

# Energy Self Assessment

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## Step 3: Analysis

If you provided "Production and Energy Use" data, the table "Summary of Your Current Operation" is a comparison of your dryer to typical efficiencies recorded in university studies of grain dryers. The efficiency of grain dryers is reported as Btu per pound of water evaporated from the grain. The estimated baseline energy use and cost to dry the grain in an average year is listed in the lower part of the first table along with the total energy use in British Thermal Units (Btu's) and the estimated carbon dioxide (CO<sub>2</sub>) emissions from combusting fuels to produce electricity and heat for drying.

The second table, "Energy and Cost Comparison Summary", summarizes the energy and cost savings of all dryer types known to be commercially available in North America. If the value in this table is positive, then using that dryer type with **all** energy efficiency options would be expected to result in lower energy costs. If the value is negative, then the dryer type is expected to use more energy than the dryer you've selected. [Click here](#) for a bar graph that illustrates a general comparison of all the dryer types without optional heat recovery or energy saving cooling processes.

Click on the dryer type in the summary table to display a detailed summary for each dryer. Each summary includes estimated differences in fuel consumption and the cost savings from the dryer options such as in-bin cooling, dryeration, heat recovery and stirring devices, if applicable. At the bottom of the table is the expected increase or decrease in carbon dioxide emissions, the principle greenhouse gas causing global warming.

Summary of Your Current Operation		
Dryer type Selected	<a href="#">Combo Hi/Low Temp Drying</a>	
Estimated efficiency of your dryer		Btu/#H2O
Typical efficiency for dryer type selected	1,200	Btu/#H2O
Energy Type	Estimated Baseline energy usage	
Energy Use Based on Drying	10,000	bushels of corn
Water Removed	26,900	pounds
Propane	265	Gallons
Electricity	2,364	kWh
Average Annual Drying Cost	\$896	\$
Total Energy Use	32,280,000	Btu
Greenhouse Gas Emissions	7,243	lbs. / yr.

## Energy and Cost Comparison Summary

For each dryer listed below, the savings indicated is for the dryer type configured with best possible energy efficiency measures.

Click on Dryer Name (below **Dryer Type**) for more detailed analysis.

Dryer Type	Potential Cost Savings	Potential Energy Savings (Btu)
<a href="#">Natural-Air Bin Dryer with stirring device</a>	\$-995	
<a href="#">Low-Temperature Bin Dryer with stirring device</a>	\$-1,185	-3,228,000
<a href="#">High Temperature Batch Bin Dryer with stirring device</a>	\$-1	-16,745,250
<a href="#">Roof Batch Dryer with aeration</a>	\$-212	-28,245,000
<a href="#">Continuous Cross-Flow Dryer with dryeration (full heat mode)</a>	\$-138	-24,210,000
<a href="#">Cross-Flow Batch Dryer with dryeration</a>	\$-69	-20,444,000
<a href="#">Mix-flow dryer with dryeration (full heat mode)</a>	\$139	-9,078,750
<a href="#">Continuous-Flow In-Bin Dryer with dryeration</a>	\$10	-16,140,000
<a href="#">Combination High/Low Temperature Drying</a>	\$	

[How can a dryer use more energy but save money?](#)

[What does a negative number mean?](#)

<a href="#">Natural-Air Bin Dryer</a>		
<b>Annual Energy Cost Savings</b>		
Propane	265	Gallons
Electricity	-9,458	kWh
Energy Savings - Dryer Only	-8,070,000	Btu
Percentage of Energy Savings	-25%	%
Annual Potential Cost Savings	\$-1,468	\$
<b>Optional Equipment/Process</b>		
<a href="#">With Stirring Device</a>	8,070,000	Btu
Cost Savings for Optional Equipment/Process	\$473	\$
<b>Energy Savings</b>		
Max. Total Energy Savings		Btu
Percentage of Energy Savings	%	%
Total Estimated Cost Savings	\$-995	\$

