November 2025

EB 2025-10

How-To Financial Feasibility Tool:
Agrivoltaics Solar Sheep Cooperative

Summer Santillana, Todd M. Schmit, Nicole Tommell, Yunjie Li, and Roberta Severson

Charles H. Dyson School of Applied Economics and Management SC
Johnson College of Business
College of Agriculture and Life Sciences
Cornell University, Ithaca, NY 14853-7801

How-To Financial Feasibility Tool:
Agrivoltaics Solar Sheep Cooperative

By:
Summer Santillana, Todd M. Schmit, Nicole Tommell, Yunjie Li, and Roberta Severson

November 2025

TABLE OF CONTENTS

1. Tool Relevance and Background Page 1
2. Financial Feasibility Tool Overview Page 3
    - Sheet Breakdown and Brief Descriptions
3. User-Driven Interfaces Page 4
    - For Viewers (Inputs)
    - Additional Inputs
    - Baseline Input Parameters for Guide Examples
4. Understanding the Auto-Calculated Spreadsheet Tables Page 9
    - Arrays, Farms, Workforce
    - Income Statement
    - Balance Sheet
    - Cash Flow Statement
    - Expense Analysis
    - Loan, Owner's Equity, and Depreciation
    - Mobilization and Fencing
5. Key Financial Insights and Tool Takeaways Page 11
6. Output Sheet Results from Baseline Parameters Page 13

1. Tool Relevance and Background

1.1 Tool Background

Solar energy production uses land with optimal characteristics for agricultural operations. Therefore, agrivoltaics, the dual use of land for both solar arrays and agricultural use, remediates many concerns associated with the loss of farmland to solar. Therefore, a team of researchers from the Cooperative Enterprise Program in Cornell University's Charles H. Dyson School of Applied Economics & Management. developed a user-driven tool to assess financial feasibility for a member-owned solar sheep grazing cooperative. This guide utilizes a "walk through" example of the tool to explain its various features.

This model was developed under the direction of Dr. Todd M. Schmit, a Professor in the Dyson School. The Dyson School is a unit within two colleges: the College of Agriculture and Life Sciences (CALS) and the SC Johnson College of Business (SCJCB). Please contact Dr. Schmit for any additional information, questions, or concerns (tms1@cornell.edu, +1-607-255-3015).

Suggested Tool Citation

Schmit, T.M., S.D. Santillana, N. Tommell, Y. Li, and R.M. Severson. 2025. Financial Feasibility Tool for a Farmer-Owned Agrivoltaic Sheep Grazing Cooperative. Version 1.0. Cooperative Enterprise Program, Charles H. Dyson School of Applied Economics and Management, Cornell University. https://cornell.box.com/v/SolarSheepFinancialTool

Funding Acknowledgement

Funding for this publication was made possible by the U.S. Department of Agriculture's (USDA) Agricultural Marketing Service through grant USDA-AMS-FSMIP-G-21-0004. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USDA.

1.2 Overview of Financial Feasibility

Financial evaluation is a critical component of the process of cooperative development as it informs potential investors and users of the business of the expected profitability of the venture. In assessing the feasibility of a new solar grazing cooperative, this financial feasibility tool estimates 10-year pro forma financial projections assuming a base set of input parameters based on credible sources, along with user-provided information. The base inputs can be changed by the user according to their specifications. The outputs of the financial modeling include standard financial statements: an income statement, balance sheet, cash flow statement, and statement of member equities.

The financial model summarizes financial performance, by year, based on a comprehensive set of revenue, expense, and equity calculations. Each financial statement provides different, yet complementary, insights into the financial performance of a business. The income statement (IS) presents revenues and operating expenses of the cooperative by year. In the tool, the operational revenues are derived solely from lease payments solar array operators make to the cooperative for

vegetative management services.[1] There are several operating and capital expenses related to the costs of services, management expenses, capital investment, and depreciation. Revenues and costs are a function of the growth of the business over time. Revenue less costs represent earnings before interests and taxes (EBIT) and subtracting EBIT by interest expenses related to loans generates profit before patronage.

1.3 Financial Aspects of a Cooperative

Unlike traditional corporations, profits generated by cooperatives do not all go to dividends and/or unallocated equity (i.e., retained earnings). The distributions of profits by cooperatives, as approved by the board of directors each year, can be paid out as dividends (generally uncommon), retained as unallocated equity, and/or distributed to members in cash and/or equity as patronage refunds based on member use of the business.[2] In this case, patronage is determined by the number of sheep provided for grazing services. Since cooperatives follow IRS Subchapter T single taxation principles, not all earnings are included in the calculation of income taxes for the cooperative. In general, taxable income for the cooperative is computed as profit before patronage less cash patronage refunds, qualified stock patronage refunds, and nonqualified stock redemptions. In this way, net income is defined as profit before patronage less income taxes in each year. The specifics of each financial statement and various financial indicators can be found in section 4.

[1] The companion farmer survey as part of this project also included components for cooperative input supply and collective marketing services. The financial feasibility of these business components, subject to farmer interest, is left for future research; however, starting with cooperative services limited to solar grazing is appropriate as a first step.

[2] Stock patronage refunds can be distributed in either qualified or nonqualified forms. The allocation affects to whom (the cooperative or the member) and when income taxes are paid. For ease of exposition, we assume all stock patronage refunds are qualified distributions, requiring a minimum cash distribution of 20% and for which members pay the income taxes in the year of distribution on both the cash and equity portions.

2. Financial Feasibility Tool Overview

2.1 Excel Tool Breakdown

The tool is set up through Microsoft Excel. Its breakdown, including the sheet order and brief descriptions, are below. Users will only make direct changes to sheets 1 and 2. All others are automatically calculated.

Sheet	Index	Type	Description
1	**For Viewers (inputs)**	**PRODUCER INPUT**	Primary input sheet for users to input fundamental model assumptions and preview the co-op's financial feasibility and needed assets.
2	**Additional Inputs**	**PRODUCER INPUT**	Secondary input sheet for users to change additional assumptions that determine the model specifications. Note that the initial settings for this section are based on research and data from the USDA and various solar grazing sources.
3	**Arrays, Farms, Workforce**	AUTO CALCULATE	Number of solar arrays and acres, sheep, farms/co-op members, and co-op workforce, including the administration team, shepherds, and drivers for mobilization.
4	**Income Statement**	AUTO CALCULATE	Income Statement: revenue, profit, income, & financial efficiency measures.
5	**Balance Sheet**	AUTO CALCULATE	Balance Sheet: assets, liabilities, equity.
6	**Cash Flow Statement**	AUTO CALCULATE	Cash Flow Statement: operating, investing, and financing cash flow.
7	**Expense Analysis**	AUTO CALCULATE	Expense Analysis: contains all estimated costs of the cooperative
8	**Loan**	AUTO CALCULATE	10-year breakdown of the estimated loan needed to finance the cooperative
9	**Owners' Equity**	AUTO CALCULATE	Statement of Owner Equity: the co-op's financial obligations to members (unallocated equity, qualified/non-qualified stocks).
10	**Depreciation**	AUTO CALCULATE	Outlook on estimated depreciation costs of mobility (trucks and trailers) and fencing
11	**Mobilization**	AUTO CALCULATE	Number and costs of trucks, trailers, drivers, and shepherds needed for cooperatives
12	**Fencing**	AUTO CALCULATE	Fencing costs

3. User-Driven Interfaces

To generate reliable and informative results from the financial forecasting model, defining and defending numerous operational parameters are necessary. This section outlines the various input parameters that users can customize to match their specifications. As noted in the previous section, the tool separates user-input sheets into sheets 1 and 2, with the major inputs contained on sheet 1. For explanatory purposes, this guide uses baseline specifications which will be outlined in subsection 3.3. These parameters are based upon prior research of the solar sheep agrivoltaics market in the northeastern U.S. by the research team.

The model includes a base year (year 0) where member recruitment is completed, the business is established, financial resources are obtained, a core management team and board of directors are functioning, and capital investments are completed prior to the first year of grazing services (year 1); i.e., there is no operating income in the base year. We assume that all costs incurred in the base year (operational and capital) are satisfied by upfront member investments, loans, and grant funding.[3] We allow for customization of the interest rate for the initial long-term loan associated with the capital investment and a 10-year loan term.

