Publication 815 (Starting a Winery in Ontario) – Financial Planning

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Publication 815 (Starting a Winery in Ontario) – Financial Plan

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INTRODUCTION

The purpose of this section is to provide an introduction to the development of a financial plan for starting a winery in Ontario. This section describes some principal elements of a simplified business plan and applies it to four start-up production levels. The discussion is intended to provide a framework for understanding the information presented here and assist readers in developing specific plans for their particular circumstances.

FINANCIAL PLANNING DESIGN: ASSUMPTIONS AND LIMITATIONS

Each of the four wineries depicted in this section share similar production profiles, production methods, personnel requirements and marketing plans that are described in some detail below (see "Winery Business Plan: Methodology and Assumptions"). The description also includes a number of illustrations of how a business plan may vary from what is presented here and how such variations may generally impact financial matters.

The information presented in this section, by necessity, required many assumptions to be made and reliance on 'best estimates' for some costs. While many of the assumptions are outlined, some assumptions and other relevant information may not be included in the discussion. In addition, the costs (including such things as personnel requirements, building square footage, etc.) presented are only estimates and actual costs and requirements may vary and result in financial outcomes materially different than those presented in this section. Finally, at a given production level (e.g., 5,000 cases), different business plans may give rise to different investment requirements, personnel demands, operating costs and cash flows, among other things. Readers should be aware of such limitations and should therefore ensure they develop their own business plans and perform their own financial research and due diligence.

Winery Ownership Structure, Initial Financing and Income Tax Rates

Ownership of each winery is assumed to be by a private limited liability corporation formed under the laws of Ontario and fully authorized to carry on a winery business in Ontario. Corporate financing is assumed to be by a combination equity and debt. Equity contributions consist of 25% of the initial capital requirements of the project. Although the initial equity of the corporation may take the form of indebtedness subordinated to the third-party lenders, this section assumes it remains as equity and does not accrue interest expense for the corporation. Personal guarantees of shareholders may be required but no guarantee fees are charged. An operating line of credit is assumed to be incremental indebtedness to the capital financing. For simplicity, a combined federal-provincial corporate tax rate of 20% is assumed. No cash distributions are made to shareholders and therefore excess cash flow remains at the corporate level and to be applied to reduce third-party indebtedness. Costs of corporate organization and regulatory compliance are not accounted for in the financial requirements.

Financial and Other Planning Opportunities

The ownership and financing structure of the start-up wineries, by necessity, is simplified for this section. Readers should consult their own financial, tax and legal advisors to investigate tax and legal considerations and planning opportunities that may impact the financial outcome of any winery investment. Some of the considerations that may be relevant to a proposed start-up may include, but are not limited to, the following:

- Different forms of business organizations (sole proprietorship, limited partnership, corporation).
- Alternative business models (contract/virtual winery, bulk wine purchases, bulk wine sales, custom crush services, etc.).
- Combined vineyard and wine production operations.
- Use of a flow-through entity during start-up phases, followed by incorporation of the enterprise upon taxable income arising.
- Indebtedness held at the individual, rather than corporate, level.
- Creditor financing.
- Income tax incentives offered to wineries or manufacturing and processing business.
- Creditor protection strategies.
- Tax deferral strategies.
- Acquisition of a going concern winery (including shares versus assets).
- Planning for sale or retirement and other exit strategy considerations.
- Purchase versus lease of land and equipment.
- Used versus new equipment.
- Good versus poor vintages.
- Crop or product losses and insurance.
- Contractors versus employees.
- Employee turnover, employee health and safety.

Adjustments for Inflation

The discussion assumes that costs and bottle prices will remain fixed throughout the modeling period.

Exclusion of Land and Waste Management Costs

The information presented here excludes the cost of land. In addition, the information presented here does not factor in the costs of a waste management program. These capital costs were excluded due to the wide range of costs that may arise depending on the circumstances and location of a proposed winery. Readers should be aware of their exclusion and the need to assess their impact on the financial outcomes of a proposed winery.

WINERY BUSINESS PLAN: ASSUMPTIONS AND METHODOLOGIES

The discussion of the principal assumptions and methodologies for the start-up wineries is presented below using four subsections corresponding to commonly used components of a business plan: Production, Marketing, Personnel/Human Resources and Financial.

Production

Production Limited to Table Wine

Winery production is limited to still table wines even though many wineries in Ontario, regardless of size, may also produce ice, dessert, sparkling or fruit wines. The production of other types of wine will affect production, personnel and marketing plans and impact many of the parameters outlined in this section. A note regarding fruit wine production is included at the end of this section.

Common Production Plan for All Production Levels

A common wine production plan is utilized for all wine production. The wineries are assumed to produce equal volumes of red and white table wine, with four grape varieties processed by smaller wineries (2,000 and 5,000 cases) and six varieties processed by larger wineries (10,000 and 20,000 cases). The wineries are also assumed to produce only varietal wines with a single class of wine per variety with all wines selling at the same bottle price. In addition, all wineries share similar vintage management principles. All wineries subject 50% of the volume of each red variety to barrel aging and subject 50% per cent of Chardonnay volume to barrel fermentation and aging. Of the wine from the current vintage remaining in tank after the transfer of wine to barrel, approximately 50% (for example, all non-Chardonnay white wine production and a some volume of red production) is bottled prior to the commencement of the next harvest. Wine is assumed to remain in barrel until at least the next harvest, when the barrels are emptied into storage tanks and re-filled with wine from the current vintage unless discarded. The wine transferred from barrel to tank would then be blended and bottled prior to the commencement of the next vintage.

