081	\$77,614
+Depreciation	\$28,064	\$64,016	\$79,949	\$85,883	\$82,161	\$76,559	\$72,944	\$59,720	\$45,993	\$47,302
-Principal Payments	(\$44,991)	(\$48,308)	(\$51,872)	(\$55,698)	(\$59,807)	(\$7,728)	(\$8,231)	(\$8,765)	(\$9,335)	(\$9,942)
NET CASH-FLOW	(\$211,702)	(\$82,147)	\$47,288	\$62,609	\$65,792	\$125,463	\$128,297	\$130,754	\$112,739	\$114,974

*Assumes the tasting price is \$15 per bottle or \$180 per case; wholesale price is \$10 per bottle or \$120 per case; 75% of sales are in the tasting room and 25% are wholesale; and the inflation rate is 2%.

**Exhibit C.2: Cash Flow Projections
5,000 Case Winery***

Period	1	2	3	4	5	6	7	8	9	10
Tasting Room Price	\$180	\$184	\$187	\$191	\$195	\$199	\$203	\$207	\$211	\$215
Wholesale Price	\$120	\$122	\$125	\$127	\$130	\$132	\$135	\$138	\$141	\$143
REVENUE:										
Tasting Room Sales	\$0	\$358,020	\$608,634	\$620,807	\$633,223	\$645,887	\$658,805	\$671,981	\$685,421	\$699,129
Whsl Premium Sales	\$0	\$128,520	\$218,484	\$222,854	\$227,311	\$231,857	\$236,494	\$241,224	\$246,048	\$250,969
Total Revenue	\$0	\$486,540	\$827,118	\$843,660	\$860,534	\$877,744	\$895,299	\$913,205	\$931,469	\$950,099
EXPENSES:										
OPERATING COSTS										
Grapes	\$82,398	\$84,046	\$85,727	\$87,441	\$89,190	\$90,974	\$92,793	\$94,649	\$96,542	\$98,473
Cooperage	\$0	\$118,320	\$120,686	\$92,325	\$94,172	\$96,055	\$97,976	\$99,936	\$101,934	\$103,973
Packaging	\$112,379	\$114,626	\$116,919	\$119,257	\$121,642	\$124,075	\$126,557	\$129,088	\$131,669	\$134,303
Mobile Bottling	\$0	\$20,859	\$21,276	\$21,702	\$22,136	\$22,578	\$23,030	\$23,491	\$23,960	\$24,440
Excise Tax (Fed)	\$0	\$8,910	\$14,184	\$14,468	\$14,757	\$15,052	\$15,353	\$15,660	\$15,974	\$16,293
Excise Tax (State)	\$0	\$6,572	\$10,860	\$11,077	\$11,299	\$11,524	\$11,755	\$11,990	\$12,230	\$12,474
B & O Taxes	\$0	\$2,355	\$4,003	\$4,083	\$4,165	\$4,248	\$4,333	\$4,420	\$4,508	\$4,598
Wine Commission	\$423	\$431	\$440	\$449	\$458	\$467	\$476	\$486	\$495	\$505
Full-Time Labor	\$95,680	\$97,594	\$99,545	\$101,536	\$103,567	\$105,638	\$107,751	\$109,906	\$112,104	\$114,346
Part-Time Labor	\$18,720	\$19,094	\$19,476	\$19,866	\$20,263	\$20,668	\$21,082	\$21,503	\$21,933	\$22,372
Marketing	\$0	\$9,667	\$16,111	\$16,433	\$16,762	\$17,097	\$17,439	\$17,788	\$18,143	\$18,506
Utilities	\$5,550	\$5,661	\$5,774	\$5,890	\$6,007	\$6,128	\$6,250	\$6,375	\$6,503	\$6,633
Office Supplies	\$1,750	\$1,785	\$1,821	\$1,857	\$1,894	\$1,932	\$1,971	\$2,010	\$2,050	\$2,091
Miscellaneous	\$4,450	\$4,539	\$4,630	\$4,722	\$4,817	\$4,913	\$5,011	\$5,112	\$5,214	\$5,318
Total Operating Costs	\$321,349	\$494,459	\$521,452	\$501,106	\$511,128	\$521,351	\$531,778	\$542,413	\$553,262	\$564,327