3.1 For Viewers (inputs)

The initial sheet of the financial feasibility tool, "For Viewers (inputs)" is setup in a way that allows for direct customization of major input parameters, while simultaneously seeing the direct impact to important financial measures of the cooperative. The sheet is split into four sections, Solar Farms, Sheep (year 0), Cooperative Financial Inputs, and Preview of Business Outputs (images 1-3 below). The green cells are those that can be customized. Gray cells are static and cannot be changed. Subsection 3.3 will specify which parameters are customized using this sheet and will explain each parameter in more detail.

3.2 Additional Inputs

To simplify the master input sheet and allow for a preview of business outputs on sheet 1, additional inputs were placed on sheet 2 of the tool. Similarly to sheet 1, the cells noted in green are customizable by the user, while non-green cells cannot be edited. Each of the inputs noted on this sheet are used to calculate the financial outputs of the cooperative. The financial tool was created to allow for as much user-driven specification as possible, with no inputs "assumed" in the model that cannot be changed. This sheet includes inputs such as grazing season length, workforce size and wage, contract costs, vehicle/asset costs and capacity, general driving logistics, fencing costs, and mechanical trimming inputs. Subsection 3.3 below will specifically outline the inputs which are customized on this sheet, sheet 2: Additional Inputs.

[3] In our application, the grant is a one-time payment in the base year (year 0). Following financial accounting principles, it is classified as "other income" in the financial statements and amortized over the length of time for which it is used for; i.e., it follows the same (8-year) depreciation schedule of the capital equipment. Therefore, it shows up in the income statement amortized over the first eight years of operation. It also shows up in the balance sheet as "deferred revenue", which offsets the income amount in the income statement. Since the grant is received as cash in the base year, there is a cash inflow in financing activities by the full amount. The amortized amount of "other income" is subtracted from the net income in cash flow statement in the section of operating activities.

Image 1: Solar Array and Sheep Farm Inputs

OVERALL INPUT SHEET AND SENSITIVITY ANALYSIS | LEGEND: YOUR INPUT | AUTO CALCULATE

This sheet consists of the main producer inputs, shown in green, as well as an initial view of the business outputs calculated using the assumptions that were used.

INPUTS:

Solar Arrays

	SMALL SOLAR	MEDIUM SOLAR	LARGE SOLAR	TOTAL ACRES/ARRAYS	
Average acres per array by size:	10	20	550	1190	acres
Beginning number of arrays by size:	3	3	2	8	arrays
Acreage	3%	5%	92%	100%	

Projected Annual Growth Rate in Acres for Solar Grazing, Percentage: 5%

Average Grazing Price per Acre: $ 750

Sheep (year 0)

# Sheep Needed:	# Sheep Farms		SMALL FARMS	MEDIUM FARMS	LARGE FARMS	VERY LARGE FARMS	TOTAL	
3570	6	Average number of sheep per farm by size category:	200	650	1750	2500	3235	Number of sheep
		Sheep distribution:	25%	25%	25%	25%	100%	CHECK EQUALS 100%
Mobilization Period (days to get sheep to arrays at beginning of season and returned to farms at end of season)	14	Number of Farms:	4	1	0.5	0.4	6	Number of farms

Average Distance between farms and arrays: 50 miles

Image 2: Co-Op Financial Inputs

COOPERATIVE FINANCIAL INPUTS:

Investment & Equity	
Grant	20%
Loan	40%
Farmer Investment	40%
CHECK ROW (grant + loan + investment = 100%)	100%
Long Term Interest Rate	8%
Loan Term	10
Base Year Investment + Startup Cost	$ 659,575
Loan Amount	$ 263,830
Working Capital	$ 250,000
Short Term Interest Rate	7.00%
Equity Information	
Membership Common Stock	$ 263,830
Tradeable common stock (1=yes)	0
Revolving period (years)	5
Dividend rate on common	0.0%
Total members/Sheep Farms (year 0)	6
Grant	$ 131,915
Average Investment per Member	$ 44,968
Member Investment per Sheep	$ 74
Profit Allocation	
(all percentages relate to before tax income)	
Percentage to Unallocated Reserve	10%
Percentage to Cash Patronage Refund	70%
Percentage to Qualified Stock Patronage Refund	20%
Percentage to Non-Qualifited Stock Patronage Refund	0%

Image 3: Preview of Business Outputs

PREVIEW OF BUSINESS OUTPUTS

COSTS:	Startup (Year 0)	Year 1	Year 5	Year 10
Capital Expense	$ 459,360	$ 58,688	$ 189,285	$ 194,353
Service Costs	$ -	$ 266,173	$ 336,172	$ 414,410
Total Direct Costs	**$ 459,360**	**$ 324,860**	**$ 525,457**	**$ 608,762**
Management Expense	$ 200,215	$ 353,887	$ 429,534	$ 545,116
Legal Cost (i.e. contracts)	$ -	$ 61,500	$ 74,680	$ 95,330
Total Management Exp	**$ 200,215**	**$ 415,387**	**$ 504,214**	**$ 640,445**
Total Cost	$ 659,575	$ 740,248	$ 1,029,671	$ 1,249,208

PROFITABILITY:	Startup (Year 0)	Year 1	Year 5	Year 6
Revenue	$ -	$ 965,239	$ 1,320,507	$ 1,953,770
Net Income	$ (260,135)	$ 189,150	$ 317,532	$ 701,598
Co-op Profit Margin	0%	20%	24%	36%
Total Assets	$ 649,440	$ 681,141	$ 894,526	$ 1,266,746

Assets Needed:

Medium Trailers and Half Ton Trucks (e.g. F150): 5

Shepherds: 5 Sheep: 3570

Assets Outsourced for Mobilization:

Custom Haul Package: 1 Ton Truck + Large Trailer + 2

Locations: Total Nodes (locations): 15

Cooperative: 1 Sheep Farms/Farmers: 5.867 Solar Arrays: 8

3.3 Baseline Input Parameters

This section highlights the parameters which were used by the research team to assess the model. The inputs used are reflected in all following sections to help explain the auto-calculated financial sheets. It is important to note that each of these inputs can be changed by the user. Those that are automatically included are based upon prior research of the solar sheep agrivoltaics market. They are included as a starting point for those who may use and change the model as they see fit. It is assumed that all costs incurred in the base year (operational and capital) are satisfied by upfront member investments (40%), loans (40%), and grant funding (20%). An 8% interest rate is assumed for the initial long-term loan associated with capital investment and a 10-year loan term. The interest rate on the $250,000 annual working capital loan is 7%. Below, in table 5, the baseline parameters are outlined, as well as the sheet they can be customized in (sheet 1 or 2).

Table 1 denotes baseline inputs for both solar arrays and sheep farm sizes and numbers. These parameters are customized using sheet 1. Those in red are not directly input, rather they are a direct result of the inputs in black. For example, the user cannot directly input the number of sheep farms by size. Instead, the user must input the sheep distribution (i.e., what percentage of the total number of sheep will be sourced from small farms, medium farms, large farms, and very large farms, and the average number of sheep per farm size. The two parameters, sheep distribution and average sheep per farm by size, imply the number of farms needed of each size to service the array acres. In contrast, the number of solar arrays and average acreage per solar array are direct inputs. The proportion of array acreage and total acreage serviced follows.

Table 1 – Sheet 1: Baseline input parameters of array and member size (red = indirectly input)

Solar Arrays	*Range & Average Acreage*	*Amount in Year 0*	*% of arrays*	*% of acreage*
Small array	0-15, 10	3	37.5	3
Medium array	15-25, 20	3	37.5	5
Large array	26+, 550	2	25	92
Sheep Farms	*Average number of sheep*	*Amount in Year 0*	*% of Farms*	*% of Co-op Sheep*
Small farm	200	4	68	25
Medium Farm	650	1	17	25
Large Farm	1750	0.5	9	25
Very Large Farm	2500	0.4	6	25
Total Acreage: 1190	***Total Arrays: 8***	***Total Sheep: 3,570***	***Total Farms (members): 6***	

The list of parameters in table 2 are customized using either sheet 1 or sheet 2, as noted in the second column. The inputs are categorized into general, core management team, investment and equity, contract negotiation, mobilization, shepherding, and fence installation.

