Assessing Technology
Viability, Value, Budgets, and More

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Presentation Plan

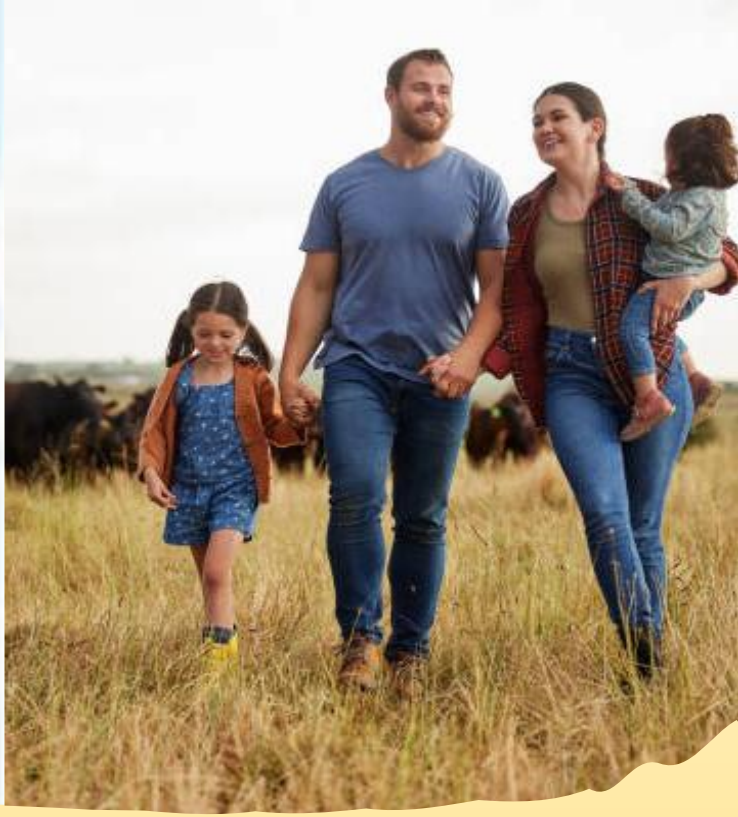
1. Context: Long-Term Economic Viability

2. Technology Evaluation Methods
   - Partial Budget (Is it Profitable)?
   - Capital Budget (Time Value of Money)
   - Cash Flow Budget (Plan for Success – Work Your Plan)

3. Preparedness

4. Preparing for the Lender





Long-Term Economic Viability for the Current and Successor Generation

Definition of Long-Term Economic Viability

Continuous capacity of farm revenues to cover financial goals for the present generation under changing economic conditions, without compromising the financial ability of future generations.

In practice: Total Revenues Cover:

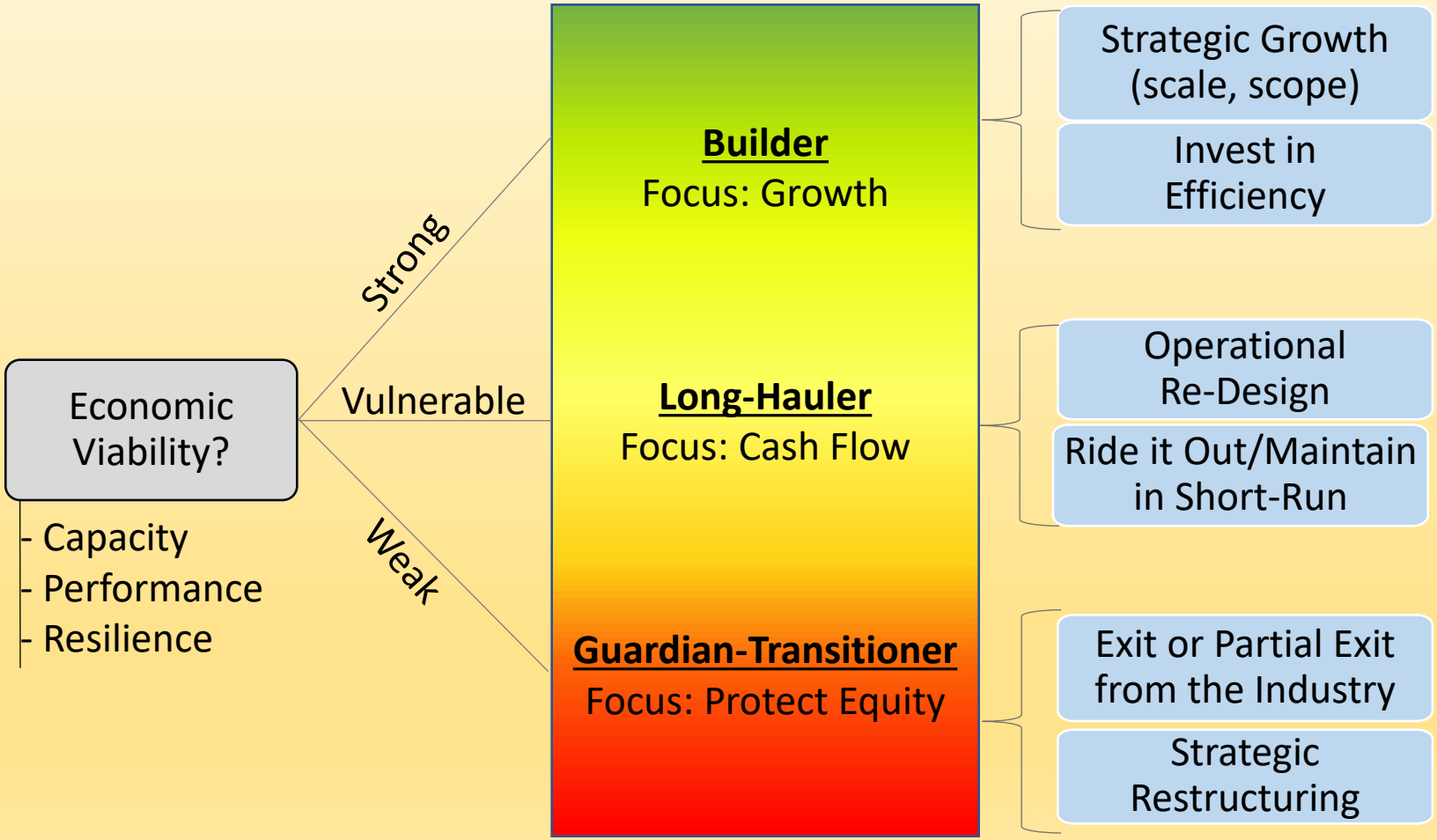
1. *operating costs, interest, and income taxes,*
2. *return to owner labor equivalent to its opportunity cost,*
3. *return to management equivalent to its opportunity cost,*
4. *asset recapitalization of the farm business, and*
5. *return to equity capital equivalent to its opportunity cost.*