**Greenhouse Gas Emissions Reduction**

<b>Carbon Dioxide - Dryer Only</b>	-12,209	lbs.
<b>Carbon Dioxide w/Energy Saving Options</b>	-8,319	lbs.
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**Low-Temperature Bin Dryer**

<b>Annual Energy Cost Savings</b>		
<b>Propane</b>	265	Gallons
<b>Electricity</b>	-10,640	kWh
<b>Energy Savings - Dryer Only</b>	-12,105,000	Btu
<b>Percentage of Energy Savings</b>	-38%	%
<b>Annual Potential Cost Savings</b>	\$-1,705	\$
<b>Optional Equipment/Process</b>		
<b><u>With Stirring Device</u></b>	8,877,000	Btu
<b>Cost Savings for Optional Equipment/Process</b>	\$520	\$
<b>Energy Savings</b>		
<b>Max. Total Energy Savings</b>	-3,228,000	Btu
<b>Percentage of Energy Savings</b>	-10%	%
<b>Total Estimated Cost Savings</b>	\$-1,185	\$
<b><u>Greenhouse Gas Emissions Reduction</u></b>		
<b>Carbon Dioxide - Dryer Only</b>	-14,154	lbs.
<b>Carbon Dioxide - Dryer w/Energy Saving Options</b>	-9,875	lbs.
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**High Temperature Batch Bin Dryer**

<b>Annual Energy Cost Savings</b>		
<b>Propane</b>	-436	Gallons
<b>Electricity</b>	1,981	kWh
<b>Energy Savings - Dryer Only</b>	-33,087,000	Btu
<b>Percentage of Energy Savings</b>	-102%	%
<b>Annual Potential Cost Savings</b>	\$-301	\$
<b>Optional Equipment/Process</b>		
<b><u>With Stirring Device (Bin Dryer)</u></b>	16,341,750	Btu
<b>Cost Savings for Optional Equipment/Process</b>	\$299	\$
<b>Energy Savings</b>		
<b>Max Estimated Energy Savings</b>	-16,745,250	Btu
<b>Max Percentage of Energy Savings</b>	-52%	%
<b>Total Estimated Cost Savings</b>	\$-1	\$

### Greenhouse Gas Emissions Reduction

Carbon Dioxide - Dryer Only	-2,258	lbs.
Carbon Dioxide - Dryer w/Energy Saving Options	117	lbs.

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### Combination High/Low Temperature Drying

#### Annual Energy Cost Savings

Propane		Gallons
Electricity		kWh
Energy Savings - Dryer Only		Btu
Percentage of Energy Savings	%	%
Annual Potential Cost Savings	\$	\$

### Greenhouse Gas Emissions Reduction

Carbon Dioxide - Dryer Only		lbs.
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### Roof Batch Dryer

#### Annual Energy Cost Savings

Propane	-384	Gallons
Electricity	2,010	kWh
Energy Savings - Dryer Only	-28,245,000	Btu
Percentage of Energy Savings	-88%	%
Annual Potential Cost Savings	-\$-212	\$

### Greenhouse Gas Emissions Reduction

Carbon Dioxide - Dryer Only	-1,554	lbs.
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### Continuous Cross-Flow Dryer

#### Annual Energy Cost Savings

Propane	-542	Gallons
Electricity	1,923	kWh
Energy Savings - Dryer Only	-43,040,000	Btu
Percentage of Energy Savings	-133%	%
Annual Potential Cost Savings	-\$-483	\$

#### Optional Equipment/Process

<a href="#">With In-bin cooling (Full heat dryer)</a>	11,298,000	Btu
<a href="#">With Dryeration (Full heat dryer)</a>	18,830,000	Btu
<a href="#">With Heat Recovery (Heat/Cool dryer)</a>	11,298,000	Btu