Table 2 – Baseline input parameters for financial feasibility projections.

Parameters	**Sheet**	**Default Value**
Average grazing price (revenue) per acre (dollars)	1	750
Solar grazing land anticipated in year 0 (acres)	1	1,190
Annual growth rate of solar grazing acres (percent)	1	5
Stocking rate (sheep/acre)	2	3
Length of grazing season (weeks)	2	27
Fuel price ($/gallon)	2	4.00
Average driving speed, mobilization/shepherding (miles/hour)	2	70
Average distance between farms and arrays (miles)	2	50

Table 2 – Baseline input parameters for financial feasibility projections.

Parameters	Sheet	Default Value
Annual inflationary cost rate (%)	2	2
Annual inflationary lease rate (%)	2	3
Supplemental mechanical mowing cost ($/hour)	2	60
Average time spent mechanical mowing (hours/acre)	2	0.5
Useful life of trucks & trailers (years)	2	8
Useful life of ATVs (years)	2	10
Annual truck maintenance cost ($/truck)	2	1,000
Annual trailer maintenance cost ($/trailer)	2	500
Annual ATV maintenance cost ($/ATV)	2	200
Core Management Team		
Chief Executive Officer ($/year)	2	75,000
Logistics Supervisor ($/year)	2	55,000
Contract Specialist ($/year)	2	55,000
Member Relations & Marketing ($/year)	2	55,000
Accountant, Contract ($/year)	2	55,000
Member Directors (number)	2	5
Director compensation ($/year)	2	5,000
Employee benefits rate (%)	2	30
Investment & Equity		
Investment allocation, Grant/Loan/Member common stock (%)	1	20/40/40
Capital investment loan interest rate (%)	1	8
Loan amortizations term (years)	1	10
Working capital loan ($)	1	250,000
Working capital loan rate (%)	1	7
Allocated equity patronage refund revolving period (years)	1	5
Tradeable common stock (1 = yes)	1	0
Dividend Rate on Common Stock	1	0
Contract Negotiation		
Farmer legal fees ($/contract)	2	250
Farmer liability insurance cost ($/acre)	2	50
Mobilization		
Contrac custom haulers (drivers + equipment) for mobilization ($/mile)	2	4.5
Large trailer capacity for mobilization (sheep)	2	75
Loading/Unloading time on site, farm/array (hours)	2	1
Labor hours available per day (hours/day)	2	24
Mobilization period: Time to move sheep to/from arrays (days)	2	14
Mobilization periods per season	2	2
Shepherding		
Wage rate, shepherding services ($/hour)	2	40
Half ton truck price for cooperative purchase ($)	2	75,000
Medium trailer price for cooperative purchase ($)	2	15,000
Medium trailer capacity for shepherding (sheep)	2	25
Fuel mileage of half ton truck (miles/gallon)	2	20
Average shepherding visits (visits/week)	2	2
Time to shepherd (hours/sheep)	2	0.05
Days per week shepherding (days/week)	2	7
Labor hours available per day (hours/day)	2	8
Fence installation		

Table 2 – Baseline input parameters for financial feasibility projections.

Parameters	Sheet	Default Value
Wage rate, fence installation ($/hour)	2	40
New fencing installation set up time (hours/acre)	2	1
Existing fencing repair and adjustment time (hours/acre)	2	0.5
Installation time – small array (hours)	2	5
Installation time – medium array (hours)	2	10
Installation time – large array (hours)	2	20
Cost for single spike netting, 164' x 35" ($)	2	135

4. Understanding the Auto-Calculated Spreadsheet Tables

4.1 Arrays, Farms, Workforce

The third sheet of the tool calculates the 10-year estimates for the solar arrays, sheep farms, revenue, and workforce based upon the inputs from sheets 1 and 2. On this sheet, the user will be able to see the estimated growth in the number of solar arrays. In turn, the growth in the number of sheep needed to service the arrays, and thus the number of sheep farms. The 10-year revenue, calculated from the lease rate times the total array acreage is shown. The size of the workforce is determined as a ratio of the workload capacity of each position. For example, with the baseline parameters assumed, it would take a full-time CEO, and only part-time employees to handle the other position responsibilities in year 0. Labor costs are determined proportionately to the size of the workforce. The number of drivers employed by the cooperative and their labor hours are determined from the calculations of what is required to move and monitor the sheep within the timelines given.

4.2 Income Statement

The fourth sheet of the tool is the consolidated income statement. The income statement combines the revenues, expenses, and profits into a single report. For a cooperative specifically, it also includes patronage allocations. Patronage allocations can be classified as cash, qualified, and non-qualified. Important financial indicators on the income statement include the net income including non-controlling interests, the co-op Profit Margin (PM), Return on Investments (ROI), and Return on Equity (ROE). Profit margin (PM) and return on investment (ROI) are computed annually. PM represents net income divided by total revenue and ROI is net income divided by total investment (assets). Cumulative ROI and ROE use the cumulative net income.

4.3 Balance Sheet

The fifth sheet of the tool is the balance sheet. The balance sheet (BS) reports the cooperative's financial position in assets, liabilities, and member equities each year. In this case, assets include cash on hand, other short-term assets, land, buildings, and equipment. Total assets represent the sum of assets less accumulated depreciation. Liabilities include a working capital loan, a long-term loan (portion of initial capital investment), and deferred revenues from grant funding (portion of the initial capital investment). Member equities include upfront membership stock/investment (with voting rights), qualified stock from retained patronage refunds, and unallocated equity (retained earnings). As usual, the amount of the cooperative's assets is equal to its liabilities and member equity.

4.4 Cash Flow Statement

The sixth sheet of tool is the cash flow statement. The cash flow statement (CFS) is especially significant in assessing financial feasibility. The CFS reports net cash inflows and outflows each year, the net change in cash, and cash at the end of the year. Cash flows are reported separately for operating activities, investing activities, and financing activities. Operational cash flows include net income from operations, other income (e.g., grants), and changes in depreciation. Investment cash flows in our case are limited to the cash outflows from capital investment in equipment.[4]

[4] We assume fully depreciated assets generate no residual cash flow from their disposition (sale).

Financing cash flows relate to liabilities and member equity; namely, the change in long-term debt, cash patronage refunds, qualified stock patronage refunds redeemed, new member stock investments, and direct investments via grant funding in the base year. The net change in cash is computed as a sum of all changes in cash in the three sections. Cash at the end of the year is simply the net change in cash in that year plus the cash at the beginning of the year (or the end of the prior year). As the financial distribution of profits is unique in a cooperative setting, end-of-year cash flows represent a particularly salient factor in evaluating the financial status of the business. Cash flows should be sufficient to distribute patronage refunds to members and redeem member equities as scheduled.[5]

4.5 Expense Analysis

The seventh sheet of the tool is the expense analysis. This sheet is important as it calculates all annual expenses of the cooperative. The expenses are split into direct costs of capital expenses and service costs, and management and legal expenses. The investment and reinvestment of new equipment is based on its useful life. The contracted labor and fuel expenses are calculated from resources needed for shepherding and mobilization.

4.6 Loan, Owner's Equity, and Depreciation

The eighth sheet of the tool calculates the loan information, including principal payments and total interest expenses. The owner's equity statement, the ninth sheet, calculates the qualified and non-qualified stock issued and redeemed to get the total members equity. The depreciation statement, the tenth sheet, shows the total annual depreciation and cumulative depreciation for the trucks, trailers, ATV, and fencing materials.

4.7 Mobilization and Fencing

The eleventh sheet, mobilization, calculates and gives an overview of the number of trucks, trailers, and ATVs needed for the cooperative's use. The sheet also includes the reinvestment expense, maintenance expense, and depreciation expense for the equipment. The sheet also shows the labor and fuel costs of shepherding and mobilization using the cooperative owned trucks and trailers. The outsourced haulers for the mobilization period are not included in these calculations as the cooperative does not retain any expenses for those other than the per mile cost. The fencing sheet, the twelfth and final sheet of the tool, calculates the costs and depreciation expenses of the fencing materials as the cooperative grows throughout the ten-year period.