How to Measure Economic Viability

Strength of LT Economic Viability:	Strong *"Builder"*	Vulnerable *"Long-Hauler"*	Weak *"Guardian-Transitioner"*
Total Farm Revenues Coverage of:			
1 Operating costs[1], interest, & taxes			
2 Return to Owner Labor[2]			
3 Return to Owner Management[2]			
4 Owner's Share of Asset Recapitalization[3]			
5 Return to Equity Capital[4]			

1. Operating costs not including payments to owners.
2. Returns to owner labor and management are opportunity costs. "Labor" is the manual work provided by owners and "management" is the planning, organizing, and decision-making provided by owners. The two are often aggregated together.
3. Owner's Share of Asset Recapitalization is investment needed to maintain and modernize capital assets of the business. An estimate is [(depreciation x 1.10) x .25]. This assumes some inflation and owner's paying 25% of purchase price.
4. Return to equity capital is the opportunity cost of interest that could have been earned on dollars invested in farm capital assets (machinery, buildings, breeding livestock, and land) if they had been invested in a similar risk non-farm alternative.

Economic Viability & Strategy



Percent of Farms Meeting the Goal

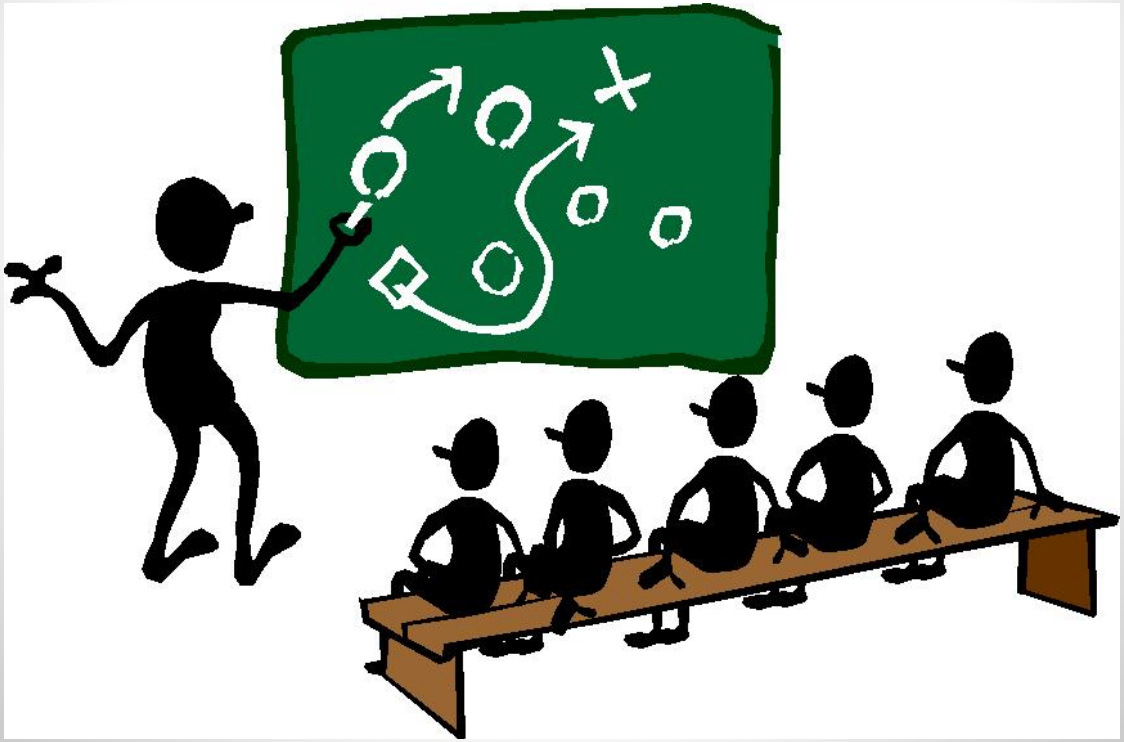
	High Third ROA Group *(Builder)*	Middle Third ROA Group *(Long-Hauler)*	Low Third ROA Group *(Guardian Transitioner*	
Number of Farms	58	60	56	
Operating, Interest, Taxes	90%	88%	71%	
Return to Labor	85%	72%	38%	
Return to Management	77%	56%	26%	
Asset Recapitalization	69%	48%	19%	
Return to Equity	44%	15%	5%	