Exhibit C.2: (continued)

Period	1	2	3	4	5	6	7	8	9	10
<i>FIXED COSTS</i>										
Insurance	\$5,000	\$5,100	\$5,202	\$5,306	\$5,412	\$5,520	\$5,631	\$5,743	\$5,858	\$5,975
Maintenance	\$2,650	\$2,703	\$2,757	\$2,812	\$2,868	\$2,926	\$2,984	\$3,044	\$3,105	\$3,167
Property Tax	\$10,680	\$10,971	\$10,726	\$10,146	\$9,782	\$9,570	\$9,946	\$10,328	\$10,737	\$11,136
Depreciation	\$47,382	\$114,483	\$154,317	\$169,686	\$160,915	\$150,389	\$144,829	\$126,495	\$106,906	\$110,179
Interest Payments	\$45,912	\$40,734	\$35,173	\$29,199	\$22,783	\$15,892	\$15,234	\$14,535	\$13,789	\$12,995
Total Fixed Costs	\$111,624	\$173,991	\$208,175	\$217,149	\$201,762	\$184,297	\$178,624	\$160,145	\$140,396	\$143,452
Total Expenses	\$432,973	\$668,450	\$729,628	\$718,255	\$712,890	\$705,648	\$710,402	\$702,559	\$693,657	\$707,779
Earnings Before Taxes	(\$432,973)	(\$181,910)	\$97,490	\$125,405	\$147,644	\$172,096	\$184,897	\$210,646	\$237,812	\$242,319
Carryover Loss	\$0	(\$432,973)	(\$614,883)	(\$517,392)	(\$391,987)	(\$244,343)	(\$72,247)	\$0	\$0	\$0
Taxable Income	(\$432,973)	(\$614,883)	(\$517,392)	(\$391,987)	(\$244,343)	(\$72,247)	\$112,650	\$210,646	\$237,812	\$242,319
Income Tax	\$0	\$0	\$0	\$0	\$0	\$0	\$27,184	\$65,402	\$75,997	\$77,755
Gross Cash-Flow	(\$432,973)	(\$181,910)	\$97,490	\$125,405	\$147,644	\$172,096	\$157,714	\$145,244	\$161,815	\$164,565
+Depreciation	\$47,382	\$114,483	\$154,317	\$169,686	\$160,915	\$150,389	\$144,829	\$126,495	\$106,906	\$110,179
-Principal Payments	(\$70,023)	(\$75,201)	(\$80,763)	(\$86,736)	(\$93,152)	(\$10,110)	(\$10,767)	(\$11,467)	(\$12,213)	(\$13,006)
NET CASH-FLOW	(\$455,615)	(\$142,628)	\$171,045	\$208,355	\$215,407	\$312,375	\$291,775	\$260,272	\$256,509	\$261,737

* Assumes the tasting price is \$15 per bottle or \$180 per case; wholesale price is \$10 per bottle or \$120 per case; 65% of sales are in the tasting room and 35% are wholesale; and the inflation rate is 2%.