[5] We assume that retained patronage refunds are redeemed on a five-year revolving fund; i.e., first in, first out.

5. Key Financial Insights and Tool Takeaways

The financial model is designed to allow for easy customization across alternative input parameters such as capital investment endowments, labor rates, fuel costs, and the size of the core management team. Accordingly, the financial model can serve as an updateable tool throughout the process of cooperative development with interested farmers and provide useful information to stakeholders for potential financial support.

As an example, let's look at financial feasibility using the baseline parameters. The output sheets are shown below, or you can follow along with the Excel tool sheets directly. Starting with the income statement, the cooperative is profitable starting in year 1, with a 20% profit margin and $189,150 of net income. Total revenue from the lease payments is noted on the first line of the table. The ROI and ROE, as well as the cumulative ROI and ROE, remain highly positive throughout the 10 years.

The balance sheet shows the total assets are equal to liabilities plus equities. In addition, the balance sheet allows viewers to see that the long-term loan ends in year 10 and liabilities are less than equity which is a benefit for the cooperative's stability. The cash flow statement is of particular importance as it shows the net change in cash throughout the year as well as the cooperative's total cash. Using the baseline parameters, the cooperative begins seeing positive cash at the beginning of year 2. However, it should be noted that the negative net change in cash in years 2, 6, and 8 are to be expected. These drops are largely due to the need for more trucks and trailers to accommodate the cooperative's growth. Given that the trailers have fixed capacity, the need for the cooperative to acquire more is incremental based on when the total number of sheep can no longer be handled with what the cooperative owns, which can take a few years to get to that point. Importantly, the model assumes these additional capital purchases are made with internal cash available from the business, rather than taking on additional debt.

The expense analysis is helpful to understand as it allows for a breakdown of the total costs the cooperative must cover. As mentioned in the previous paragraph, the incremental nature of truck and trailer growth can specifically be seen on this sheet in the Capital Expenses section. As a reminder, the administrative expenses also increase as the cooperative increases as the model assumes the administrative team is hired on an as needed basis. For example, the logistics supervisor is assumed to be able to handle up to 100 nodes (count of farms, arrays, and co-op locations) in a full-time status. Since there are only 15 notes in year 1, the logistics supervisor only needs to be hired and paid 15% of full-time status (i.e., if 40 hr/week = full time, they will need to work 6 hr/week and 15% of the total allocated annual salary is $11,681 per year.

The loan document outlines the assumed 8% annual interest rate and it's impact on the 10-year principal and interest payment projections. As can be seen, the loan will be fully paid off in year 10. The interest on the working capital is also calculated for the 10-year time frame. As was noted on the balance sheet, the debt to assets ratio is positive and decreases throughout the planning horizon. This shows the cooperative's dependence on debt financing decreases throughout the years, and the cooperative maintains more assets than debt.

The owner's equity statement is critical for understanding the financial workings of a cooperative model. This sheet calculates the membership stock, stocks issued and redeemed (qualified and

non-qualified), and unallocated equity. Using the baseline parameters, the qualified stocks are redeemed on a 5-year revolving period which can be seen from the second chart on the statement and the line for qualified stock redeemed. The baseline parameters do not include any non-qualified stocks. Overall, the total member's equity is small in year 0 but quickly begins to increase on an annual basis. The unallocated equity becomes positive in year 10. Unallocated equity is calculated by subtracting cash and qualified patronage refunds from the net income and adding the previous year's unallocated equity. This shows that at the end of year 10, if the cooperative were to sell all of its assets it would be able to use the proceeds to pay off all debts and not owe any money, leaving positive profits to distribute to the member-owners.

The depreciation statement simply calculates the annual depreciation of the owned resources (the trucks, trailers, ATVs, and fencing materials) based upon their useful life. Given the baseline useful life of eight years for the trucks and trailers, the sheet shows a decrease in depreciation expenses in year 8. The mobilization sheet shows the number of trucks, trailers, and ATV's that the cooperative needs to own to maintain its business. It also shows how many trucks and trailers are needed to handle the mobilization of the sheep, in addition to using the cooperative owned equipment.

This mobilization sheet also calculates the necessary investment, reinvestment, maintenance, depreciation (i.e., summarized on the previous sheet), and fuel expenses for the equipment. The model assumes one driver (cooperative employed) and ATV are needed for each cooperative owned truck/trailer. All of cooperative employed drivers are used for both the shepherding and mobilization of the sheep. The additional labor needed to complete mobilization based on the baseline mobilization period (i.e., 14 days) is employed through custom haulers on a per mile cost basis. For example, in year 1 the cooperative needs to own 5 half-ton trucks with 5 trailers (25 sheep capacity). Then, they would need to hire 5 full-time drivers employed hourly. To move all of the sheep pre-season and post-season, they would need approximately two additional custom haulers.

Finally, the final sheet, fencing, calculates the amount of fencing materials needed. Assuming the cooperative will use rolls of single spike netting that is 164' x 35'', it would take 6 rolls for a 1-acre paddock, 8 rolls for a 2-acre paddock, and 12 rolls for a 5-acre paddock. The paddocks are moved around by the shepherds to facilitate good grazing patterns by the sheep within the arrays. The time for fencing setup depends on the size of the array. To setup the fencing for year 1 of the cooperative, it would take approximately 85 hours. The setup time becomes more efficient throughout the years as it doesn't need to be set up twice but instead it just needs moving and repairs of previous installs. The model assumes that the cooperative needs materials to setup a 1, 2, and 5-acre paddock at each array. The sheet also calculates the necessary reinvestment and depreciation of the fence materials based on its useful life of 8 years.

The examples discussed in this section will hopefully serve as a useful guide to understanding the various financial statements within the tool. While they may be helpful, it's important to remember that each of the parameters discussed can be changed to fit the user's needs.

If there are any questions or concerns, please contact the research team lead, Dr. Todd Schmit: tms1@cornell.edu, +1-607-255-3015.

Consolidated Income Statement

This sheet contains the cooperative's income statement. The income statement calculates the profit and income of the cooperative, while taking into account the patronage. The second table is used to calculate the income, excluding the grant income, for usage on the Owner's equity sheet. It should not be used to estimate the total cooperative income.