<b>Cost Savings for Optional Equipment/Process</b>	\$345	\$
<b>Energy Savings</b>		
<b>Total Energy Saved</b>	-24,210,000	Btu
<b>Percentage of Energy Savings</b>	-75%	%
<b>Total Estimated Cost Savings</b>	\$-138	\$
<b>Greenhouse Gas Emissions Reduction</b>		
<b>Carbon Dioxide - Dryer Only</b>	-3,704	lbs.
<b>Carbon Dioxide - Dryer w/Energy Saving Options</b>	-968	lbs.
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<b><u>Cross-Flow Batch Dryer</u></b>		
<b>Annual Energy Cost Savings</b>		
<b>Propane</b>	-441	Gallons
<b>Electricity</b>	1,978	kWh
<b>Energy Savings - Dryer Only</b>	-33,625,000	Btu
<b>Percentage of Energy Savings</b>	-104%	%
<b>Annual Potential Cost Savings</b>	\$-310	\$
<b>Optional Equipment/Process</b>		
<b><u>With In-bin cooling (Full heat dryer)</u></b>	6,590,500	Btu
<b><u>With Dryeration (Full heat dryer)</u></b>	13,181,000	Btu
<b>Cost Savings for Optional Equipment/Process</b>	\$241	\$
<b>Energy Savings</b>		
<b>Total Energy Saved</b>	-20,444,000	Btu
<b>Percentage of Energy Savings</b>	-63%	%
<b>Total Estimated Cost Savings</b>	\$-69	\$
<b>Greenhouse Gas Emissions Reduction</b>		
<b>Carbon Dioxide - Dryer Only</b>	-2,336	lbs.
<b>Carbon Dioxide - Dryer w/Energy Saving Options</b>	-420	lbs.
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<b><u>Mixed-flow dryer</u></b>		
<b>Annual Energy Cost Savings</b>		
<b>Propane</b>	-326	Gallons
<b>Electricity</b>	2,041	kWh
<b>Energy Savings - Dryer Only</b>	-22,865,000	Btu
<b>Percentage of Energy Savings</b>	-71%	%
<b>Annual Potential Cost Savings</b>	\$-113	\$
<b>Optional Equipment/Process</b>		

<a href="#">With In-bin cooling (Full heat dryer)</a>	8,271,750	Btu
<a href="#">With Dryeration (Full heat dryer)</a>	13,786,250	Btu
<b>Cost Savings for Optional Equipment/Process</b>	\$252	\$
<b>Energy Savings</b>		
<b>Total Energy Saved</b>	-9,078,750	Btu
<b>Percentage of Energy Savings</b>	-28%	%
<b>Total Estimated Cost Savings</b>	\$139	\$
<a href="#">Greenhouse Gas Emissions Reduction</a>		
<b>Carbon Dioxide - Dryer Only</b>	-772	lbs.
<b>Carbon Dioxide - Dryer w/Energy Saving Options</b>	1,232	lbs.
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<a href="#">Continuous-Flow In-Bin Dryer</a>		
<b>Annual Energy Cost Savings</b>		
<b>Propane</b>	-312	Gallons
<b>Electricity</b>	2,049	kWh
<b>Energy Savings - Dryer Only</b>	-21,520,000	Btu
<b>Percentage of Energy Savings</b>	-67%	%
<b>Annual Potential Cost Savings</b>	\$-89	\$
<b>Optional Equipment/Process</b>		
<a href="#">With Dryeration (Full heat dryer)</a>	5,380,000	Btu
<b>Cost Savings for Optional Equipment/Process</b>	\$99	\$
<b>Energy Savings</b>		
<b>Total Energy Saved</b>	-16,140,000	Btu
<b>Percentage of Energy Savings</b>	-50%	%
<b>Total Estimated Cost Savings</b>	\$10	\$
<a href="#">Greenhouse Gas Emissions Reduction</a>		
<b>Carbon Dioxide - Dryer Only</b>	-577	lbs.
<b>Carbon Dioxide - Dryer w/Energy Saving Options</b>	205	lbs.
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