In practice, the production profile plan of any new winery may vary materially from that presented here and from other comparably sized start-up wineries. Although the basic process for producing table wine is straightforward, production involves multiple considerations that impact building, equipment, personnel and financial requirements. The basic winemaking process involves grapes being delivered to the winery and processed (crushed and/or pressed) and the juice being fermented into wine. The wine is then aged, bottled, sometimes aged further in bottle and then finally released for sale. The production process and related planning becomes more complicated when a winery has several vintages being processed concurrently, with each vintage at a different stage of production. Each vintage may share space, tanks, equipment and staff with other vintages. A production plan that incorporates processing of several different grape varieties injects further complications. Each variety may have unique production stages, processes, treatments, cost profiles and timeframes. Crop sizes, volumes and quality may also vary year-to-year or even vineyard-to-vineyard which may further complicate production

planning. A winery may also produce two or more classes of a single wine (i.e., wines with a different quality profiles and pricing) from a single grape variety or blend, with each class having unique stages, processes, cost profiles, treatments and timeframes. A business plan that seeks to incorporate additional production and risk management flexibility than that presented here will by necessity require additional resources.

Grape Receiving

All wineries are assumed to use similar grape receiving methods and equipment (Table 6.1). Grapes for white wine production are assumed to be received, de-stemmed, crushed and pressed with the juice transferred to settling tanks. Grapes for red wine production are assumed to be received, de-stemmed and crushed and transferred to red fermentation tanks for fermentation. All grapes are received and processed using plastic grape bins (e.g., Pro-bins) and a forklift and rotator for loading grapes into a receiving hopper for controlled feeding into a de-stemmer-crusher. All wineries use destemmer-crushers, with the principal difference between wineries being processing rates (in tonnes per hour) of the equipment. Similarly, all wineries rely on air bladder presses that differ in terms of their capacity (one to four tonnes per hour). All wineries are also assumed to use similar must pumps for transferring grapes to presses or tanks.

Table 6.1 Grape Receiving Equipment

Description	**2,000 Cases**	**5,000 Cases**	**10,000 Cases**	**20,000 Cases**
Harvest Lugs	50	100	200	300
Picking Bins (1 ton)	15	30	60	100
Lids	15	30	60	100
Receiving Hopper - small	1	1	1	1
Grape Elevator	1	1	1	1
Destemmer-crusher - Small	1	0	0	0
Destemmer-crusher - Medium	0	1	0	0
Destemmer-crusher - large	0	0	1	1
Press, Membrane - Small	1	0	0	0
Press, Membrane - Medium	0	1	0	0
Press, Membrane - Large	0	0	1	1
Must Pump	1	1	1	1
Must Lines	75	200	300	450

Actual grape receiving methods for wineries may differ materially from those relied on here. A 2,000 case winery may wish to avoid the capital cost of a forklift and rotator and instead rely on less capital-intensive methods such as hand totes and hand or conveyor loading or short term rentals of forklifts and rotators for the harvest period. These differences may significantly impact initial capital requirements. In addition, the use of different winemaking methods may require additional or different equipment or building features to accommodate such methods. For example, winemaking decisions such as the use of whole cluster pressing may greatly reduce the production rate for any given press and require a winery to reconsider its equipment selection and capital requirements (e.g., more or larger presses) or labour demands (e.g., additional shifts of labour to run the presses). Winemaking decisions may also prompt wineries to invest in

gravity facilities or more costly, but gentle, peristaltic pumps for some grape processing. Such considerations may have a material impact on equipment selection on the crush pad and overall capital and labour requirements.

Red and White Table Wine Cellar Processing

All wineries share consistent production processes for wine production. Red wine fermentations occur in stainless steel fermentation tanks, with a portion of finished wine transferred to barrel for aging with the remainder left in storage tanks. Red barrels are emptied into storage or blending tanks and the wine processed for final blending and bottling. All wineries use oak cooperage for the production of all red wines with fifty per cent of the volume of each red wine subjected to barrel ageing. Red wine is assumed to remain in barrel until at least the next harvest, when the barrels may be emptied and re-filled with wine from the current vintage or discarded.

White wine fermentations proceed with juice being settled in stainless steel tanks and then racked to stainless steel fermentation tanks or, in the case of Chardonnay, barrels for fermentation. Barrels are again emptied into storage or blending tanks and the wine processed for final blending and bottling. All wineries use cooperage for the production of Chardonnay. Fifty per cent of Chardonnay volume is assumed to be subjected to barrel fermentation and aging. Although Chardonnay may be barrel fermented, fermentation tank requirements are assumed not to be affected since Chardonnay juice will be settled and clarified in tank prior to being transferred to barrel for fermentation. Like red wine subjected to barrel treatment, white wine is assumed to remain in barrel until at least the next harvest, when the barrels may be emptied with past vintages and re-filled with the wine from the current vintage or discarded.

Grape Variety and Timing Assumptions

Wineries producing 2,000 and 5,000 cases process four grape varieties, two red and two white, with two early ripening varieties (a white, Chardonnay, and a red, Merlot) received and fermented prior to the harvest and processing of the remaining two varieties (Riesling and Cabernet Franc) (Table 6.2). The early ripening variety wines are transferred to barrel and/or storage tanks prior to the receiving/harvest and processing of the two later ripening varieties. Accordingly, tank capacity is designed to accommodate concurrent separate fermentations of two varieties. Wineries producing 10,000 and 20,000 cases are assumed to process six grape varieties, three red and three white (Table 6.2). Three varieties are assumed to be earlier ripening varieties (Chardonnay, Sauvignon Blanc and Merlot) and received and fermented prior to receipt of the other red and white varieties (Riesling, Cabernet Franc and Cabernet Sauvignon). These wines are assumed transferred to barrel or storage, as the case may be, prior to receipt of the three later ripening varieties. Accordingly, tank capacity is designed to accommodate concurrent but separate fermentations of three different varieties.

