

# Maple Start-Up: 20,000 taps– Multiple Sites

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## Introduction

This guide is part of a series that offers a summary of the start-up investments needed for maple production systems at several scales. Capital budgets for sap-only enterprises and sap-to-bulk syrup enterprises are included in this series. The profiles demonstrate typical commercial scales and situations common in maple production regions. Five separate scenarios for sap-only enterprises range from 3,000 taps to 15,000 taps. Four scenarios for sap-to-bulk syrup business models are included that range from 5,000 taps to 20,000 taps. Business models include sap collection systems flowing direct to a sugar house and also situations that include satellite sugarbush locations that require moving sap back to the main processing facility.

The guide includes a section on maple production investments and a separate section on real estate investments. Readers with existing real estate can utilize the maple production start-up investment section to plan for a new enterprise on existing owned or rented land. Readers without access to forest land can combine the maple production investment totals with estimated real estate investment ranges demonstrated in the last section of the guide.

The business profiles presented here are each meant to serve as a building block for the capital budgeting individual business owners will need to complete before making investments or seeking outside capital. A list of assumptions is provided below that indicates which elements are included or not included in each business start-up profile. Maple producers, agricultural lenders and other users of this guide are advised to consider the start-up estimates presented here to be lower than the full business start-up costs for several reasons. The University of Vermont Northeast Maple Benchmark project has been tracking detailed financial records with participating maple businesses for several years. Detailed inventory and asset valuation from that research demonstrates that actively operating businesses invest in additional necessary items. These include but are not limited to: forestry services, additional trucks/trailers, all-terrain vehicles for sugarbush management, specialized shop tools, specialized packing equipment, office equipment, site improvements and many other items that may or may not be directly linked to sap harvest and syrup processing.

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Research for this project was conducted from winter 2021 through August 2021. The costs presented here reflect an average of prices from multiple equipment manufacturers and tubing installers at the time of the study. (Authors Note: Any price changes caused from supply chain disruption, inflationary trends or other market dynamics after August 2021 are not factored into this report).

## Assumptions

The following assumptions have been used to standardize the business start-up investment profile.

All Terrain- Utility Vehicle (ATV-UTV): the valuation of listed ATV/UTV and snow machines recorded through the UVM Northeast Maple Benchmark were averaged for relevant business size classes. All size classes had approximately \$1.50 per tap assigned to these investments.

Equipment Cost: retail prices minus a typical 10% dealer discount.

Extractors/Releasers: self-contained units with submersible pump.

Monitoring System: includes vacuum sensors at each main line and a tank level sensor.

Hauling: Hauling investments are included in the 10,000 tap and 20,000 tap profiles that include a satellite sugarbush at other locations.

3,000 tap hauling scenario (in the 10,000 total tap profile): Includes a \$30,000 charge for the value of truck, pumps, hardware and tanks. This assume a short haul of 3-10 miles and the pro-rated value of a suitable truck that is only needed for 8-12 weeks per year.

5,000 tap hauling scenario (in the 20,000 total tap profile): Includes a \$45,000 charge for the value of truck, pumps, hardware and tanks. This assume a short haul of 3-10 miles and the pro-rated value of a suitable truck that is only needed for 8-12 weeks per year.

Power/Driveway: a short distance gravel driveway with limited site work and easily accessible power supply for 200-amp service hook-up. A \$5,000 estimate is used for all sap-only profiles. This same cost is included in the “sugarhouse” line item for bulk syrup profiles. Factor in additional costs for longer distance to access electrical supply.

Processing Capacity and Sizing: Reverse Osmosis (RO) and evaporator run-time is limited to 4-5 hours per day for 5,000 taps, limited to 4-6 hours per day for 10,000 taps, and limited to 5-7 hours per day for 20,000 taps. Run time limitations were established by assessing the different personnel and staffing availability at various scales. Smaller enterprises assume shorter processing run-time because owner operators will also need to allocate a portion of time for work in the woods.

Real Estate: Using a tap density of 55 taps per acre the following real estate values can be added to the production system totals. \$1,000 per acre = \$18 per tap; \$1,500 per acre = \$27 per tap; \$2,000 per acre = \$36 per tap; \$2,500 per acre = \$45 per tap and \$3,000 per acre = \$55 per tap.

Sugarhouse: The following calculations have been used to estimate sugarhouse construction:

5,000 taps: 768 square feet @ \$55 per square foot

10,000 taps: 1,300 square feet @ \$50 per square foot

20,000 taps: 1,500 square feet @ \$50 per square foot

Shipping Container: a 40 foot “Conex” type container set on level ground with limited site work and small insulated room for a vacuum pump in rear of container with room in front for a tank or for storage.