**Exhibit C.3: Cash Flow Projections
10,000 Case Winery***

Period	1	2	3	4	5	6	7	8	9	10
Tasting Room Price	\$180	\$184	\$187	\$191	\$195	\$199	\$203	\$207	\$211	\$215
Wholesale Price	\$120	\$122	\$125	\$127	\$130	\$132	\$135	\$138	\$141	\$143
REVENUE:										
Tasting Room Sales	\$99,000	\$555,390	\$1,029,996	\$1,050,596	\$1,071,608	\$1,093,040	\$1,114,901	\$1,137,199	\$1,159,943	\$1,183,142
Whsl Premium Sales	\$54,000	\$302,940	\$561,816	\$573,052	\$584,513	\$596,204	\$608,128	\$620,290	\$632,696	\$645,350
Total Revenue	\$153,000	\$858,330	\$1,591,812	\$1,623,648	\$1,656,121	\$1,689,244	\$1,723,029	\$1,757,489	\$1,792,639	\$1,828,492
EXPENSES:										
OPERATING COSTS										
Grapes	\$164,884	\$168,182	\$171,545	\$174,976	\$178,476	\$182,045	\$185,686	\$189,400	\$193,188	\$197,052
Cooperage	\$0	\$236,640	\$241,373	\$184,650	\$188,343	\$192,110	\$195,952	\$199,871	\$203,869	\$207,946
Packaging	\$224,757	\$229,252	\$233,837	\$238,514	\$243,284	\$248,150	\$253,113	\$258,175	\$263,339	\$268,606
Mobile Bottling	\$4,950	\$40,290	\$41,096	\$41,918	\$42,756	\$43,611	\$44,483	\$45,373	\$46,281	\$47,206
Excise Tax (Fed)	\$3,585	\$15,503	\$27,368	\$27,916	\$28,474	\$29,043	\$29,624	\$30,217	\$30,821	\$31,437
Excise Tax (State)	\$2,242	\$11,932	\$21,580	\$64,739	\$66,034	\$67,354	\$68,701	\$70,075	\$71,477	\$72,906
B & O Taxes	\$741	\$4,154	\$7,704	\$7,858	\$8,016	\$8,176	\$8,339	\$8,506	\$8,676	\$8,850
Wine Commission	\$846	\$846	\$846	\$846	\$846	\$846	\$846	\$846	\$846	\$846
Full-Time Labor	\$144,500	\$147,390	\$150,338	\$153,345	\$156,411	\$159,540	\$162,730	\$165,985	\$169,305	\$172,691
Part-Time Labor	\$18,720	\$19,094	\$19,476	\$19,866	\$20,263	\$20,668	\$21,082	\$21,503	\$21,933	\$22,372
Marketing	\$2,673	\$14,703	\$27,265	\$27,810	\$28,366	\$28,933	\$29,512	\$30,102	\$30,704	\$31,318
Utilities	\$8,800	\$8,976	\$9,156	\$9,339	\$9,525	\$9,716	\$9,910	\$10,108	\$10,311	\$10,517
Office Supplies	\$3,300	\$3,366	\$3,433	\$3,502	\$3,572	\$3,643	\$3,716	\$3,791	\$3,866	\$3,944
Miscellaneous	\$8,900	\$9,078	\$9,260	\$9,445	\$9,634	\$9,826	\$10,023	\$10,223	\$10,428	\$10,636
Total Operating Costs	\$588,897	\$909,405	\$964,276	\$964,722	\$984,000	\$1,003,663	\$1,023,719	\$1,044,177	\$1,065,043	\$1,086,327

Exhibit C.3: (continued)