Budgeting



Budgeting Is a Map of Success

Practical implementation of strategic and operational goals



A Few Truisms About Budgeting

- Budgeting forces the planning function of management
- There has never been a budget that was right!
- Budgets are based on the unknown and thus involves estimating, forecasting, guessing
- As a budget part becomes known, it becomes fact
- Budgeting with sensitivity analysis shows where the risks are at

Types of Budgeting

- Partial Budgeting
- Capital Budgeting
- CapEx Budgeting
- Cash Flow Budgeting
- Enterprise Budgeting



Partial Budgeting



What is a Partial Budget

- A means to evaluate the expected impact on profit from relatively singular changes (partial changes) in an operation including:
  - Changes in input mix (amount, type, quality, etc.)
    - That get more output
    - Same output, but at a less cost for inputs
    - New technology
    - Own versus lease
  - Changes in production mix
  - Changes in size of enterprises
  - Technology purchase
  - And much more

Why a Partial Budget

- Like other types of budgeting, it forces the planning function of management. And:
  - It is fairly easy and straight forward to do!
  - Yet it provides a process for thinking through the financial implication of operational changes

Process: Ask Four Questions

- **<u>What increases in profits will result from:</u>**
    1. Additional revenues
    2. Eliminated or reduced costs

- **<u>What decreases in profits will result from:</u>**
    3. Eliminated or reduced revenues
    4. Additional costs

Let's Get Dirty
Partial Budgeting



UW-Madison Division of Extension Farm Management:
- https://farms.extension.wisc.edu/articles/partial-budgeting/

Partial Budget Case Study

- Change: Purchase a drone versus hiring aerial application of fungicide/insecticide plus an additional late season micro-nutrient pass
  - 800 acres of corn Corn price: $4.50/bu
  - Yield increase of 1.5 bu/acre
  - Eliminate custom hire fee ($15.00 per acre)

  - Five acres lost production at 200 bu/acre
  - Acquisition cost: $30,000, 5-year useful life, $3,000 salvage value, and 5% *i*-rate
  - Operating costs per application: $3.00/acre
  - Labor costs: $2.50 per acre per application

To the Spreadsheet!

Sensitivity Analysis: Where's The Risk

- Base Scenario Net Benefit: **-$2,125**

What Happens If …		
Corn prices ($4.50/bu)	$5.50/bushel	
	$6.00/bushel	
Additional production:	2.0 bushels/acre	
	2.5 bushels/acre	
	3.0 bushels/acre	
Number of acres (800):	1,200 acres	
	1,600 acres	

Considerations?

- Accuracy of estimates?
- Where's the risk and can it be mitigated?
- Other alternatives
  - Spot applications
  - Custom services
- Impact on other operations
  - Your labor lost to other parts of the operation?
  - Or excess labor that can be devoted to the drones?
- Other
  - Work-Life balance
  - Health

Chalkboard Time



Capital Assets Are Expensive

Top 5 Dairy non-feed expenses, average of 2021-2025			
	Per CWT (Rank)	Per Cow (Rank)	Percent of Non-Feed Cost
Labor	2.09 (1)	540 (1)	24%
Repairs	0.82 (2)	212 (2)	9%
Depreciation	0.81 (3)	209 (3)	9%
Supplies	0.63 (4)	164 (4)	7%
Interest	0.45 (5)	117 (5)	5%
Total Non-Feed Costs	8.73	2,258	
Depreciation + ½ Repairs + ½ Interest	1.44	373	17%

Source: FINBIN (2026). Center for Farm Financial Management: University of Minnesota. Retrieved from http://finbin.umn.edu (originally created June 26,2026.

Capital Assets Are Expensive

Top 5 Crop expenses, average of 2021-2025			
	Per Bushel	Per Acre	Percent of Total
Rent	1.10	215	26%
Fertilizer	.91	178	21%
Machinery costs	.90	176	21%
Seed	.61	119	14%
Interest	.52	102	12%
Source: FINBIN (2026). Center for Farm Financial Management: University of Minnesota. Retrieved from http://finbin.umn.edu (originally created Nov 1, 2026.			

Capital Assets Are Expensive And …

- Multiple years to pay back
- Profits in future years, but investment outlay is today
- Interest costs
- Goals:
  1. Returns > Cost of Capital
  2. Self-Liquidating repayment

- Most important, I must wait to get my profits and time is a cost!

