



# Investment analysis for additional grain storage

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**C**arries have been good for several years and many elevator managers are thinking about adding space. The first step is to determine the maximum cost you can incur and stay within your financial parameters. That budget is the basis for the design and build decisions that will follow. The following is an algorithm for setting the budget for a bin project.

1. Evaluate long-term prospects for

the facility.

2. Decide on your minimum rate of return.

3. Estimate future cash flows.

4. Calculate the budget.

## Facility prospects

Improvements and additions usually don't raise the market value of a facility nearly enough to cover their cost. If there's a good chance that your facility will be coming on the market within a few years, adding space probably isn't a good idea. Assuming

that isn't the case, what will the future business environment be like? Probably the most costly misjudgment made in evaluating capital investments is assuming that recent favorable business conditions will continue for years out into the future. For perspective, look five to 10 years back. Be especially careful about extrapolating recent rapid growth out into the future. Few businesses grow fast for a long period in a mature industry such as ours. Think about the big picture as well as your particular location. The biggest macro question at present is whether the government will continue to provide huge production subsidies.

### Minimum rate-of-return

What is the minimum acceptable rate-of-return for this project? There is no one correct answer. It's a judgment call depending on individual situations and tolerance for risk. Large corporations won't make capital investments unless they are expected to yield at least 15% to 20% (before taxes). Grain storage space has a fairly high level of risk. Bins are single purpose. If the business environment changes and they aren't generating revenues, it's difficult to bail out and cut your losses. Inflation is a factor to consider when evaluating long-lived assets. There's little reason to think that bins will be a long-term hedge against inflation. This argues for a slightly higher minimum rate of return than you'd accept on assets with shorter economic lives.

Think in terms of rate-of-return on total invested capital, not return on equity capital invested in this particular asset. Return on equity can be more a function of leverage than asset performance. Use of leverage should be considered within the context of the entire balance sheet, not individual assets.

Along with setting a minimum rate of return, you need to decide on an economic life and residual value. Assuming a long economic life for storage facilities is usually justified. One advantage of a long economic life is that a few years more or less don't change the outcome much. And the value at the end, which is a difficult estimate to make, doesn't affect the outcome nearly as much as with a shorter life.

### Future cash flows

Additional space must be justified by expected future cash flows. They generally fall into six categories:

1. Storage fees for holding customer-owned grain.
2. Market carries for holding company-owned grain.
3. Handling margins, drying, mix and blend profits and other income from increased receipts.
4. Reduced labor overtime and other costs due to reducing shipments during harvest.
5. Maintenance and repairs (negative cash flow).
6. Tax benefits.

Not all cash flows can be estimated as a steady stream of averages. Some, such as tax benefits, may only occur early in the economic life. Others, such as

<i>Graph #1: Example of Discounted Cash Flow Analysis</i>	
<b>Additional space being considered</b>	<b>300M Bu.</b>
<b>Minimum rate-of-return</b>	<b>15%</b>
<b>Expected life</b>	<b>15 years</b>
<b>Residual value</b>	<b>\$60,000</b>
<b>Expected storage fee income</b>	<b>0</b>
<b>Expected net cash carry</b>	<b>\$48,000/yr. (16¢/bu.)</b>
<b>Expected extra handle attributable to space</b>	<b>100,000 Bu./yr.</b>
<b>Expected cash flow on extra bushels</b>	<b>\$8,000 Bu./yr. (8¢/bu.)</b>
<b>Expected average labor savings</b>	<b>\$5,000/yr.</b>
<b>Rough estimate of initial cost</b>	<b>\$400,000</b>
<b>Depreciation schedule</b>	<b>\$66,000/yr. for 6 years</b>
<b>Average marginal tax rate</b>	<b>35%</b>
<b>Cash flow from depreciation</b>	<b>\$23,000/yr. for 6 years</b>
<b>Anticipated maintenance</b>	<b>\$5,000/yr. beginning year 6 plus \$30,000 rehab in year 12</b>

**Graph #2: Schedule of Cash Flows (in 000):**

Year	Grain	Tax Benefits	Cost Savings	Expenses	Residual Value	Totals
1	56	23	5	0	0	84
2	56	23	5	0	0	84
3	56	23	5	0	0	84
4	56	23	5	0	0	84
5	56	23	5	0	0	84
6	56	23	5	-5	0	79
7	56	0	5	-5	0	56
8	56	0	5	-5	0	56
9	56	0	5	-5	0	56
10	56	0	5	-5	0	56
11	56	0	5	-5	0	56
12	56	0	5	-35	0	26
13	56	0	5	-5	0	56
14	56	0	5	-5	0	56
15	56	0	5	-5	60	116

major maintenance costs may occur later.

With marketing loan-based farm policy, storage fees are not nearly as important as they used to be. Few elevators can figure on getting additional storage income from more space. For most facilities, earning carries by holding company-owned grain is the major source of income attributable to additional space. Historical carries (net of interest) are usually the starting point for estimating future carries. You need records of local basis levels at which grain could have been sold, futures carries and interest costs. Don't use "best case" scenarios. Nobody buys the lows and sells the highs regularly. It may even be overly optimistic to use the historical carries you've actually been able to capture with your existing space. To the extent you've been successful in using existing space to capture the best carries, they might not be

available for additional space. For example, harvest basis lows don't last long anymore. Your receiving capacity may force you to buy some "new space" bushels before or after "gut slot" basis depressions. Shipping limitations might force you to begin shipping "new space" bushels sooner giving up some carry off the back end.

When calculating carries, you should always compare "sales" basis available during ownership accumulation with sales basis during liquidation. If you compare accumulation "buy" basis with liquidation "sales" basis, you will include gross handling margins. Will new space allow you to handle more bushels or merely to hold bushels you would otherwise ship? The answer probably depends on your shipping capacity during harvest and whether transportation is available. If additional space will allow you to dump

additional bushels, the net handling revenue associated with them is a cash flow attributable to the new space. The major sources of these revenues are handling margins, drying income and mix and blend profit. Estimated marginal costs must be subtracted to arrive at net handling revenues.

In some situations, having to ship during harvest to keep space clear results in significant labor and other costs that can be avoided if the bushels are held. If this is the case, these savings should be factored into your analysis.

Tax benefits largely come from deductions for depreciation. Storage bins and associated handling equipment can usually be depreciated rapidly. The depreciation each year multiplied by the marginal tax rate is the cash flow attributable to the investment. Estimating tax benefits is fairly simple in the case of a sole proprietorship or "C" corporation. It's more complex in the case of a partnership, LLC or "S" corporation in which tax benefits pass through to multiple partners, members or stockholders with different tax situations. You should probably enlist the aid of an accountant in making these estimates. *(Note: Don't worry if the rough estimate of initial cost you use to estimate depreciation turns out different from the budget unless the difference is big. If it is, you can adjust depreciation to better fit.)*

### Project budget

The final step is mechanical. Use the present value (PV) function on a spreadsheet program or financial calculator to determine the maximum initial cost that still yields your minimum acceptable internal rate of return. (Or you can back into it using the internal rate of return function.) That's your budget. Now it's time to call the contractors and see if it's feasible. 

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