Period	1	2	3	4	5	6	7	8	9	10
<i>FIXED COSTS</i>										
Insurance	\$8,200	\$8,364	\$8,531	\$8,702	\$8,876	\$9,053	\$9,235	\$9,419	\$9,608	\$9,800
Maintenance	\$4,700	\$4,794	\$4,890	\$4,988	\$5,087	\$5,189	\$5,293	\$5,399	\$5,507	\$5,617
Property Tax	\$17,619	\$18,685	\$18,682	\$18,004	\$17,692	\$17,683	\$18,420	\$19,171	\$19,974	\$20,755
Depreciation	\$76,806	\$193,053	\$272,722	\$303,517	\$286,034	\$267,331	\$258,561	\$236,865	\$212,658	\$219,204
Interest Payments	\$74,212	\$66,488	\$58,195	\$49,288	\$39,724	\$29,453	\$28,235	\$26,938	\$25,557	\$24,086
Total Fixed Costs	\$181,538	\$291,385	\$363,019	\$384,499	\$357,414	\$328,710	\$319,743	\$297,792	\$273,303	\$279,461
Total Expenses	\$770,435	\$1,200,790	\$1,327,295	\$1,349,221	\$1,341,414	\$1,332,373	\$1,343,462	\$1,341,968	\$1,338,346	\$1,365,789
Earnings Before Taxes	(\$617,435)	(\$342,460)	\$264,517	\$274,427	\$314,707	\$356,871	\$379,566	\$415,521	\$454,292	\$462,703
Carryover Loss	\$0	(\$617,435)	(\$959,895)	(\$695,378)	(\$420,951)	(\$106,243)	\$0	\$0	\$0	\$0
Taxable Income	(\$617,435)	(\$959,895)	(\$695,378)	(\$420,951)	(\$106,243)	\$250,627	\$379,566	\$415,521	\$454,292	\$462,703
Income Tax	\$0	\$0	\$0	\$0	\$0	\$80,995	\$129,053	\$141,277	\$154,459	\$157,319
Gross Cash-Flow	(\$617,435)	(\$342,460)	\$264,517	\$274,427	\$314,707	\$275,876	\$250,514	\$274,244	\$299,833	\$305,384
+Depreciation	\$76,806	\$193,053	\$272,722	\$303,517	\$286,034	\$267,331	\$258,561	\$236,865	\$212,658	\$219,204
-Principal Payments	(\$103,387)	(\$111,141)	(\$119,477)	(\$128,438)	(\$138,070)	(\$17,604)	(\$18,924)	(\$20,343)	(\$21,869)	(\$23,509)
NET CASH-FLOW	(\$644,016)	(\$260,548)	\$417,762	\$449,507	\$462,671	\$525,603	\$490,150	\$490,765	\$490,622	\$501,079

*Assumes the tasting price is \$15 per bottle or \$180 per case; wholesale price is \$10 per bottle or \$120 per case; 55% of sales are in the tasting room and 45% are wholesale; and the inflation rate is 2%.