Time Value of Money

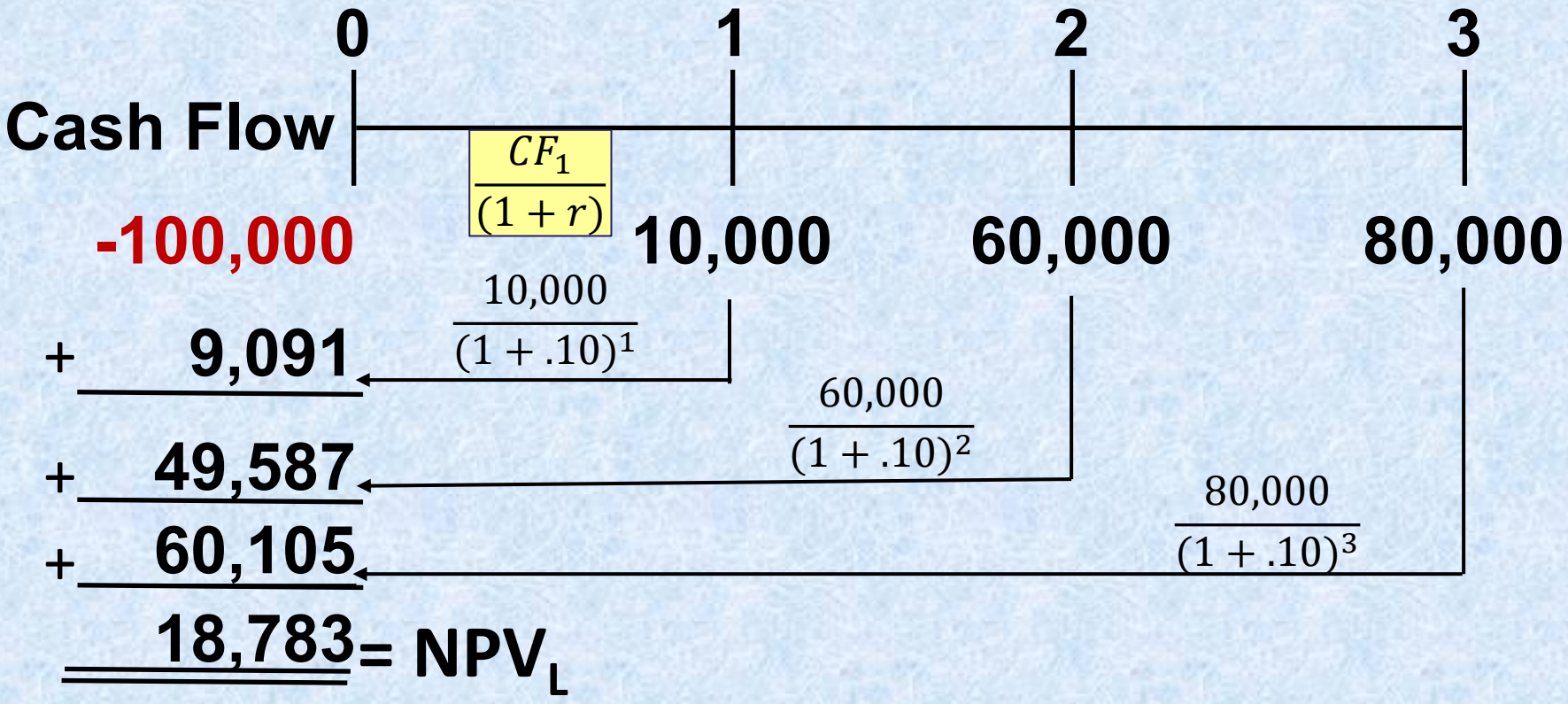
Capital Budgeting Includes the Time Value of Money

- Payback Method
- Net Present Value (NPV)
- Internal Rate of Return (IRR)
- Modified Internal Rate of Return (MIRR)

Take into account the time value of money

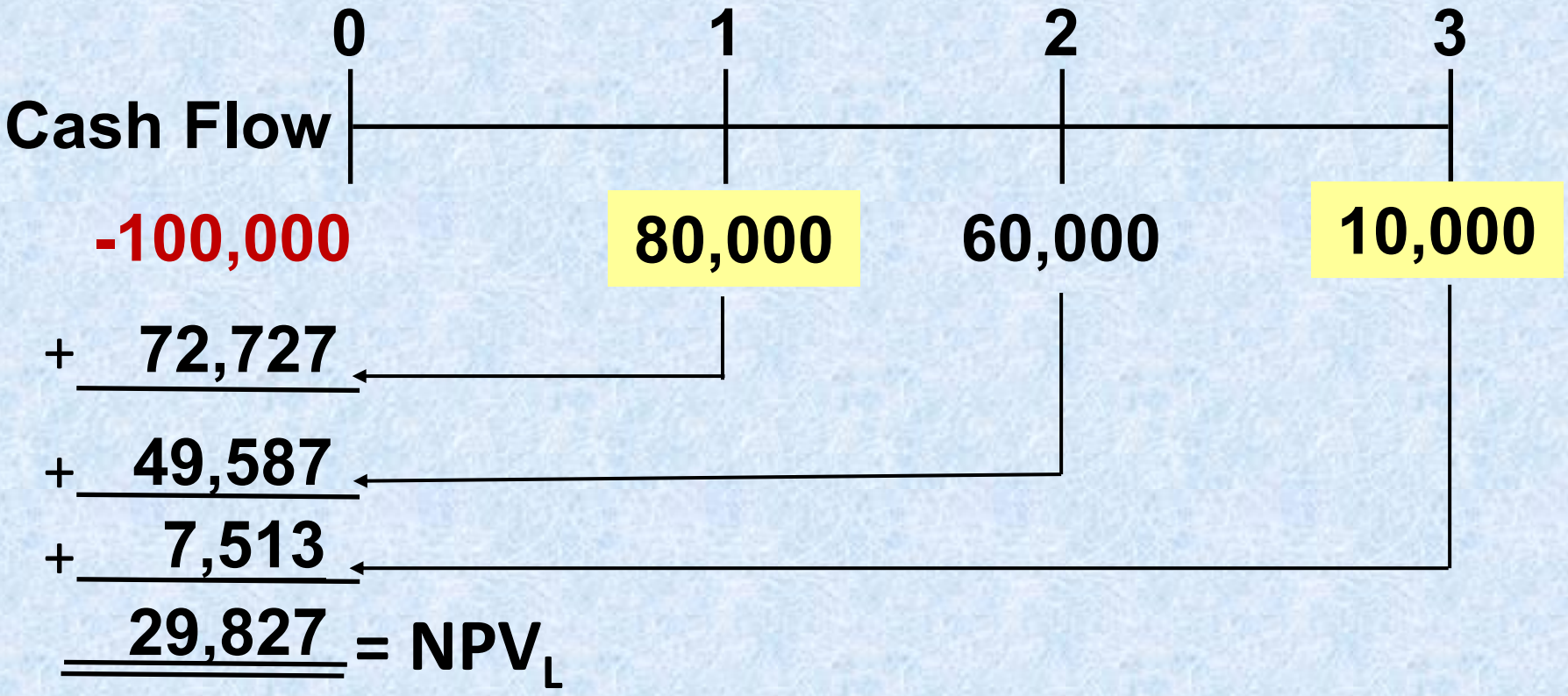
What is the Net Present Value?