Tanks: the most cost effective units that will fit into a shipping container or for larger sizes are set near container.

Truck and Tractor: the valuation of listed trucks and tractors recorded through the UVM Northeast Maple Benchmark were averaged for relevant business size classes. The truck and tractor investment is \$8.50 per tap for size classes 10,000 taps and under. The truck and tractor investment is \$5.50 for all size classes greater than 10,000 taps.

Tubing System: estimated 3 taps per lateral line with a modern wet/dry system that is professionally installed by a third party. Includes main-lines, lateral and drops. This assumes a short distance between the sap collection house or tank and the sugarbush of less than 50 yards. Estimated cost is \$15 per tap. Factor in additional costs for longer runs of wet/dry lines without taps.

Vacuum Pump: dry vein pumps with variable frequency drive (VFD).

## 20,000 Tap Bulk Syrup Enterprise - Multiple Site Start-Up Investment

The budget below provides an estimate of start-up investments directly related to sap collection and bulk syrup processing for a 20,000 tap enterprise with 15,000 taps flowing directly to the sugarhouse and 5,000 taps rented at a different site. This section does not include real estate acquisition costs. See the next section for real estate costs.

	20,000 Total Taps	
	15,000 Taps Direct to Sugarhouse	5,000 Taps Hauled
ATV/UTV	\$22,500	\$7,500
Extractor	\$9,534	\$3,487
Hauling		\$45,000
Monitoring System	\$23,116	\$8,962
Power/Driveway	\$0	\$5,000
Shipping Container		\$5,000
Tanks	\$19,869	\$6,443
Tubing	\$225,000	\$75,000
Truck and Tractor	\$67,500	\$22,500
Vacuum Pump	\$18,725	\$6,078
<b>Subtotal Sap Collection</b>	<b>\$386,243</b>	<b>\$184,969</b>
<b>Cost Per Tap</b>	<b>\$26</b>	<b>\$37</b>
	<i>NOTE: Cost Per Tap is calculated based on the 15,000 tap count.</i>	<i>NOTE: Cost Per Tap is calculated based on the 5,000 tap count.</i>
Barrels	\$38,400	
Concentrate Tank	\$1,898	
Evaporator	\$52,000	
Filter Press	\$4,746	
Misc Tools	\$2,000	
Permeate Tank	\$3,659	
Sugarhouse	\$75,000	
Reverse Osmosis	\$47,000	
<b>Subtotal Sugarhouse Cost</b>	<b>\$224,702</b>	
<b>Cost Per Tap</b>	<b>\$11</b>	
<b>Total Cost - Sap &amp; Processing</b>	<b>\$795,914</b>	
<b>Total Cost Per Tap</b>	<b>\$40</b>	
		<i>NOTE: Total Cost Per Tap is calculated based on the 20,000 tap count.</i>

## Real Estate Investment

The profile listed below estimates the purchase of 272 acres of forest to support 15,000 taps. The 5,000 additional taps included in this profile are on rented land and do not require an initial property purchase.

Forest land values can vary dramatically in U.S. maple production regions. The tables in this section provide estimated land acquisition costs for new maple enterprises. The acquisition of forest land for a newly established maple sap or syrup business is likely to incur additional costs related to forest thinning, roads, trails, culverts and other improvements. The same parcel may also have the potential to generate revenue from timber harvesting prior to the establishment of the maple sap collection system. These additional costs and revenue are not included in the forest real estate section because of the wide range of situations present. Prospective business owners can use the general estimates in this report with their own site specific factors to enhance the accuracy of their financial start-up investment plan.

Using a tap density of 55 taps per acre the real estate values shown in Table 1 below can be added to the production system investment totals reported in the earlier section.

*Table 1: Real estate investment per tap at different land values*

	Forest Land \$1,000/A	Forest Land \$1,500/A	Forest Land \$2,000/A	Forest Land \$2,500/A	Forest Land \$3,000/A
<b>Per Tap</b>	\$18	\$27	\$36	\$45	\$55

*Table 2: Combined maple production and 272-acre real estate investment totals*

	Sap and Processing	Full Start-Up With 272 Acres at \$1,000/A	Full Start-Up With 272 Acres at \$2,000/A	Full Start-Up With 272 Acres at \$3,000/A
<b>Total Cost</b>	\$795,000	\$1,067,000	\$1.3 M	\$1.6 M

*Table 3: Start-up capital per tap for 20,000 tap profile at different land values*

	Total Cost Sap and Processing	Full Start-Up With Forest Land \$1,000/A	Full Start-Up With Forest Land \$2,000/A	Full Start-Up With Forest Land \$3,000/A
<b>Per Tap</b>	\$40	\$53	65	\$80

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