**Exhibit C.4: Cash Flow Projections
15,000 Case Winery***

Period	1	2	3	4	5	6	7	8	9	10
Tasting Room Price	\$180	\$184	\$187	\$191	\$195	\$199	\$203	\$207	\$211	\$215
Wholesale Price	\$120	\$122	\$125	\$127	\$130	\$132	\$135	\$138	\$141	\$143
REVENUE:										
Tasting Room Sales	\$94,500	\$530,145	\$983,178	\$1,002,842	\$1,022,898	\$1,043,356	\$1,064,223	\$1,085,508	\$1,107,218	\$1,129,362
Whsl Premium Sales	\$117,000	\$656,370	\$1,217,268	\$1,241,613	\$1,266,446	\$1,291,775	\$1,317,610	\$1,343,962	\$1,370,841	\$1,398,258
Total Revenue	\$211,500	\$1,186,515	\$2,200,446	\$2,244,455	\$2,289,344	\$2,335,131	\$2,381,834	\$2,429,470	\$2,478,060	\$2,527,621
EXPENSES:										
OPERATING COSTS										
Grapes	\$247,326	\$252,272	\$257,318	\$262,464	\$267,714	\$273,068	\$278,529	\$284,100	\$289,782	\$295,577
Cooperage	\$0	\$354,960	\$362,059	\$276,975	\$282,515	\$288,165	\$293,928	\$299,807	\$305,803	\$311,919
Packaging	\$337,136	\$343,878	\$350,756	\$357,771	\$364,927	\$372,225	\$379,670	\$387,263	\$395,008	\$402,908
Mobile Bottling	\$6,075	\$59,109	\$60,291	\$61,497	\$62,727	\$63,981	\$65,261	\$66,566	\$67,898	\$69,256
Excise Tax (Fed)	\$4,492	\$22,361	\$40,552	\$41,363	\$42,191	\$43,034	\$43,895	\$44,773	\$45,669	\$46,582
Excise Tax (State)	\$2,980	\$17,508	\$32,299	\$32,945	\$33,604	\$34,276	\$34,962	\$35,661	\$36,374	\$37,102
B & O Taxes	\$1,067	\$5,987	\$11,103	\$11,325	\$11,552	\$11,783	\$12,019	\$12,259	\$12,504	\$12,754
Wine Commission	\$1,268	\$1,268	\$1,268	\$1,268	\$1,268	\$1,268	\$1,268	\$1,268	\$1,268	\$1,268
Full-Time Labor	\$293,470	\$299,339	\$305,326	\$311,433	\$317,661	\$324,015	\$330,495	\$337,105	\$343,847	\$350,724
Part-Time Labor	\$18,720	\$19,094	\$19,476	\$19,866	\$20,263	\$20,668	\$21,082	\$21,503	\$21,933	\$22,372
Marketing	\$3,281	\$18,404	\$33,461	\$34,130	\$34,813	\$35,509	\$36,219	\$36,944	\$37,683	\$38,436
Utilities	\$12,300	\$12,546	\$12,797	\$13,053	\$13,314	\$13,580	\$13,852	\$14,129	\$14,411	\$14,700
Office Supplies	\$4,896	\$4,994	\$5,094	\$5,196	\$5,300	\$5,406	\$5,514	\$5,624	\$5,736	\$5,851
Miscellaneous	\$10,710	\$10,924	\$11,143	\$11,366	\$11,593	\$11,825	\$12,061	\$12,302	\$12,548	\$12,799
Total Operating Costs	\$943,721	\$1,422,646	\$1,502,945	\$1,440,653	\$1,469,441	\$1,498,804	\$1,528,755	\$1,559,305	\$1,590,465	\$1,622,249

Exhibit C.4: (continued)

Period	1	2	3	4	5	6	7	8	9	10
FIXED COSTS										
Insurance	\$10,500	\$10,710	\$10,924	\$11,143	\$11,366	\$11,593	\$11,825	\$12,061	\$12,302	\$12,548
Maintenance	\$6,750	\$6,885	\$7,023	\$7,163	\$7,306	\$7,453	\$7,602	\$7,754	\$7,909	\$8,067
Property Tax	\$24,129	\$25,926	\$26,119	\$25,296	\$24,988	\$25,134	\$26,217	\$27,322	\$28,504	\$29,654
Depreciation	\$106,743	\$272,646	\$392,149	\$438,480	\$412,394	\$385,513	\$373,533	\$347,278	\$317,257	\$327,075
Interest Payments	\$101,345	\$90,956	\$79,800	\$67,820	\$54,957	\$41,143	\$39,442	\$37,630	\$35,700	\$33,645
Total Fixed Costs	\$249,467	\$407,123	\$516,015	\$549,902	\$511,011	\$470,836	\$458,618	\$432,044	\$401,672	\$410,989
Total Expenses	\$1,193,188	\$1,829,769	\$2,018,960	\$1,990,555	\$1,980,451	\$1,969,640	\$1,987,373	\$1,991,349	\$1,992,138	\$2,033,239
Earnings Before Taxes	(\$972,688)	(\$592,764)	\$275,122	\$349,408	\$406,311	\$464,858	\$495,815	\$541,503	\$591,371	\$601,940
Carryover Loss	\$0	(\$972,688)	(\$1,565,452)	(\$1,290,329)	(\$940,921)	(\$534,610)	(\$69,752)	\$0	\$0	\$0
Taxable Income	(\$972,688)	(\$1,565,452)	(\$1,290,329)	(\$940,921)	(\$534,610)	(\$69,752)	\$426,063	\$541,503	\$591,371	\$601,940
Income Tax	\$0	\$0	\$0	\$0	\$0	\$0	\$144,862	\$184,111	\$201,066	\$204,660
Gross Cash-Flow	(\$972,688)	(\$592,764)	\$275,122	\$349,408	\$406,311	\$464,858	\$350,954	\$357,392	\$390,305	\$397,281
+Depreciation	\$106,743	\$272,646	\$392,149	\$438,480	\$412,394	\$385,513	\$373,533	\$347,278	\$317,257	\$327,075
-Principal Payments	(\$141,068)	(\$151,458)	(\$162,613)	(\$174,593)	(\$187,456)	(\$26,175)	(\$27,877)	(\$29,689)	(\$31,618)	(\$33,674)
NET CASH-FLOW	(\$1,007,013)	(\$471,576)	\$504,658	\$613,296	\$631,249	\$824,196	\$696,610	\$674,981	\$675,943	\$690,682