***Discount Rate (r)* =10%**



What is the Net Present Value?

***Discount Rate (r)* =10%**



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Case Study Problem: 2 AMS milkers for a 120-Cow Dairy

- AMS units: $400,000
- Barn retrofit: $50,000
- System setup: $25,000

TOTAL: $475,000

- Capital improvement in year 5: $30,000
- Salvage value: $80,000

- Milk sales increase: $39,420
  - Range: $26,280 - $56,560 (at $20/cwt milk price)
- Labor savings: $34,675
  - Range: $18,250 - $51,100

- Additional feed costs: $6,570
- Additional utilities: $2,000
- Repairs
  - Years 1-3: $16,500 (10K-23K)
  - Years 4-7: $21,000 (14K-28K)
  - Years 8-10: $25,500 (18K-33K)

To the Spreadsheet!

Chalkboard Time



UW-Madison Division of Extension, Farm Management:
https://farms.extension.wisc.edu/articles/cash-flow-budgeting/

What is Cash Flow Budgeting

- Summary of projected/planned inflows and outflows of cash
  - Key word is “cash”
    - If cash is not exchanging hands, it does not go on the cash flow budget



Cash Flow Budget - Two Kinds

1. Year by Year impact of an investment
    i. See the Capital Budget

2. Monthly whole farm cash flow budget
    - Planning cash availability across the year
        - Debt service
        - Capital asset replacement/modernization
        - Budgeting strategic and operational needs

Why Cash Flow Budgeting

1. Forces the planning function of management. Have to know:
   - input amounts and prices
   - labor needs
   - expected production and prices
   - capital investment plans
   - borrowing needs
   - debt repayment
   - investment plans