Table 6.2 The Wine Varieties Produced and Percent of Total Output

Grape Variety	2000 cases	5000 cases	10000 cases	20000 cases
Chardonnay	25%	25%	18%	18%
Riesling	25%	25%	18%	18%
Pinot Gris	-	-	-	-
Sauvignon Blanc	-	-	15%	15%
Vidal	-	-	-	-
Merlot	25%	25%	18%	18%
Pinot Noir	-	-	-	-
Cabernet Franc	25%	25%	18%	18%
Cabernet Sauvignon	-	-	15%	15%
Gamay	-	-	-	-
Baco Noir	-	-	-	-

Juice Requirements

Juice requirements for production targets are increased by 5% of case volume to compensate for losses during processing (Table 6.3). Actual losses may be greater or less than those assumed here.

Table 6.3 Juice requirements in Hectoliters (hl). Juice requirements are calculated at 105% of required wine volume, with 9 liters of wine per case (12-750 mL bottles).

Grape Variety	2000 cases	5000 cases	10000 cases	20000 cases
Chardonnay	47.3	118.1	165.4	330.8
Riesling	47.3	118.1	165.4	330.8
Pinot Gris	0.0	0.0	0.0	0.0
Sauvignon Blanc	0.0	0.0	141.8	283.5
Vidal	0.0	0.0	0.0	0.0
Merlot	47.3	118.1	165.4	330.8
Pinot Noir	0.0	0.0	0.0	0.0
Cabernet Franc	47.3	118.1	165.4	330.8
Cabernet Sauvignon	0.0	0.0	141.8	283.5
Gamay	0.0	0.0	0.0	0.0
Baco Noir	0.0	0.0	0.0	0.0
Totals in hl	189	472.5	945	1890

Grape Tonnage Requirements

All varieties are assumed to share a 75% conversion ratio of tonnage to juice volume (i.e., 750 litres of wine per tonne of grapes) (Table 6.4). Grape varieties may differ in terms of the tonnage required to yield a volume of juice due to differences in the ratios of juice, seeds, stems and

skins. Differences may also arise based on harvesting decisions (hand harvesting or mechanical harvesting where the latter method may eliminate a considerable amount of stems per tonne delivered to the crush pad). Differences in tonnage to juice ratios may also arise from winemaking and quality control decisions. A winemaker may limit the volume obtained or press pressure when processing juice or wine to avoid extraction of undesirable compounds that may negatively affect wine quality or increase the cost of processing in the winery. Other strategies may seek to extract additional juice or wine volumes by using higher pressures.

Table 6.4 Tonnage Requirements by Variety.

Variety	**2000 cases**	**5000 cases**	**10000 cases**	**20000 cases**
Chardonnay	6.3	15.8	22.1	44.1
Riesling	6.3	15.8	22.1	44.1
Pinot Gris				
Sauvignon Blanc			18.9	37.8
Vidal				
Merlot	6.3	15.8	22.1	44.1
Pinot Noir				
Cabernet Franc	6.3	15.8	22.1	44.1
Cabernet Sauvignon			18.9	37.8
Gamay				
Baco Noir				
Totals in tonnes	25.2	63.0	126.0	252.0

Fermentation and Storage Tank Parameters

All wineries rely principally on stainless steel fermentation tanks with all such fermentation tanks assumed to be designed to accommodate both red and white fermentations. Consequently, costs reflect such tanks have cooling, a door at the base of the tank for removal of grape skins and seeds (pomace), a racking door above the base to permit racking after white fermentation or settling (red or white), a closed top with a large door to facilitate cap management for red processing and adequate valves to permit racking/pumpovers. In addition to large stainless steel fermentation tanks, each winery has a number of one-tonne open top stainless steel fermenters roughly equivalent to that needed for fermenting 10-15% of its expected red grape tonnage. The 2,000 and 5,000 case wineries are assumed to use a greater proportion of one-tonne fermenters than larger tanks for red fermentations because of the smaller scale of the operations and to facilitate use of larger numbers of smaller closed top tanks for volume management (e.g., avoidance of partially-filled tanks and head space when storing bulk wine).

All wineries are also assumed to have adequate tank capacity for bulk storage of wine produced in a single vintage, less the amount held in barrel. For this purpose, it is assumed that fermentation tanks may also be used for bulk storage if idle. Each winery is also assumed to have at least one extra larger-sized tank for temporary storage for racking wine or juice from tanks (including delestage) and/or barrels and for use in blending and bottling preparation. Minimum requirements for tank capacity are estimated assuming that 50% of a current vintage's

wine volume that is not transferred to barrel is bottled prior to the next harvest with the balance of the bulk wine remaining in stainless steel storage tanks at the commencement of the next harvest. Storage tanks that are not also fermentation tanks do not have cooling jackets. Jacketed tanks are used for cold stabilization. Wineries are also assumed to have several variable capacity flex-tanks for temporary storage. Adequate on-site storage space for bottled wine is also assumed.

For red fermentations it is assumed that one tonne of grapes will require no less than 915 L of fermentation tank space when de-stemmed and crushed. This differs from white fermentations where one tonne of grapes is assumed to require no less than 750 L of fermentation tank space.

The tank requirements in Table 6.5 have been estimated using the wine production profiles and assumed relative dates of harvest described above. If the production profile varies in a given year or if relative harvest dates vary, there is risk of a shortage in tank space for the wineries that is not reflected in the financial information presented here.

Table 6.5 Winery Tank Requirements expressed in numbers of each unit.