*Assumes the tasting price is \$15 per bottle or \$180 per case; wholesale price is \$10 per bottle or \$120 per case; 45% of sales are in the tasting room and 55% are wholesale; and the inflation rate is 2%.

**Exhibit C.5: Cash Flow Projections
20,000 Case Winery***

Period	1	2	3	4	5	6	7	8	9	10
Tasting Room Price	\$180	\$184	\$187	\$191	\$195	\$199	\$203	\$207	\$211	\$215
Wholesale Price	\$120	\$122	\$125	\$127	\$130	\$132	\$135	\$138	\$141	\$143
REVENUE:										
Tasting Room Sales	\$90,000	\$504,900	\$936,360	\$955,087	\$974,189	\$993,673	\$1,013,546	\$1,033,817	\$1,054,493	\$1,075,583
Whsl Premium Sales	\$180,000	\$1,009,800	\$1,872,720	\$1,910,174	\$1,948,378	\$1,987,345	\$2,027,092	\$2,067,634	\$2,108,987	\$2,151,167
Total Revenue	\$270,000	\$1,514,700	\$2,809,080	\$2,865,262	\$2,922,567	\$2,981,018	\$3,040,639	\$3,101,451	\$3,163,480	\$3,226,750
EXPENSES:										
OPERATING COSTS										
Grapes	\$329,768	\$336,363	\$343,091	\$349,952	\$356,951	\$364,090	\$371,372	\$378,800	\$386,376	\$394,103
Cooperage	\$0	\$473,280	\$482,746	\$369,300	\$376,686	\$384,220	\$391,905	\$399,743	\$407,737	\$415,892
Packaging	\$449,514	\$458,505	\$467,675	\$477,028	\$486,569	\$496,300	\$506,226	\$516,351	\$526,678	\$537,211
Mobile Bottling	\$8,600	\$77,900	\$79,458	\$81,047	\$82,668	\$84,321	\$86,008	\$87,728	\$89,483	\$91,272
Excise Tax (Fed)	\$6,170	\$30,005	\$53,736	\$54,811	\$55,907	\$57,026	\$58,166	\$59,329	\$60,516	\$61,726
Excise Tax (State)	\$4,344	\$23,724	\$43,019	\$43,880	\$44,757	\$45,652	\$46,565	\$47,497	\$48,447	\$49,416
B & O Taxes	\$1,365	\$7,657	\$14,200	\$14,484	\$14,774	\$15,069	\$15,371	\$15,678	\$15,992	\$16,312
Wine Commission	\$1,691	\$1,691	\$1,691	\$1,691	\$1,691	\$1,691	\$1,691	\$1,691	\$1,691	\$1,691
Full-Time Labor	\$379,805	\$387,401	\$395,149	\$403,052	\$411,113	\$419,335	\$427,722	\$436,277	\$445,002	\$453,902
Part-Time Labor	\$28,080	\$28,642	\$29,214	\$29,799	\$30,395	\$31,003	\$31,623	\$32,255	\$32,900	\$33,558
Marketing	\$3,402	\$19,085	\$34,700	\$35,394	\$36,102	\$36,824	\$37,561	\$38,312	\$39,078	\$39,860
Utilities	\$15,200	\$15,504	\$15,814	\$16,130	\$16,453	\$16,782	\$17,118	\$17,460	\$17,809	\$18,165
Office Supplies	\$6,000	\$6,120	\$6,242	\$6,367	\$6,495	\$6,624	\$6,757	\$6,892	\$7,030	\$7,171
Miscellaneous	\$12,800	\$13,056	\$13,317	\$13,583	\$13,855	\$14,132	\$14,415	\$14,703	\$14,997	\$15,297
Total Operating Costs	\$1,246,739	\$1,878,933	\$1,980,053	\$1,896,520	\$1,934,417	\$1,973,072	\$2,012,499	\$2,052,715	\$2,093,736	\$2,135,577