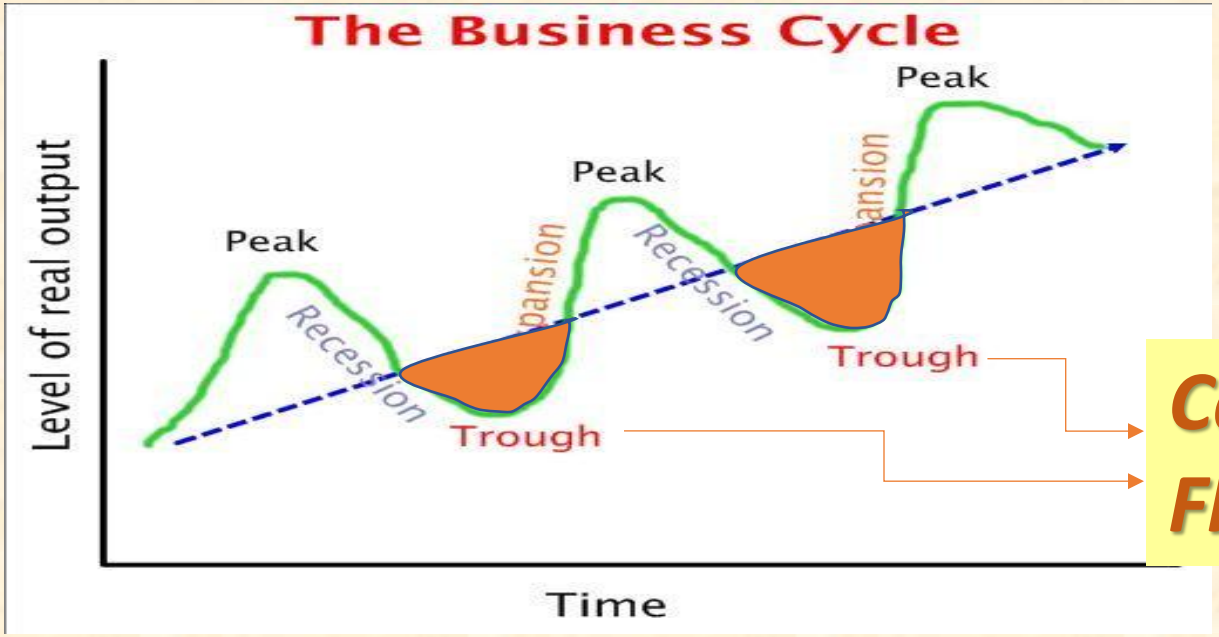
Why Cash Flow Budgeting

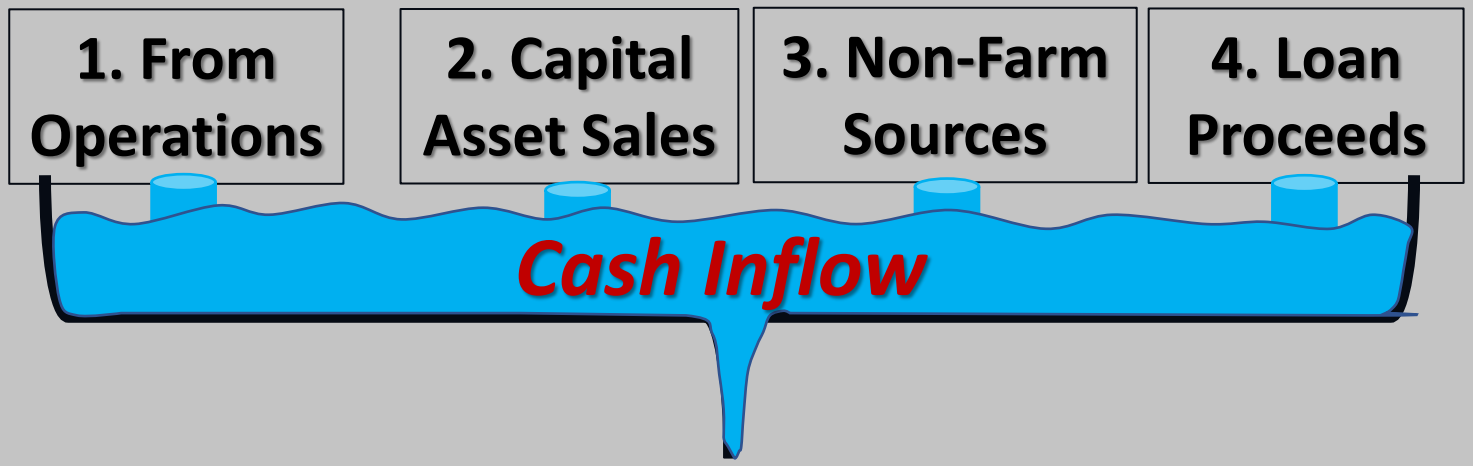
2. Communication/planning with your lender
   - Setting up lines of credit
   - Capital investments
   - Reduce surprises



Why a Cash Flow Budget

3. During poor profitability times, Cash Flow is King!
   - Cash flow gets the business to the other side of the profitability crisis




1. From Operations
2. Capital Asset Sales
3. Non-Farm Sources
4. Loan Proceeds
Cash Inflow

Cash Flow Structure

+ (1) Cash Inflow from operations
+ (2) Capital asset sales
+ (3) Non-farm sources
– (5) Cash Outflow from operations
– (6) Capital asset purchases
– (7) Non-farm outflows
– (8) Scheduled debt payments
+ (4) New Borrowing

= Final Net Cash Flow

Cash Flow Budget Example

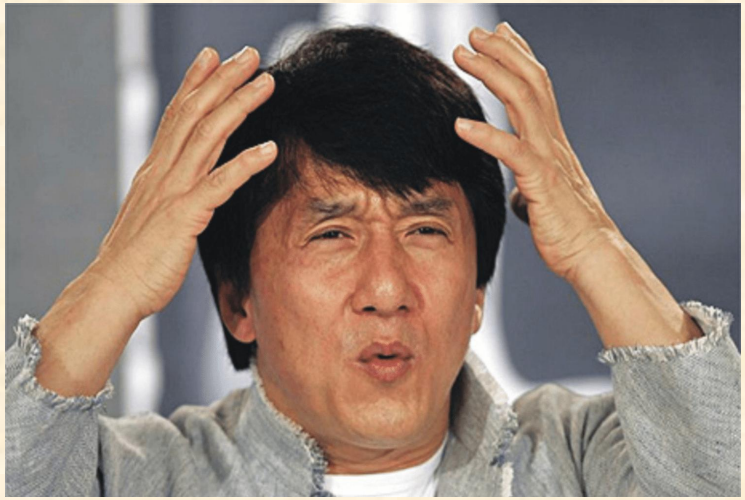
	Jan	Feb

I'm Showing Negative Cash Flow! Now What???



Major Fact About Cash Flow

Cash Flow Can NEVER Be Negative



Cash Flow Budget Example

	Jan	Feb
Operations	215,000	
Capital Asset Sales	40,000	
Non-Farm Sources	2,000	
Operations	220,000	
Capital Asset Purchases	65,000	
Non-Farm Expenses	6,000	
Debt Service	18,000	
CASH FLOW BEFORE BORROWING	**-52,000**	

How To Increase Cash Flow

Increase inflows, decrease outflows:

+ 1. Cash Inflow from operations
+ 2. Capital asset sales
+ 3. Non-farm sources
– 5. Cash Outflow from operations
– 6. Capital asset purchases
– 7. Non-farm outflows
– 8. Scheduled debt payments
+ 4. New Borrowing
= Final Cash Flow

How to Increase Cash Flow

1. Double check for accuracy (sales, loan proceeds, capital asset sales, etc.)

2. Can any inflow or outflow items be moved to a different time period that helps cover short-term shortages
3. Are there other sources of cash inflow
4. Can any cash outflows be eliminated or delayed

5. NEW BORROWING

How to Increase Cash Flow

+ Increase Cash Inflow from operations

- Greater production efficiency
- Better price/marketing
- Sell inventory
- Benefit/cost of culling decisions
- Custom work
- Contract production
- Feed out some steers
- Sell embryos (add an enterprise)

How to Increase Cash Flow

+ **2. Capital asset sales (tractors, land, cows)**

- Sell capital assets particularly under-performing ones
  - Creates new cash flow
  - Lose future potential income from use of that asset
  - Tax consequences
- Outsource activities and sell associated assets
  - Sell combine and custom-hire combining
- Sell low profitability enterprises
  - Do you have non-productive or under-performing assets/activities/enterprises that are not pulling their weight
  - Tax consequences