Description	**2,000 Cases**	**5,000 Cases**	**10,000 Cases**	**20,000 Cases**
Fermentation Tank 20HL, Red/White	0	0	6	0
Fermentation Tank 50HL, Red/White	1	2	6	6
Fermentation Tank 75HL, Red/White	1	2	6	6
Fermentation Tank 100HL, Red/White	0	0	0	6
SS Open Top Fermenters - Red	5	10	20	40
Storage Tanks - 30 HL	2	2	2	0
Storage Tanks - 50 HL	1	2	3	2
Storage Tanks - 80 HL	0	0	0	3
Flex Tanks - 5 HL, Variables	2	4	4	6
Flex Tanks - 11 HL, Variables	0	2	4	8

All wineries are assumed to have opted to purchase fermentation tanks that may be used for red or white production. In this case, the cost of an individual red/white tank may be expected to be higher than a dedicated red or white tank, but the overall capital requirements for the winery may be reduced where production design permits elimination of one or more tanks or reduces the square footage requirements of the cellar. Although this strategy may be expected to reduce the initial capital requirements, it introduces production risks (tank shortages) in the event of variation in the production profile between red and white production. A winery that instead chooses to purchase dedicated red and white tanks may be expected to have reduced risks of tank shortages, but greater capital investment requirements for tanks and larger building square footage. In general, the differences in red and white fermenters are straightforward. A red fermenter requires a door at the base of the tank for removal of grape skins and seeds (pomace) and an open top, or large door, to facilitate cap management methods to extract colour from the skins. By contrast, white fermenters do not require a door at the base, but may require a racking door above the base to permit racking after fermentation or settling. Moreover, white fermentation tanks commonly have closed top with a small door for venting, cleaning and racking. White fermenters are commonly jacketed for cooling during fermentation, while red

fermenters may not be. White fermenters in Ontario are commonly stainless steel, but red fermenters may also be made of wood, notably oak.

All wineries are also assumed to have selected early and late ripening varieties in the production mix that facilitate reduced tank volume and cooling equipment requirements. The plan seeks to have the fermentations for the early ripening varieties completed and the wine transferred to settling or storage tanks or barrels prior to the harvest and processing of the later-ripening varieties. Although this production mix may be expected to reduce the initial capital requirements, it introduces additional production risks (tank shortages) in the event of harvest date variation. A winery that instead chooses to process a single variety or only varieties with similar harvest dates may be expected to reduce such risks but have significantly greater initial capital requirements.
Capacity planning may be further complicated by the effect of poor vintages where disease pressure may prompt early harvests of some varieties, putting pressure on capacity planning.

There are strategies that a winery may seek to employ to manage tank capacity. Forward grape purchase contracts may assist in capacity planning. Arranging grape purchases in advance can integrate use of historical harvest dates for planning capacity requirements in the winery, and enhance efficient use of capital. By contrast, excess fermentation tank capacity may be a wise investment decision if grape purchases are to occur through the spot market, where purchase decisions may be based on quality or price rather than convenience of harvest date. Such strategic purchases may seek higher prices for the resulting wine to justify the added expense.

A further alternative to reduce the investment in fermentation tanks and cooling equipment may be the use of on- or off-site cold storage facilities for temporary storage of grapes and juice. Such options may be costly but yield favourable results from a cost-benefit perspective.

Some of these considerations may be useful additions to a comprehensive financial plan. None of these considerations are reflected in the information presented here.

Cellar Equipment

All wineries share basic cellar equipment, with differences between wineries being in quantity of individual pieces of equipment (i.e., smaller wineries may make do with a single impeller pump while larger wineries may have two or three) or capacity of the individual pieces of equipment (i.e., plate and frame filters with varying filtering capacities) (Table 6.6). All wineries rely on a plate and frame filter for their principal filter. Other filters may be used depending on the needs and financial resources of a winery, including membrane, leaf, or lees filters, but no others are reflected in the costs here. All wineries also rely on mobile bottling services, including reliance on the service's pre-bottling sterile filtering when required, eliminating the need for the purchase of filters. Cellar equipment (i.e., pumps, filters, mixers, hoses, fittings, cooling, etc) is assumed to be purchased in new condition, with estimates of cost including delivery (FOB Niagara) and installation.

Table 6.6 Cellar Equipment expressed in number of units.

Equipment	2,000 Cases	5,000 Cases	10,000 Cases	20,000 Cases
Pomace Pump	1	1	1	1
Transfer pump	1	2	3	4
Hose	200	250	350	450
Mixer	1	1	1	1
Plate and Frame Filter	1	1	1	1
Barrel Washer	1	1	1	1
Pressure washer	1	1	1	1
Air compressor	1	1	1	1
Slurry Mixer	0	0	0	0
Inert gas tanks and lines-small	1	0	0	0
Inert gas tanks and lines-med	0	1	2	0
Inert gas tanks and lines-large	0	0	0	1
Laboratory Equipment	1	1	1	1

Refrigeration Equipment

Wineries cooling requirements have been estimated based on a number of published capacities for wineries and the capacities scaled to winery size (Table 6.7). In practice, a winery's cooling capacity will require detailed calculations and be a function of a number of factors including maximum daily grape tonnage to be processed, grape temperature at harvest, precooling requirements, cold stabilization requirements, desired fermentation rates, winery building and cooling system heat gain and the efficiency of the refrigeration system. Moreover, a winery's choices of cooling systems may include fixed or mobile units as well as incorporate tube in tube head exchangers and other equipment options. Readers should consult a qualified advisor for the design of a cooling system having regard to the individual circumstances of a winery.

Table 6.7 Refrigeration Equipment

Specifications	2,000 Cases	5,000 Cases	10,000 Cases	20,000 Cases
Cooling capacity (KW)	10.6	26.4	52.8	105.5
Cooling capapcity (BTU/hr)	36000	90000	180000	360000
Cooling capacity (tons/hr)	3.0	7.5	15.0	30.0

Other Winemaking Supplies

Wineries will incur additional costs during the production process relating to winemaking supplies such as commercial yeasts, fining agents and oenological additives. No additional costs have been accounted for these inputs. The actual cost of winemaking supplies will be affected by numerous factors and may differ by variety and vintage.

Bottling

All wineries are assumed to rely on mobile bottling services, regardless of production size. The cost of using mobile bottling is a function of the volume of wine being bottled and the number of different wines, labels and packaging materials used. All wineries are assumed a cost of $2.75 per case plus some additional service charges related to bottling of multiple wines on a single visit. Multiple wines being bottled in a single day will increase the per bottle cost. Consequently, larger production volumes of single wines may benefit from economies of scale when relying on mobile bottling. Larger wineries may purchase a dedicated bottling line and may offer bottling services to local wineries as a means to earn a return on the investment of the line. Smaller wineries may also use lower cost manual bottling equipment, which may result in higher labour costs and require investments in additional filters.