Year	0	1	2	3	4	5	6	7	8	9	10
Lease payment Revenue	$ -	$ 965,239	$ 1,043,906	$ 1,128,984	$ 1,220,996	$ 1,320,507	$ 1,428,129	$ 1,544,521	$ 1,670,400	$ 1,806,537	$ 1,953,770
Service cost	$ -	$ (266,173)	$ (272,302)	$ (309,789)	$ (298,675)	$ (336,172)	$ (333,171)	$ (351,515)	$ (390,385)	$ (391,048)	$ (414,410)
Gross profit	$ -	$ 699,066	$ 771,603	$ 819,195	$ 922,321	$ 984,336	$ 1,094,958	$ 1,193,006	$ 1,280,015	$ 1,415,489	$ 1,539,360
Labor expense	$ (200,215)	$ (353,887)	$ (364,353)	$ (390,424)	$ (400,329)	$ (429,534)	$ (452,372)	$ (472,911)	$ (493,825)	$ (515,971)	$ (545,116)
Legal expense	$ -	$ (61,500)	$ (64,500)	$ (67,650)	$ (71,208)	$ (74,680)	$ (78,577)	$ (82,406)	$ (86,426)	$ (90,897)	$ (95,330)
Depreciation and amortization	$ (59,920)	$ (67,362)	$ (86,557)	$ (95,607)	$ (116,281)	$ (138,562)	$ (162,173)	$ (175,494)	$ (144,465)	$ (155,639)	$ (158,176)
Other income (Grant), net		$ 16,489	$ 16,489	$ 16,489	$ 16,489	$ 16,489	$ 16,489	$ 16,489	$ 16,489	$ -	$ -
Operating income (EBIT)	$ (260,135)	$ 232,806	$ 272,683	$ 282,003	$ 350,993	$ 358,050	$ 418,324	$ 478,685	$ 571,788	$ 652,982	$ 740,739
Interest expense		$ (38,606)	$ (37,149)	$ (35,576)	$ (33,877)	$ (32,041)	$ (30,059)	$ (27,918)	$ (25,606)	$ (23,109)	$ (20,412)
Profit before Patronage	$ (260,135)	$ 194,200	$ 235,533	$ 246,428	$ 317,116	$ 326,009	$ 388,265	$ 450,767	$ 546,182	$ 629,873	$ 720,326
Cash Patronage Refund	**$ -**	**$ 135,940**	**$ 164,873**	**$ 172,499**	**$ 221,981**	**$ 228,206**	**$ 271,786**	**$ 315,537**	**$ 382,327**	**$ 440,911**	**$ 504,228**
Qualified Patronage Refund	$ -	$ 38,840	$ 47,107	$ 49,286	$ 63,423	$ 65,202	$ 77,653	$ 90,153	$ 109,236	$ 125,975	$ 144,065
Qualified Redeemed	$ -	$ -	$ -	$ -	$ -	$ -	$ 38,840	$ 47,107	$ 49,286	$ 63,423	$ 65,202
Non-qualified Patronage Refund	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Non-Qualified Redeemed	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Income before taxes	$ (260,135)	$ 194,200	$ 235,533	$ 246,428	$ 317,116	$ 326,009	$ 388,265	$ 450,767	$ 546,182	$ 629,873	$ 720,326
Taxable income	$ (260,135)	$ 19,420	$ 23,553	$ 24,643	$ 31,712	$ 32,601	$ 38,827	$ 45,077	$ 54,618	$ 62,987	$ 72,033
Tax expense	$ -	$ 5,049	$ 6,124	$ 6,407	$ 8,245	$ 8,476	$ 10,095	$ 11,720	$ 14,201	$ 16,377	$ 18,728
Net income including non-controlling interest	**$ (260,135)**	**$ 189,150**	**$ 229,409**	**$ 240,020**	**$ 308,871**	**$ 317,532**	**$ 378,171**	**$ 439,047**	**$ 531,981**	**$ 613,497**	**$ 701,598**
Co-op Profit Margin		**20%**	**22%**	**21%**	**25%**	**24%**	**26%**	**28%**	**32%**	**34%**	**36%**
ROI		**49%**	**57%**	**56%**	**69%**	**68%**	**77%**	**85%**	**98%**	**108%**	**117%**
ROE		**270%**	**155%**	**104%**	**93%**	**72%**	**72%**	**71%**	**72%**	**71%**	**69%**
Cumulative ROI		28%	32%	31%	37%	35%	40%	45%	50%	53%	55%
Cumulative ROE		270%	155%	104%	93%	72%	72%	71%	72%	71%	69%

Balance Sheet

This sheet contains the cooperative's balance sheet. The balance sheet determines the cooperatives assets, liabilities, and equities.

Year	0	1	2	3	4	5	6	7	8	9	10
ASSETS											
Short-term assets	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000
Cash from Operations	$ -	$ 40,375	$ 15,642	$ 81,298	$ 88,204	$ 101,575	$ 100,264	$ 206,172	$ 194,368	$ 269,270	$ 349,320
Land Buildings and Equipment	$ 459,360	$ 518,048	$ 671,567	$ 745,850	$ 917,954	$ 1,107,240	$ 1,311,855	$ 1,430,134	$ 1,657,630	$ 1,833,311	$ 2,027,663
Less Accumulated Depreciation	$ (59,920)	$ (127,282)	$ (213,839)	$ (309,446)	$ (425,727)	$ (564,289)	$ (726,462)	$ (901,956)	$ (1,046,421)	$ (1,202,060)	$ (1,360,236)
TOTAL ASSETS	**$ 649,440**	**$ 681,141**	**$ 723,370**	**$ 767,702**	**$ 830,432**	**$ 894,526**	**$ 935,658**	**$ 984,349**	**$ 1,055,578**	**$ 1,150,520**	**$ 1,266,746**
LIABILITIES											
Working capital loan	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000
Long-term loan	$ 263,830	$ 245,618	$ 225,949	$ 204,707	$ 181,765	$ 156,987	$ 130,228	$ 101,328	$ 70,115	$ 36,406	$ -
Deferred Revenue	$ 131,915	$ 115,426	$ 98,936	$ 82,447	$ 65,958	$ 49,468	$ 32,979	$ 16,489	$ -	$ -	$ -
TOTAL LIABILITIES	**$ 645,745**	**$ 611,044**	**$ 574,885**	**$ 537,153**	**$ 497,722**	**$ 456,455**	**$ 413,207**	**$ 367,817**	**$ 320,115**	**$ 286,406**	**$ 250,000**
MEMBER EQUITY											
Membership stock	$ 263,830	$ 277,022	$ 290,873	$ 305,416	$ 320,687	$ 336,722	$ 353,558	$ 371,236	$ 389,797	$ 409,287	$ 429,752
Qualified stock	$ -	$ 38,840	$ 85,947	$ 135,232	$ 198,655	$ 263,857	$ 302,670	$ 345,717	$ 405,668	$ 468,219	$ 547,083
Non-qualified stock	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Unallocated equity	$ (260,135)	$ (245,765)	$ (228,335)	$ (210,100)	$ (186,633)	$ (162,508)	$ (133,777)	$ (100,420)	$ (60,003)	$ (13,392)	$ 39,912
TOTAL MEMBER EQUITY	**$ 3,695**	**$ 70,097**	**$ 148,484**	**$ 230,549**	**$ 332,710**	**$ 438,070**	**$ 522,451**	**$ 616,532**	**$ 735,463**	**$ 864,114**	**$ 1,016,746**
TOTAL LIABILITIES AND EQUITY	**$ 649,440**	**$ 681,141**	**$723,370**	**$767,702**	**$830,432**	**$894,526**	**$935,658**	**$984,349**	**$1,055,578**	**$1,150,520**	**$1,266,746**
Check	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Cash Flow Statement

This sheet contains the cooperative's cash flow statement. This statement includes the movement of cash for the cooperative over the course of 10 years.