How to Increase Cash Flow

+ 3. Increase income from non-farm sources

- Off-farm income
- Sale of non-farm assets
- New/Additional family contribution
- Investor partner
- Agritourism, hunting fees, horse boarding, storage for boats and campers

How to Increase Cash Flow

- **5. Reduce Cash Outflow from operations**
  - Reduce variable costs (feed, seed, fertilizer, custom hire, etc.)
    - Negotiate a lower price
    - Cheaper ration ingredients
    - Better feed management
    - Variable rate application
  - Reduce Labor costs (or get more out of your labor)
  - Reduce Land costs
    - Negotiate contracts
  - Collaboration (bulk buying, shared field work, manure fertilizer, shared machinery, etc.)

How to Increase Cash Flow

- **6. Delay/Reduce capital asset purchases**
  - Cost-benefit via repairs
  - Short-term custom hire
  - Lease
  - Collaborative swop (machinery, labor, combination)
  - Negotiation

How to Increase Cash Flow

- **7. Reduce non-farm outflows**
  - Family living withdrawal
  - Any “Family bonuses” not related to farm operations
    - Entertainment
    - Repairs to non-farm assets
    - Insurance
    - Christmas bonus
    - Room and Board
    - Tractor pulling expenses

How to Increase Cash Flow

- **8. Reduce scheduled debt payments**
  - Re-structure and lengthen amortization
  - Interest only payments
  - Debt consolidation
    - Be wary of mixing debt purpose
  - Negotiate
    - Lower interest rate
    - Principal write-off
    - Longer amortization

"Negotiate" means both parties get something for their troubles!!
- Additional collateral
- Marketing plan
- Risk Mgt plan
- Co-signor

How to Increase Cash Flow

\+ **4. New Borrowing**

- Re-structure and borrow additional against equity
- New/Additional operating line of credit

Time Permitting, Review the Cash Flow Spreadsheet

Capital Expenditure Budget

- Planning:
  - Capital asset purchases
  - Capital asset sales
  - Loan levels
  - Downpayment levels

To the Spreadsheet!