Oak Cooperage

As described above, all wineries use cooperage for the production of all red wines and Chardonnay. Fifty per cent of Chardonnay volume is subjected to barrel fermentation and aging and 50% of red wine volume is subjected to barrel ageing. Wine is assumed to remain in barrel until at least the next harvest, when the barrels are emptied and re-filled with the wine from the current vintage or discarded. Newly purchased barrels are assumed to be dedicated to the current vintage. Barrel costs are assumed to be $1,000 for a French oak barrel and $500 for an American oak barrel.

Each winery is assumed to purchase new oak barrels in the first year of production. In the following two years, only 10% of a vintage's barrels are purchased new with the remainder being barrels purchased in previous vintages. Thereafter, 50% of a vintage's barrels are purchased new. Each winery maintains sufficient oak barrels to meet oak barrel requirements for at least two vintages. It is assumed that 75% of barrels are French oak, with the remainder being, less expensive, American oak. All barrels are assumed to be 225L and of export quality. Barrels are discarded after five vintages.

Cooperage decisions may materially vary winery-to-winery and year-to-year. New wineries may opt to purchase some used neutral barrels from other wineries to use in early vintages to have access to neutral barrels or until a barrel program is fully developed by the winery. This strategy may reduce early cooperage costs. Wineries may seek to use other types of barrels such as Hungarian or Canadian oak, or different sizes such as 500L Puncheons, which may also affect associated costs. Year-to-year winemaking decisions relating to vintage differences, length of time in barrel, grape quality, wine styles and wine quality levels may also impact cooperage requirements and associated costs. Since oak treatment is expensive in terms of material and labour, lower priced wines may not be subjected to barrel aging and a winemaker may instead rely on oak alternatives such as chips, staves and dust. Such alternatives may be much less costly and labour intensive compared to barrels and may be a realistic option for many wineries. Premium priced wines may be barrel aged for periods exceeding the period contemplated here. For white wines, barrels aging may extend from 9 months to 3 years. For red wines, barrel aging may extend from 18 months to 5 years. A winery's barrel program may call for aging durations

greater than those outlined here and would impact both barrel purchases and building requirements.

Packaging

All wineries are assumed to share comparable packaging costs (bottles, boxes, labels, closures and capsules) of approximately $30 per case. In practice, however, a winery may have different packaging costs for different wines, depending on quality level and distribution outlet. Premium wines may have higher closure costs, heavier weight bottles and higher quality labels. The size of a winery or the volume of a particular wine may also impact packing costs. Smaller wineries may have increased packaging costs due to higher per-unit costs of smaller batches of labels and boxes. Products distributed through the LCBO may require compliance with bottle specifications mandated by the LCBO. Wineries that do not sell through the LCBO may opt for different bottle options, depending on the availability of glass, price point and the image desired for the product. Packaging costs are included in cost of inventory.

Building

All wineries share basic design parameters including floor space to house tanks, barrels, a basic lab, office space, and a tasting/retail area. Crush pad facilities are assumed to be located at the exterior of the winery building and protected from weather by an overhead canopy. The building area for each winery was estimated using published data for wineries, tank, equipment and barrel requirements and discussions with industry participants (Table 6.8). All wineries share a building cost of $125 per square foot. The costs of the winery building are based on published data for wineries and manufacturing facilities sharing similar construction parameters. The building parameters included steel frame construction, metal siding, 25-30 foot walls, insulation, concrete floors and standard facilities for lighting, electrical and plumbing. Climate control was assumed to be through a commercial heating/cooling system for the production/storage area and a standard commercial heating, ventilation and air-conditioning (HVAC) system for the office/retail area.

Table 6.8. Winery building square footage estimates.

2,000 Cases	5,000 Cases	10,000 Cases	20,000 Cases
2,500	4,000	7,000	11,500

In practice, the design and heating/cooling systems of a winery building may be expected to differ greatly across wineries. Wine production planning, aesthetics, branding, potential for future expansion of production, environmental considerations, zoning and other regulatory requirements, equipment demands may all have material influences on the design and cost of a winery building.

Waste Management

As noted above, the information presented here does not include costs associated with winery waste management. Winery waste management costs will be influenced by numerous factors including region, site and proximity to utilities, among other things. In addition to waste

disposal for winery production, there may be material waste management planning costs incurred before construction can commence. Wineries seeking to position themselves for growth in production may seek to build excess capacity in their waste management system, and thereby increase the initial capital costs.

Marketing

All wineries share a similar annual marketing cost expressed in terms of cost per case of production of $4 per case. These costs may include: marketing research; brand development and maintenance; participation in LCBO marketing programs; internet, print, radio or television advertisement; promotional items; signage; uniforms; and participation in industry or regional associations. Costs may also include ensuring advertising is in compliance with legal requirements established under the regulations to the *Liquor Licence Act* (Ontario).

In practice, a winery's marketing budget may vary year-to-year and from winery-to-winery. New wineries may seek to evaluate different programs and associations to evaluate the effectiveness of each for their products. Differences in vintages and tourism trends may also stimulate higher or lower investments in marketing in a given period. A winery may also seek to incur higher marketing costs to support a decision to distribute a brand through the LCBO or to develop a new brand or refresh an old one.

Personnel/Human Resources

Personnel requirements for the wineries are estimated based on published information and discussions with industry participants (Table 6.9). Smaller wineries may rely on the owner/manager acting as winemaker with part-time help as needed. Increasing production size leads to the need for dedicated, full-time winemaking and office staff with larger winery production also requiring dedicated retail, warehousing and marketing staff. Personnel requirements for all wineries are reduced to some degree through the use of contract services, such as mobile bottling services.

Table 6.9 Personnel Requirements.