Year	0	1	2	3	4	5	6	7	8	9	10
Cash Flow from Operating Activities											
Net Income	$ (260,135.47)	$ 189,150.39	$ 229,409.41	$ 240,020.45	$ 308,871.11	$ 317,532.30	$ 378,170.54	$ 439,046.91	$ 531,980.86	$ 613,496.50	$ 701,597.68
Depreciation and Amortization	$ 59,920.00	$ 67,362.13	$ 86,556.81	$ 95,606.68	$ 116,281.41	$ 138,561.59	$ 162,173.17	$ 175,494.27	$ 144,465.05	$ 155,638.95	$ 158,176.44
Other income (Grant), net	$ -	$ (16,489.39)	$ (16,489.39)	$ (16,489.39)	$ (16,489.39)	$ (16,489.39)	$ (16,489.39)	$ (16,489.39)	$ (16,489.39)	$ -	$ -
Total	**$ (200,215.47)**	**$ 240,023.13**	**$ 299,476.83**	**$ 319,137.75**	**$ 408,663.13**	**$ 439,604.50**	**$ 523,854.32**	**$ 598,051.80**	**$ 659,956.51**	**$ 769,135.46**	**$ 859,774.12**
Cash Flow from Investing											
CAPEX	$ (459,360.00)	$ (58,687.74)	$ (153,518.80)	$ (74,283.47)	$ (172,104.33)	$ (189,285.27)	$ (204,615.42)	$ (118,278.75)	$ (227,496.66)	$ (175,680.12)	$ (194,352.68)
Total	**$ (459,360.00)**	**$ (58,687.74)**	**$ (153,518.80)**	**$ (74,283.47)**	**$ (172,104.33)**	**$ (189,285.27)**	**$ (204,615.42)**	**$ (118,278.75)**	**$ (227,496.66)**	**$ (175,680.12)**	**$ (194,352.68)**
Cash Flow from Financing											
Long Term Debt Increases (Decreases)	$ 263,830.19	$ (18,212.06)	$ (19,669.03)	$ (21,242.55)	$ (22,941.95)	$ (24,777.31)	$ (26,759.50)	$ (28,900.26)	$ (31,212.28)	$ (33,709.26)	$ (36,406.00)
Cash patronage refunds Increase (Decrease)	$ -	$ (135,939.71)	$ (164,873.29)	$ (172,499.30)	$ (221,981.29)	$ (228,205.96)	$ (271,785.81)	$ (315,536.80)	$ (382,327.10)	$ (440,911.25)	$ (504,228.31)
Qualified Patronage Refund											
Qualified Redeemed	$ -	$ -	$ -	$ -	$ -	$ -	$ (38,839.92)	$ (47,106.65)	$ (49,285.51)	$ (63,423.23)	$ (65,201.70)
Non-qualified Patronage Refund	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Non-Qualified Redeemed	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Member Stock	$ 263,830.19	$ 13,191.51	$ 13,851.08	$ 14,543.64	$ 15,270.82	$ 16,034.36	$ 16,836.08	$ 17,677.88	$ 18,561.78	$ 19,489.87	$ 20,464.36
Other direct investment - Grant	$ 131,915.09										
Total	**$ 659,575.47**	**$ (140,960.26)**	**$ (170,691.23)**	**$ (179,198.21)**	**$ (229,652.43)**	**$ (236,948.91)**	**$ (320,549.14)**	**$ (373,865.82)**	**$ (444,263.12)**	**$ (518,553.86)**	**$ (585,371.65)**
Net Change in cash	**$ -**	**$ 40,375.13**	**$ (24,733.20)**	**$ 65,656.07**	**$ 6,906.38**	**$ 13,370.32**	**$ (1,310.24)**	**$ 105,907.23**	**$ (11,803.26)**	**$ 74,901.47**	**$ 80,049.78**
Cash at Beginning of Year	$ -	$ -	$ 40,375.13	$ 15,641.93	$ 81,298.00	$ 88,204.37	$ 101,574.70	$ 100,264.46	$ 206,171.69	$ 194,368.43	$ 269,269.90
Cash at End of Year	**$ -**	**$ 40,375.13**	**$ 15,641.93**	**$ 81,298.00**	**$ 88,204.37**	**$ 101,574.70**	**$ 100,264.46**	**$ 206,171.69**	**$ 194,368.43**	**$ 269,269.90**	**$ 349,319.68**

Expense Analysis

This sheet contains an expense analysis for the cooperative. The expenses are broken down into capital expenses, service costs, management expenses, and legal cost.

Year	0	1	2	3	4	5	6	7	8	9	10
Capital expenses											
Investment of new trucks	$ 375,000	$ -	$ 75,000	$ -	$ 75,000	$ 75,000	$ 75,000	$ -	$ 75,000	$ 75,000	$ 75,000
Reinvestment of new trucks	$ -	$ 46,875	$ 46,875	$ 56,250	$ 56,250	$ 65,625	$ 75,000	$ 84,375	$ 84,375	$ 46,875	$ 56,250
Investment of new trailers	$ 75,000	$ -	$ 15,000	$ -	$ 15,000	$ 15,000	$ 15,000	$ -	$ 15,000	$ 15,000	$ 15,000
Reinvestment of new trailers	$ -	$ 9,375	$ 9,375	$ 11,250	$ 11,250	$ 13,125	$ 15,000	$ 16,875	$ 16,875	$ 9,375	$ 11,250
Paddock fencing	$ 9,360	$ 1,287	$ 1,307	$ 2,499	$ 1,498	$ 2,691	$ 1,693	$ 1,719	$ 2,916	$ 751	$ 1,937
Total Capital Expense	**$ 459,360.00**	**$ 58,687.74**	**$ 153,518.80**	**$ 74,283.47**	**$ 172,104.33**	**$ 189,285.27**	**$ 204,615.42**	**$ 118,278.75**	**$ 227,496.66**	**$ 175,680.12**	**$ 194,352.68**
Contracted Labor (trucks + trailers + drivers)		$ 197,648	$ 201,956	$ 234,998	$ 221,116	$ 252,878	$ 243,303	$ 257,142	$ 293,597	$ 288,464	$ 306,598
Fuel expense - Mobilization		$ 20,400	$ 19,372	$ 22,084	$ 20,986	$ 23,311	$ 25,285	$ 27,085	$ 25,788	$ 27,215	$ 28,505
Fuel expense - Shepherding		$ 4,834	$ 4,834	$ 4,834	$ 5,371	$ 5,371	$ 6,446	$ 6,446	$ 6,446	$ 6,983	$ 6,983
Fuel expense - Fencing		$ 90	$ 90	$ 90	$ 100	$ 100	$ 120	$ 120	$ 120	$ 130	$ 130
Truck, trailer, and ATV maintenance		$ 7,500	$ 9,000	$ 9,000	$ 10,500	$ 12,000	$ 13,500	$ 13,500	$ 15,000	$ 16,500	$ 18,000
Mowing expense -- outsourced landscaping		$ 35,700	$ 37,050	$ 38,783	$ 40,602	$ 42,512	$ 44,517	$ 47,223	$ 49,434	$ 51,756	$ 54,194
Total Service Cost	$ -	$ 266,173	$ 272,302	$ 309,789	$ 298,675	$ 336,172	$ 333,171	$ 351,515	$ 390,385	$ 391,048	$ 414,410
Total Direct Cost	**$ 459,360.00**	**$ 324,860**	**$ 425,821.25**	**$ 384,072.49**	**$ 470,779.40**	**$ 525,456.83**	**$ 537,786.60**	**$ 469,793.73**	**$ 617,881.86**	**$ 566,728.09**	**$ 608,762.38**
Labor											
Administration											
Chief Officers	$ 107,143	$ 109,286	$ 111,471	$ 113,701	$ 115,975	$ 118,294	$ 120,660	$ 123,073	$ 125,535	$ 128,046	$ 130,607
Logistics Supervisors	$ 11,681	$ 12,831	$ 14,028	$ 15,274	$ 15,721	$ 17,922	$ 18,442	$ 18,984	$ 21,391	$ 22,017	$ 23,629
Contract Specialists	$ 41,905	$ 43,277	$ 44,715	$ 51,781	$ 53,473	$ 61,028	$ 63,002	$ 65,068	$ 73,370	$ 75,763	$ 84,654
Member Relations and Marketing	$ 4,610	$ 5,538	$ 6,504	$ 6,674	$ 6,850	$ 7,900	$ 8,107	$ 8,321	$ 9,465	$ 9,714	$ 9,973
Accountant	$ 8,177	$ 8,982	$ 9,820	$ 10,692	$ 11,005	$ 12,545	$ 12,909	$ 13,289	$ 14,973	$ 15,412	$ 16,540
Board Members Retainer	$ 25,000	$ 25,500	$ 26,010	$ 26,530	$ 27,061	$ 27,602	$ 28,154	$ 28,717	$ 29,291	$ 29,877	$ 30,475
Tranportation											
Labor for mobilization		$ 66,447	$ 64,361	$ 73,305	$ 71,053	$ 79,301	$ 86,742	$ 93,925	$ 91,218	$ 97,483	$ 103,524
Labor for paddock fence installation	$ 1,700	$ 1,877	$ 1,958	$ 2,150	$ 2,243	$ 2,452	$ 2,671	$ 2,786	$ 3,025	$ 3,156	$ 3,417
Labor for shepherding (inspecting sheep)		$ 80,149	$ 85,486	$ 90,317	$ 96,949	$ 102,489	$ 111,685	$ 118,745	$ 125,556	$ 134,502	$ 142,298
Mangement Expense	**$ 200,215.47**	**$ 353,887**	**$ 364,353.11**	**$ 390,424.21**	**$ 400,328.98**	**$ 429,533.59**	**$ 452,372.48**	**$ 472,910.58**	**$ 493,825.08**	**$ 515,970.65**	**$ 545,115.65**
Liability Insurance		$ 59,500	$ 62,475	$ 65,599	$ 68,879	$ 72,323	$ 75,939	$ 79,736	$ 83,722	$ 87,909	$ 92,304
Legal Fees		$ 2,000	$ 2,025	$ 2,051	$ 2,329	$ 2,358	$ 2,638	$ 2,670	$ 2,704	$ 2,989	$ 3,026
Total Legal Cost	$ -	**$ 61,500.00**	**$ 64,500.00**	**$ 67,650.00**	**$ 71,207.50**	**$ 74,680.38**	**$ 78,576.89**	**$ 82,405.74**	**$ 86,426.03**	**$ 90,897.33**	**$ 95,329.69**
Total Management & Legal Expense	**$ 200,215.47**	**$ 415,387.33**	**$ 428,853.11**	**$ 458,074.21**	**$ 471,536.48**	**$ 504,213.96**	**$ 530,949.38**	**$ 555,316.32**	**$ 580,251.10**	**$ 606,867.97**	**$ 640,445.34**
Total cost	**$ 659,575.47**	**$ 740,247.76**	**$ 854,674.36**	**$ 842,146.70**	**$ 942,315.88**	**$ 1,029,670.79**	**$ 1,068,735.98**	**$ 1,025,110.05**	**$ 1,198,132.97**	**$ 1,173,596.07**	**$ 1,249,207.72**