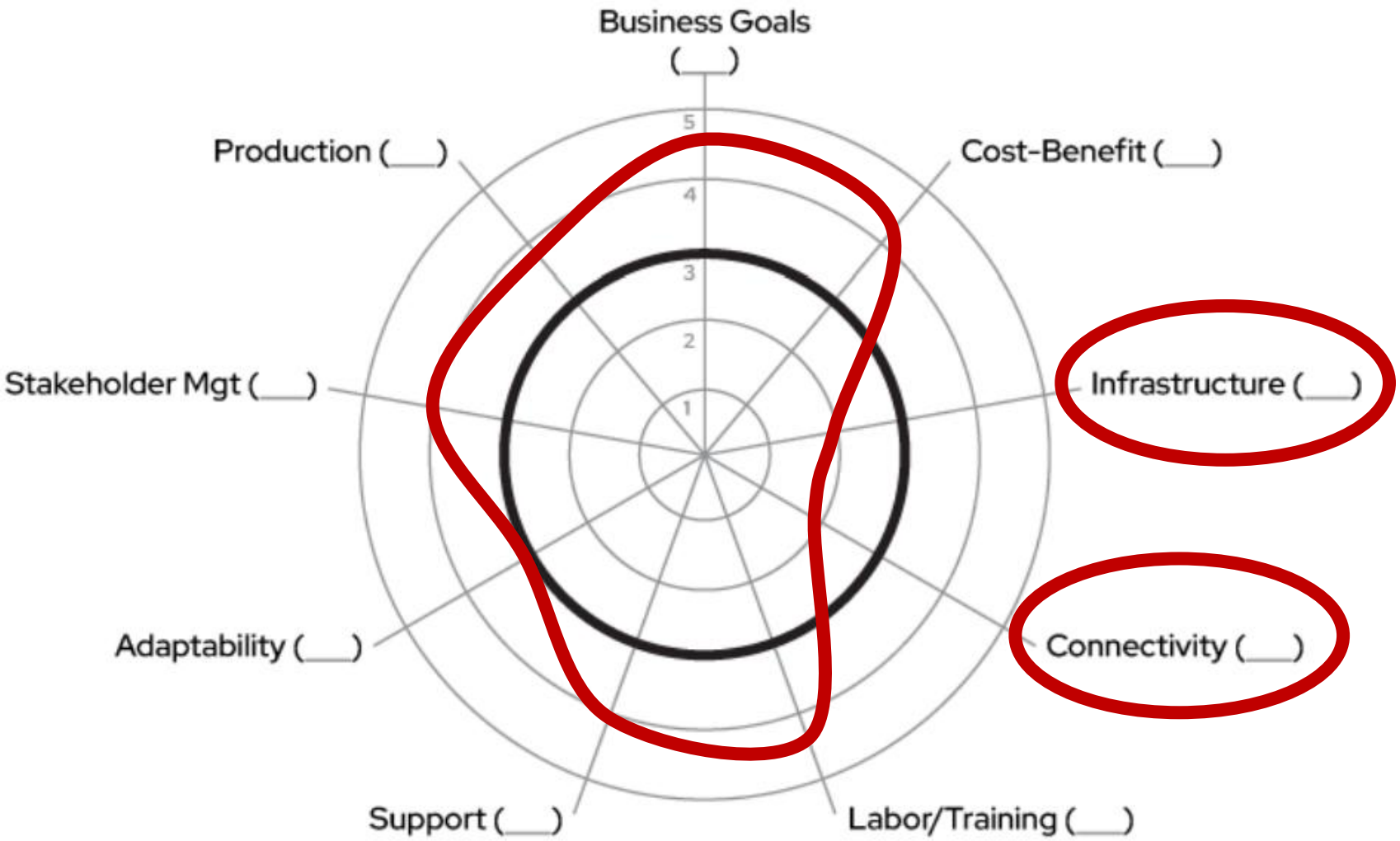
2027	2028	2029	2030	2031

Ag Technology – Are Your Ready

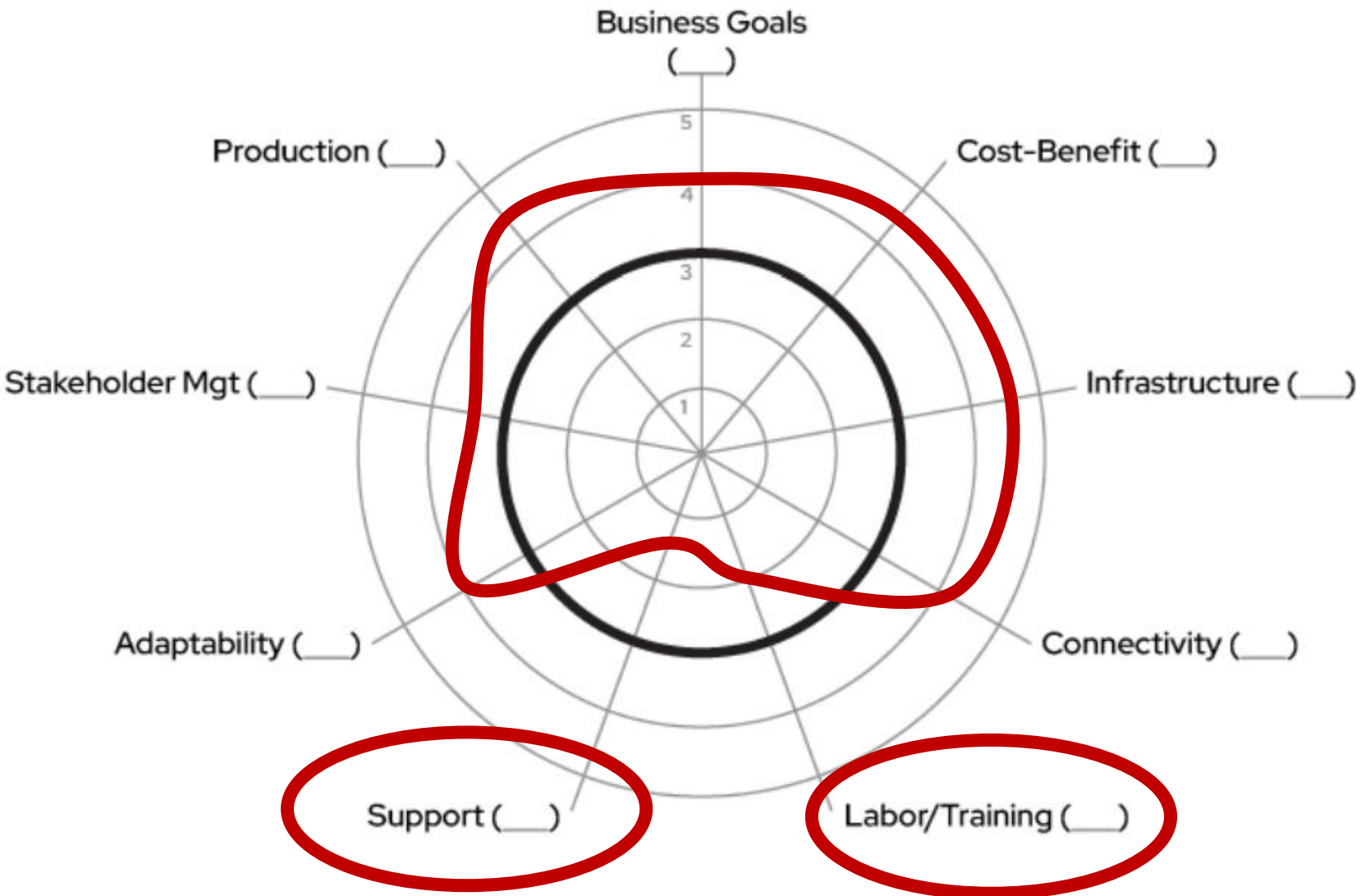
- Are you ready to invest?
- Is it the right investment for your operation

- Agriculture Technology Readiness
  - https://farms.extension.wisc.edu/articles/adopting-new-technology-start-with-the-right-questions/
- Farm Technology Readiness App
  - https://farms.extension.wisc.edu/articles/farm-tech-ready-app/

Readiness Wheel



Readiness Wheel



Preparing for the Lender



Preparing for the Lender

- Normal stuff
  - Balance Sheet, tax returns, accrual income statement, CF
- In addition:
  - Physical infrastructure: retrofitting, transportation, ventilation/humidity, etc.
  - Electronic: charging stations, connectivity, high speed networks, compatibility
  - Support: repairs, parts, software patches/fixes
  - Risk: data security, obsolescence,
  - Manager cranium
  - Legal: licensing, permits, contracts, insurance
  - Stranded Asset Trap
  - New labor alignment


That's all Folks!