	2000 cases	5000 cases	10000 cases	20000 cases
FULL TIME				
Manager	0.5	1	1	1
Winemaker	0.5	1	1	1
Assistant Winemaker				1
Cellarhand		1	1	1
Warehouse				1
Customer Service				1
Sales Manager				1
Office Manager			1	1
Clerical/Accounting				1
TOTAL FULL TIME	1	3	4	9
PART TIME				
Clerical	0.5	1		
Customer Service		1	2	2
TOTAL PART TIME	0.5	2	2	2

Staffing requirements will vary considerably across wineries, regardless of size. Employee requirements may also be further reduced through the use of additional contract services, including, for example, consulting winemakers. For purposes of this section, estimates have been based on the use of employees rather than contractors with the exception of bottling services.

In Ontario, salaries for a given position can vary widely across wineries of comparable size. Estimates of costs for personnel are based on published wages and discussions with industry participants.

Financial

Annual Grape Costs

All wine is produced from grapes grown in Ontario in the current year and eligible for VQA designation. Grape costs are calculated using the 2013 Grape Growers of Ontario base prices (Table 6.10) and are assumed to increase 2% per annum which may not reflect actual price changes. Table 6.10 illustrates that Ontario base prices for grapes vary significantly depending on grape variety. Since grape costs are the largest input cost for wine production, the choice of variety by a winery will impact input costs. At the same time, the variety may also impact the marketability and pricing of wine with higher input costs potentially offering a winery a greater opportunity to capture higher bottle prices for their production.

Table 6.10 Grape costs (GGO 2013 base prices).

Grape Variety	Class	2013 Grape Costs (Dollars/Tonne at Base)
Chardonnay	9b	1459.0
Riesling	9	1431.0
Pinot Gris	9d	1635.0
Sauvignon Blanc	9e	1610.0
Vidal	7a	618.0
Merlot	10d	1894.0
Pinot Noir	10a	1933.0
Cabernet Franc	10c	1676.0
Cabernet Sauvignon	10b	1875.0
Gamay	10	1283.0
Baco Noir	5b	860.0

In practice, a winery may pay more or less than the base price depending on various factors such as grape sugar levels, adoption of marketing board plateau pricing, premiums paid for additional vineyard services such as hand harvesting, crop thinning etc.

Wine Pricing

Average retail bottle prices are assumed to be consistent for all wineries at $12.95 (per 750 mL bottle) or $155.40 per case (9 x 750 mL bottles), regardless of variety or quality of vintage. The price of wine is assumed to remain constant throughout the modeling period presented here. The cash flow to a winery is also affected by the sales outlet that should be considered along with bottle price in developing a business plan. The sales outlets used and the cash flow effect by outlet are outlined below (see "*Sales Outlets*").

Sales Outlets

Wineries producing 2,000 and 5,000 cases are assumed to rely exclusively on retail (cellar door) and direct delivery (licensee) sales (Table 6.11). Wineries producing 10,000 and 20,000 cases are assumed to include sales through retail outlets of the Liquor Control Board of Ontario (LCBO) (Table 6.11). The net cash flow to a winery is affected by the sales outlet in Ontario with cellar door and direct sales yielding the greatest gross cash flow to a winery per bottle sold. Consequently, wineries may prefer cellar door and licensee sales provided sales costs associated with cellar door and licensee sales provide more attractive net cash flows to the winery than LCBO sales. In such cases, wineries may utilize the LCBO as a selective sales outlet to, for example, build awareness of the winery. To the extent a winery is unable to market its entire production in a cost-effective manner through cellar door and licensee sales, a winery may seek LCBO retail outlet sales. Several programs at the LCBO for small producers may facilitate smaller wineries distributing wine through the LCBO.

Table 6.11 – Sales outlet assumptions by winery.

Winery	Direct Sales (%)	LCBO Sales (%)	Direct Delivery (%)
2000 Cases	75	0	25
5000 Cases	75	0	25
10000 Cases	60	25	15
20000 Cases	45	40	15

Effect of Sales Outlet (Retail, Direct Delivery and LCBO) on Net Cash Flow from Sales

The sales outlet impacts the cash flow to a winery on a bottle sold. A winery will receive net cash flow from a sale of a $12.95 bottle of wine of $5.90 (LCBO), $10.34 (Winery door) and $9.21 (Direct Delivery).

Differences in the cash flow from each outlet principally relates to differences in taxes and fees collected by the federal and provincial governments. Taxes and fees may change and a reader should ensure that the current taxes and fees are obtained from their advisors when evaluating the financial considerations relating to sales outlets.

Wines Sales (Years 1 to 5)

All wineries are assumed to share the same timing for realizing sales of wine in initial five years of operations following which annual sales remain approximately equal to the winery's stated production level (e.g., 2,000, 5,000, 10,000 and 20,000 cases, as the case may be) (Table 6.12). No sales occur in the first year of operation. In years two, three, four and five, sales consist of 25, 30, 35 and 40%, respectively, of both beginning inventory and the current year's production (Table 6.12). For financial planning purposes, capital investments are assumed to occur at the beginning of Year 1, while operating expenses and revenues are assumed to occur at the year end.

Table 6.12 – Sales by year of operation.

Year	% of Beginning Inventory	% of Current Year's Production
1	0	0
2	25	25
3	30	30
4	35	35
5	40	40

Differences in timing of sales may arise for any given winery. A winery may choose to purchase wine prior to the first harvest to obtain inventory for sales. A winery that also is developing a vineyard for a source of grapes would typically need to wait until the third year for the vineyard to generate a usable crop. In the interim, the winery may purchase grapes from other growers. The costs of grapes from a winery vineyard may differ from those purchased from growers.

Financing

All wineries finance equipment (and initial barrels) and buildings with 25% equity and 75% debt. Building loans are based on a 25-year amortization period. Equipment loans are based on a 5-year financing period. Rates are based on current examples of building and equipment financing and may vary over time as well as by borrower and lender. Closing costs are assumed to be a fixed percentage of the loan amount (i.e., for equipment loans, 1% of the loan amount due at closing and for building loans, 2% of the loan amount due at closing).