Loan

This sheet contains the 10-year details of the initial loan the cooperative will need to take on in year 0.

Total Investment	$ 659,575									
Long Term Interest Rate	8.00%									
Percent Financed	40.00%									
Loan Amount	$263,830									
Loan Term	10									
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
Beginning Balance	$263,830	$245,618	$225,949	$204,707	$181,765	$156,987	$130,228	$101,328	$70,115	$36,406
Interest Rate	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
Interest	$21,106	$19,649	$18,076	$16,377	$14,541	$12,559	$10,418	$8,106	$5,609	$2,912
Annual Payment	$39,318	$39,318	$39,318	$39,318	$39,318	$39,318	$39,318	$39,318	$39,318	$39,318
Principal	$18,212	$19,669	$21,243	$22,942	$24,777	$26,759	$28,900	$31,212	$33,709	$36,406
Ending Balance	$245,618	$225,949	$204,707	$181,765	$156,987	$130,228	$101,328	$70,115	$36,406	$0
Working Capital	$250,000									
Short Term Interest Rate	7%									
Interest Amount	$17,500									
Total Interest Expense	$38,606	$37,149	$35,576	$33,877	$32,041	$30,059	$27,918	$25,606	$23,109	$20,412
Total Debt	$495,618	$475,949	$454,707	$431,765	$406,987	$380,228	$351,328	$320,115	$286,406	$250,000
Total Assets	$649,440	$681,141	$723,370	$767,702	$830,432	$894,526	$935,658	$984,349	$1,055,578	$1,150,520
Debt/Assets	76.3%	69.9%	62.9%	56.2%	49.0%	42.5%	37.5%	32.5%	27.1%	21.7%

Owner's Equity

This sheet calculates the various equities of the cooperative, including qualified and non-qualified stock, preferred stock, and unallocated equity.

Year	0	1	2	3	4	5	6	7	8	9	10
Membership Stock	$ 263,830	$ 277,022	$ 290,873	$ 305,416	$ 320,687	$ 336,722	$ 353,558	$ 371,236	$ 389,797	$ 409,287	$ 429,752
Qualified Stock Issued	$ -	$ 38,840	$ 47,107	$ 49,286	$ 63,423	$ 65,202	$ 77,653	$ 90,153	$ 109,236	$ 125,975	$ 144,065
Qualified Stock Redeemed	$ -	$ -	$ -	$ -	$ -	$ -	$ 38,840	$ 47,107	$ 49,286	$ 63,423	$ 65,202
Qualified Stock Balance	$ -	$ 38,840	$ 85,947	$ 135,232	$ 198,655	$ 263,857	$ 302,670	$ 345,717	$ 405,668	$ 468,219	$ 547,083
Non Qualified Stock Issued	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Non Qualified Stock Redeemed	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Non Qualified Stock Balance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Unallocated Equity	$ (260,135)	$ (245,765)	$ (228,335)	$ (210,100)	$ (186,633)	$ (162,508)	$ (133,777)	$ (100,420)	$ (60,003)	$ (13,392)	$ 39,912
Total Members Equity	$ 3,695	$ 70,097	$ 148,484	$ 230,549	$ 332,710	$ 438,070	$ 522,451	$ 616,532	$ 735,463	$ 864,114	$ 1,016,746
The Calculations Below Are Used to Determine the Equity Revolved Each Year Based on the Inputed Revolving Period											
Qualified Stock Credits Issued		$ 38,840	$ 47,107	$ 49,286	$ 63,423	$ 65,202	$ 77,653	$ 90,153	$ 109,236	$ 125,975	$ 144,065
Qualified Stock Credits Redeemed 1 yr rev			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Qualified Stock Credits Redeemed 2 yr rev				$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Qualified Stock Credits Redeemed 3 yr rev					$ -	$ -	$ -	$ -	$ -	$ -	$ -
Qualified Stock Credits Redeemed 4 yr rev						$ -	$ -	$ -	$ -	$ -	$ -
Qualified Stock Credits Redeemed 5 yr rev							$ 38,840	$ 47,107	$ 49,286	$ 63,423	$ 65,202
Qualified Stock Credits Redeemed 6 yr rev								$ -	$ -	$ -	$ -
Qualified Stock Credits Redeemed 7 yr rev									$ -	$ -	$ -
Qualified Stock Credits Redeemed 8 yr rev										$ -	$ -
Qualified Stock Credits Redeemed 9 yr rev											$ -
Qualified Stock Credits Redeemed 10 yr rev											
Total Qualified Redeemed		$ -	$ -	$ -	$ -	$ -	$ 38,840	$ 47,107	$ 49,286	$ 63,423	$ 65,202
Total Qualified Stock Credits		$ 38,840	$ 85,947	$ 135,232	$ 198,655	$ 263,857	$ 302,670	$ 345,717	$ 405,668	$ 468,219	$ 547,083
Non-Qualified Stock Credits Issued		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Non-Qualified Stock Credits Redeemed 1 yr rev			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Non-Qualified Stock Credits Redeemed 2 yr rev				$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Non-Qualified Stock Credits Redeemed 3 yr rev					$ -	$ -	$ -	$ -	$ -	$ -	$ -
Non-Qualified Stock Credits Redeemed 4 yr rev						$ -	$ -	$ -	$ -	$ -	$ -
Non-Qualified Stock Credits Redeemed 5 yr rev							$ -	$ -	$ -	$ -	$ -
Non-Qualified Stock Credits Redeemed 6 yr rev								$ -	$ -	$ -	$ -
Non-Qualified Stock Credits Redeemed 7 yr rev									$ -	$ -	$ -
Non-Qualified Stock Credits Redeemed 8 yr rev										$ -	$ -
Non-Qualified Stock Credits Redeemed 9 yr rev											$ -
Non-Qualified Stock Credits Redeemed 10 yr rev											
Total Non-Qualified Redeemed		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Non-Qualified Stock Credits		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Depreciation

This sheet shows the depreciation for the cooperatives vehicles and fencing.

Year	0	1	2	3	4	5	6	7	8	9	10
Trucks, Trailers, and ATV	$ 58,750.00	$ 66,031.25	$ 85,062.50	$ 93,800.00	$ 114,287.50	$ 136,231.25	$ 159,631.25	$ 172,737.50	$ 141,343.75	$ 153,593.75	$ 156,050.00
Fencing	$ 1,170.00	$ 1,330.88	$ 1,494.31	$ 1,806.68	$ 1,993.91	$ 2,330.34	$ 2,541.92	$ 2,756.77	$ 3,121.30	$ 2,045.20	$ 2,126.44
Total Depreciation	**$ 59,920.00**	**$ 67,362.13**	**$ 86,556.81**	**$ 95,606.68**	**$ 116,281.41**	**$ 138,561.59**	**$ 162,173.17**	**$ 175,494.27**	**$ 144,465.05**	**$ 155,638.95**	**$ 158,176.44**

Mobilization

This sheet estimates the number and costs of the vehicles the cooperative will need over the initial 10-years.