Exhibit C.5: (continued)

Period	1	2	3	4	5	6	7	8	9	10
FIXED COSTS										
Insurance	\$12,800	\$13,056	\$13,317	\$13,583	\$13,855	\$14,132	\$14,415	\$14,703	\$14,997	\$15,297
Maintenance	\$8,600	\$8,772	\$8,947	\$9,126	\$9,309	\$9,495	\$9,685	\$9,879	\$10,076	\$10,278
Property Tax	\$31,071	\$33,423	\$33,633	\$32,485	\$32,002	\$32,122	\$33,537	\$34,981	\$36,528	\$38,031
Depreciation	\$141,852	\$362,583	\$521,921	\$583,845	\$549,213	\$514,156	\$498,965	\$462,344	\$420,701	\$433,793
Interest Payments	\$130,908	\$117,035	\$102,137	\$86,138	\$68,956	\$50,504	\$48,415	\$46,191	\$43,822	\$41,299
Total Fixed Costs	\$325,231	\$534,869	\$679,956	\$725,178	\$673,335	\$620,409	\$605,017	\$568,098	\$526,125	\$538,698
Total Expenses	\$1,571,970	\$2,413,802	\$2,660,009	\$2,621,698	\$2,607,752	\$2,593,480	\$2,617,517	\$2,620,813	\$2,619,861	\$2,674,274
Earnings Before Taxes	(\$1,289,970)	(\$831,782)	\$273,919	\$370,908	\$444,707	\$520,028	\$558,262	\$618,480	\$684,219	\$695,887
Carryover Loss	\$0	(\$1,289,970)	(\$2,121,752)	(\$1,847,833)	(\$1,476,925)	(\$1,032,218)	(\$512,190)	\$0	\$0	\$0
Taxable Income	(\$1,289,970)	(\$2,121,752)	(\$1,847,833)	(\$1,476,925)	(\$1,032,218)	(\$512,190)	\$46,071	\$618,480	\$684,219	\$695,887
Income Tax	\$0	\$0	\$0	\$0	\$0	\$0	\$6,911	\$210,283	\$232,634	\$236,601
Gross Cash-Flow	(\$1,289,970)	(\$831,782)	\$273,919	\$370,908	\$444,707	\$520,028	\$551,351	\$408,197	\$451,584	\$459,285
+Depreciation	\$141,852	\$362,583	\$521,921	\$583,845	\$549,213	\$514,156	\$498,965	\$462,344	\$420,701	\$433,793
-Principal Payments	(\$188,099)	(\$201,972)	(\$216,871)	(\$232,870)	(\$250,052)	(\$32,130)	(\$34,219)	(\$36,443)	(\$38,812)	(\$41,334)
NET CASH-FLOW	(\$1,336,218)	(\$671,171)	\$578,969	\$721,884	\$743,868	\$1,002,053	\$1,016,097	\$834,098	\$833,474	\$851,744

*Assumes the tasting price is \$15 per bottle or \$180 per case; wholesale price is \$10 per bottle or \$120 per case; 35% of sales are in the tasting room and 65% are wholesale; and the inflation rate is 2%.

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