Operating costs are financed using an operating line of credit secured against business assets including inventory. After the first year of operations barrels are financed using the operating line of credit. In practice, there is no assurance that a winery (especially smaller wineries) will be able to obtain a line of credit on acceptable terms.

Deduction of Capital Costs in Computing Income

Winery tanks, cellar equipment and oak barrels are purchased new with the cost deducted on a straight-line basis over three years at the rates of 25%, 50% and 25%, respectively, having regard to the tax requirement of only half the deduction being available in the year of acquisition. The building costs are depreciated at 10% per year on a declining balance basis with the initial year also limited to 50% of the calculated deduction.

Income Taxes

Wineries are assumed to be subject to income tax at a combined federal-provincial rate of 20%. Losses are carried forward and used against winery income in later years. Losses will have greater value to the extent they may be used to shelter other sources of income in earlier years.

Timing of Cash Receipts and Outlays and Calculation of Interest Expense

Initial capital outlays are assumed made at the beginning of the period. Interest expense is calculated assuming that the average indebtedness for a given period is one-half of the debt at the end of the period and is considered paid in cash following the end of the period.

WINERY FINANCIAL INFORMATION

The following information is presented:

- Initial capital investment requirements
- Estimated fruit requirements
- Estimated annual cash flows (5 years)
- Projected summary of annual income and expenses with cash flows (5 years)
- Net present value (NPV) of cash flows
- Internal rate of return (IRR)
- Examples of adjustments for a fruit winery

Initial Investment Requirements (2,000, 5,000, 10,000 and 20,000 cases)

The initial investment requirements for the wineries ranged from $357,477 to $1,786,055 (Table 6.13) and demonstrated that the marginal capital requirement per case of production declined with increasing production levels. The capital requirements excluded land and waste management costs. The cost of increasing production from one level of production to another may be materially different than the incremental costs presented here.

Table 6.13 – Total investment required by winery

Category	2,000 Cases	5,000 Cases	10,000 Cases	20,000 Cases
Receiving Equipment	$ 48,971	$ 68,085	$ 96,300	$ 118,833
Cellar Equipment	$ 20,830	$ 30,040	$ 43,450	$ 47,860
Refrigeration Equipment	$ 24,595	$ 39,950	$ 63,950	$ 87,000
Fermentation& Storage Equipment	$ 50,623	$ 110,547	$ 303,941	$ 675,030
Material Handling Equipment	$ 53,186	$ 53,186	$ 53,685	$ 95,422
Building	$ 125,000	$ 250,000	$ 375,000	$ 500,000
Barrels (Year 1)	$ 26,500	$ 66,000	$ 118,500	$ 236,500
Tasting Area/Retail	$ 3,722	$ 4,652	$ 9,674	$ 13,260
Office	$ 4,050	$ 6,075	$ 8,100	$ 12,150
Total Investment	$ 357,477	$ 628,535	$ 1,072,600	$ 1,786,055

Estimated Fruit Requirements

Table 6.14. Fruit Tonnage Requirements

Variety	2000 cases	5000 cases	10000 cases	20000 cases
Chardonnay	6.3	15.8	22.1	44.1
Riesling	6.3	15.8	22.1	44.1
Pinot Gris				
Sauvignon Blanc			18.9	37.8
Vidal				
Merlot	6.3	15.8	22.1	44.1
Pinot Noir				
Cabernet Franc	6.3	15.8	22.1	44.1
Cabernet Sauvignon			18.9	37.8
Gamay				
Baco Noir				
Totals in tonnes	25.2	63.0	126.0	252.0

Estimated Annual Cash Flows (5 Years)

All wineries demonstrate negative cash flow in the initial years of operations attributable to the initial cash investment at Year 0 (the required equity contribution at the commencement of operations) and the absence of cash flow during the first year of operation (i.e., no inventory

available for sale) in the presence of operating expenses (Table 6.15). Unit sales for all wineries increase in the first three years before achieving the targeted production level and remaining stable thereafter (i.e., in year one no wine is available to be sold and in years two and three not all wine produced is sold). The time lag between production and realization of revenue in the early years of each winery results in negative cash flow requiring material amounts of interim funding through a bank credit line attached to inventory or other source. No additional interest expense is imputed as a further operating expense during these years.

The initial negative cash flows may be able to be mitigated by the purchase of wine prior to the initial vintage of the winery to generate cash flow and to build distribution channels and accelerate recognition of cash flow. Such purchases may require additional borrowings and financing costs to be factored into the feasibility plan and final financial plan.

Table 6.15 – Net Cash flow by winery at commencement of operations (Year 0) and in the first five years of production (Years 1 to 5).

Year	2,000 Cases	5,000 Cases	10,000 Cases	20,000 Cases
0	($89,369)	($157,134)	($268,150)	($446,514)
1	($275,002)	($640,541)	($1,046,840)	($1,946,203)
2	($111,447)	($234,422)	($502,199)	($1,000,869)
3	($31,692)	($35,035)	$225,958	$635,017
4	$36,100	$134,445	$547,314	$1,270,132
5	$84,750	$256,071	$771,898	$1,655,789

All wineries experience an initial negative cash flow that is followed by positive cash flows. Over twenty years, cash flows peak and then decline with the trend attributable to several factors. Tax losses that occur in early years of losses are carried forward and used to shelter income in profitable years until losses are exhausted. Taxes become payable and contribute to reduced net cash flows. Inflation then reduces the revenue while costs continue to increase, reducing the profitability of the operations in later years after losses are exhausted.