Sheep	# Sheep	# Sheep farms	# Small farms	# Medium farms	# Large farms	# Extra Large farms
Year 0	3,570	6	4	1	1	0

Pro Forma capital investments and outsourcing hauling projection

Year	0	1	2	3	4	5	6	7	8	9	10
Trucks/Trailers needed for mobilization	3	4	4	5	5	6	7	7	8	9	10
Outsourced (driver + truck + trailer combo):	2	2	2	3	3	4	4	4	5	5	6
Owned:	5	5	6	6	7	8	9	9	10	11	12
Trucks/Trailers for Cooperative to Own (for Shepherding)											
Trucks/Trailers needed for shepherding	5	5	6	6	7	8	9	9	10	11	12

Option 3: Purchase trailers & trucks (Year 0 baseline)

Capital expense	**Price (new)**	
Half Ton Truck (medium)	$ 75,000.00	
		Trailer Sheep
Medium-Sized Sheep/Livestock Trailer	$ 15,000.00	**Capacity:** 25
ATV	$ 5,000.00	

ADDITIONAL VEHICLES/LABOR FOR MOBILIZATION SEASON - TO OUTSOURCE

		Trailer Sheep
Per Mile Cost of contracted driver (driver + 1 ton truck + large trailer)	$ 4.50	**Capacity:** 75

Useful life of truck	8 years
Useful life of ATV	10 years
Useful life of trailer	8 years

Quantities needed to Own

Trucks											
Total Half-Ton Trucks Owned	5	5	6	6	7	8	9	9	10	11	12
ATVs											
ATVs owned	5	5	6	6	7	8	9	9	10	11	12
Trailers											
Total Trailers (medium) Owned	5	5	6	6	7	8	9	9	10	11	12

Investment costs (per year)

Trucks	$ 375,000	$ -	$ 75,000	$ -	$ 75,000	$ 75,000	$ 75,000	$ -	$ 75,000	$ 75,000	$ 75,000
Reinvestment based on useful years		$ 46,875.00	$ 46,875.00	$ 56,250.00	$ 56,250.00	$ 65,625.00	$ 75,000.00	$ 84,375.00	$ 84,375.00	$ 46,875.00	$ 56,250.00
ATVs	$ 25,000	$ -	$ 5,000.00	$ -	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ -	$ 5,000.00	$ 5,000.00	$ 5,000.00
Reinvestment based on useful years		$ 2,500.00	$ 2,500.00	$ 3,000.00	$ 3,000.00	$ 3,500.00	$ 4,000.00	$ 4,500.00	$ 4,500.00	$ 5,000.00	$ 5,500.00
Trailers	$ 75,000	$ -	$ 15,000	$ -	$ 15,000	$ 15,000	$ 15,000	$ -	$ 15,000	$ 15,000	$ 15,000
Reinvestment based on useful years		$ 9,375.00	$ 9,375.00	$ 11,250.00	$ 11,250.00	$ 13,125.00	$ 15,000.00	$ 16,875.00	$ 16,875.00	$ 9,375.00	$ 11,250.00
Total new trucks, trailers, and ATVs	**$ 475,000**	**$ 58,750**	**$ 153,750**	**$ 70,500**	**$ 165,500**	**$ 177,250**	**$ 189,000**	**$ 105,750**	**$ 200,750**	**$ 156,250**	**$ 168,000**

Maintenance (oil changes, routine inspections, tires, etc.)

Trucks	$ 5,000.00	$ 5,000.00	$ 6,000.00	$ 6,000.00	$ 7,000.00	$ 8,000.00	$ 9,000.00	$ 9,000.00	$ 10,000.00	$ 11,000.00	$ 12,000.00
Maintenance cost per truck, per year	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00
ATV	$ 1,000.00	$ 1,000.00	$ 1,200.00	$ 1,200.00	$ 1,400.00	$ 1,600.00	$ 1,800.00	$ 1,800.00	$ 2,000.00	$ 2,200.00	$ 2,400.00
Maintenance cost per ATV, per year	$ 200.00	$ 200.00	$ 200.00	$ 200.00	$ 200.00	$ 200.00	$ 200.00	$ 200.00	$ 200.00	$ 200.00	$ 200.00
Trailers	$ 2,500.00	$ 2,500.00	$ 3,000.00	$ 3,000.00	$ 3,500.00	$ 4,000.00	$ 4,500.00	$ 4,500.00	$ 5,000.00	$ 5,500.00	$ 6,000.00
Maintenance cost per trailer, per year	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00
Total	**$ 7,500.00**	**$ 7,500.00**	**$ 9,000.00**	**$ 9,000.00**	**$ 10,500.00**	**$ 12,000.00**	**$ 13,500.00**	**$ 13,500.00**	**$ 15,000.00**	**$ 16,500.00**	**$ 18,000.00**

Driver labor cost

Shepherds Needed	5.0	5.0	6.0	6.0	7.0	8.0	9.0	9.0	10.0	11.0	12.0
Seasonal Mobilization Drivers Needed	1.8	2.3	2.4	3.0	3.0	3.6	3.6	4.0	4.8	4.9	5.5
Shepherding Labor Cost	$ 80,149.39	$ 85,486.12	$ 90,317.21	$ 96,949.33	$ 102,489.06	$ 111,684.59	$ 118,745.49	$ 125,556.40	$ 134,501.68	$ 142,297.96	$ 152,402.17
Mobilization Labor Cost (employees)	66,447.2	64,361.0	73,305.0	71,052.6	79,300.9	86,742.3	93,925.5	91,217.9	97,483.4	103,524.4	109,024.2
Total	**$ 146,596.56**	**$ 149,847.09**	**$ 163,622.26**	**$ 168,001.90**	**$ 181,790.00**	**$ 198,426.88**	**$ 212,670.99**	**$ 216,774.32**	**$ 231,985.13**	**$ 245,822.39**	**$ 261,426.37**

Depreciation expense	*Assumes straight-line depreciation method*										
Trucks	$ 46,875.00	$ 52,734.38	$ 67,968.75	$ 75,000.00	$ 91,406.25	$ 108,984.38	$ 127,734.38	$ 138,281.25	$ 111,328.13	$ 120,703.13	$ 121,875.00
	$ 2,500.00	$ 2,750.00	$ 3,500.00	$ 3,800.00	$ 4,600.00	$ 5,450.00	$ 6,350.00	$ 6,800.00	$ 7,750.00	$ 8,750.00	$ 9,800.00
Trailers	$ 9,375.00	$ 10,546.88	$ 13,593.75	$ 15,000.00	$ 18,281.25	$ 21,796.88	$ 25,546.88	$ 27,656.25	$ 22,265.63	$ 24,140.63	$ 24,375.00
Total	**$ 58,750.00**	**$ 66,031.25**	**$ 85,062.50**	**$ 93,800.00**	**$ 114,287.50**	**$ 136,231.25**	**$ 159,631.25**	**$ 172,737.50**	**$ 141,343.75**	**$ 153,593.75**	**$ 156,050.00**

Gas expense

Gas expense shepherding	$ 4,834.29	$ 4,834.29	$ 4,834.29	$ 5,371.43	$ 5,371.43	$ 6,445.71	$ 6,445.71	$ 6,445.71	$ 6,982.86	$ 6,982.86	
Gas expense mobilization (cooperative owned assets)	$ 20,400.45	$ 19,372.50	$ 22,084.01	$ 20,985.71	$ 23,310.58	$ 25,285.34	$ 27,084.53	$ 25,788.01	$ 27,215.34	$ 28,504.68	
Total Gas Expense	$ 25,234.73	$ 24,206.78	$ 26,918.30	$ 26,357.14	$ 28,682.00	$ 31,731.06	$ 33,530.24	$ 32,233.72	$ 34,198.20	$ 35,487.54	

It is the policy of Cornell University actively to support equality of educational and employment opportunity. No person shall be denied admission to any educational program or activity or be denied employment on the basis of any legally prohibited discrimination involving, but not limited to, such factors as race, color, creed, religion, national or ethnic origin, sex, age or handicap. The University is committed to the maintenance of affirmative action programs, which will assure the continuation of such equality of opportunity.