Projected Summary of Annual Income and Expenses with Cash Flows (5 Years)

Table 6.16 Projected Summary of Income and Expenses with Cash Flow Projections for Initial 5-years of Operations

2,000 Cases	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Revenues		0	159,510	239,265	307,057	355,707
Expenses		300,259	352,502	299,485	246,400	244,738
Taxable Income		0	0	0	0	0
Loss Carry Forward		(300,259)	(493,251)	(553,471)	(492,814)	(381,845)
Income Tax		0	0	0	0	0
Net Income		(300,259)	(192,992)	(60,220)	60,657	110,970
Capital Outlays	(89,369)	(32,487)	(33,944)	(35,466)	(37,057)	(38,719)
Depreciation		57,744	115,489	63,994	12,500	12,500
Net Cash Flow	(89,369)	(275,002)	(111,447)	(31,692)	36,100	84,750
5,000 Cases	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Revenues		0	398,775	598,163	767,642	889,268
Expenses		679,805	760,806	680,282	599,650	597,040
Taxable Income		0	0	0	0	0
Loss Carry Forward		(679,805)	(1,041,837)	(1,123,956)	(955,964)	(663,736)
Income Tax		0	0	0	0	0
Net Income		(679,805)	(362,031)	(82,119)	167,992	292,228
Capital Outlays	(157,134)	(51,370)	(53,658)	(56,049)	(58,547)	(61,157)
Depreciation		90,634	181,267	103,134	25,000	25,000
Net Cash Flow	(157,134)	(640,541)	(234,422)	(35,035)	134,445	256,071
10,000 Cases	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Revenues		0	532,798	1,260,955	1,582,311	1,806,895
Expenses		1,118,218	1,265,773	1,116,687	967,407	962,698
Taxable Income		0	0	0	0	0
Loss Carry Forward		(1,118,218)	(1,851,193)	(1,706,926)	(1,092,022)	(247,825)
Income Tax		0	0	0	0	0
Net Income		(1,118,218)	(732,976)	144,268	614,904	844,196
Capital Outlays	(268,150)	(92,147)	(96,273)	(100,585)	(105,090)	(109,799)
Depreciation		163,525	327,050	182,275	37,500	37,500
Net Cash Flow	(268,150)	(1,046,840)	(502,199)	225,958	547,314	771,898
20,000 Cases	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Revenues		0	927,463	2,563,349	3,198,464	3,638,930
Expenses		2,072,767	2,335,039	2,065,078	1,794,774	1,786,501
Taxable Income		0	0	0	0	274,047
Loss Carry Forward		(2,072,767)	(3,480,344)	(2,982,072)	(1,578,382)	0
Income Tax		0	0	0	0	54,809
Net Income		(2,072,767)	(1,407,576)	498,272	1,403,690	1,852,429
Capital Outlays	(446,514)	(160,825)	(168,070)	(175,643)	(183,558)	(191,831)
Depreciation		287,389	574,777	312,389	50,000	50,000
Net Cash Flow	(446,514)	(1,946,203)	(1,000,869)	635,017	1,270,132	1,710,598

Financial Analysis Measures

Net Present Value (NPV)

Net present value (NPV) is used to appraise the financial desirability of a long-term investment or project. NPV is the present value of the expected future net cash flows from the project less the amount of the initial cash investment. The discount or interest rate used to calculate the present value can be selected based on the cost of financing or the return necessary to make the investment attractive given the perceived risk of the investment. Table 6.17 presents the estimated NPV of the wineries cash flows over a 20-year period using interest rates ranging from 0% to 45%.

Table 6.17 – Net Present Value Profile (20 Year) at Discount Rates of 0% to 45%.

Discount Rate	2,000 Cases	5,000 Cases	10,000 Cases	20,000 Cases
0.00%	$718,582	$2,154,421	$7,721,403	$17,579,645
5.00%	$235,842	$880,389	$3,922,268	$9,221,329
10.00%	($6,493)	$234,866	$1,974,150	$4,926,813
15.00%	($135,223)	($113,442)	$900,450	$2,551,467
20.00%	($206,406)	($310,749)	$271,602	$1,152,570
25.00%	($246,617)	($426,315)	($115,255)	$285,199
30.00%	($269,285)	($495,153)	($362,471)	($275,011)
35.00%	($281,593)	($536,037)	($524,904)	($648,293)
40.00%	($287,582)	($559,571)	($633,606)	($902,706)
45.00%	($289,625)	($572,023)	($707,017)	($1,078,698)

Table 6.17 illustrates that there are some large differences in the range of interest rates that provide a positive NPV for the wineries. The risk associated with smaller wineries or the cost of financing for such wineries may be too high to make such investments attractive unless changes to a winery's business plan reduce the initial investment and input costs or increase the efficiency of production.

Internal Rate of Return (IRR)

Like the NPV, the internal rate of return (IRR) is used to appraise the financial desirability of long-term investments. The IRR refers to an interest rate that results in the net present value of the estimated net cash flows of an investment being equal to the net present value of the investment. The higher a project's IRR, the more financially desirable the project may be provided all other factors are equal. The IRR may also be compared against the cost of financing to evaluate the viability of the investment under current financing costs. Table 6.18 illustrates that the current business plans for smaller wineries fail to provide acceptable IRR values suggesting that changes to the business plan are required to improve the financial prospects of the wineries before they may be pursued. In the present case, the $12.95 bottle price for the production of the wineries may be unrealistic and with higher bottle prices the IRR would be acceptable. Table 6.18 also illustrates that the IRR for the larger wineries may be acceptable under the current business plans.

Table 6.18 – Internal Rate of Return (IRR) using a discount rate of 8%, finance rate of 4.5% and a re-investment rate of 6%.

2,000 Cases	5,000 Cases	10,000 Cases	20,000 Cases
10%	13%	23%	27%

ADJUSTMENTS FOR A FRUIT WINERY

Equipment

Fruit wineries require the same basic equipment, space and operating considerations as grape wineries. There are some variations to the types of equipment needed:

- pulper/chopper rather than destemmer crusher
- stone fruit or cider press
- combination plate/lees filter (20 plate) 40 cm × 40 cm
- oak barrels may not be needed, and oak chips may be substituted