

SAVING ENERGY ON YOUR FARM



Climate Action Initiative
BC AGRICULTURE & FOOD

BC GREENHOUSES

Reducing energy consumption is an excellent way to reduce operating costs, as well as minimize environmental impacts. Below are some of the key energy saving opportunities applicable to greenhouse operations in BC. Consider these opportunities and work towards implementing those applicable to your operation.



photo by Sandra Tretick

Low or No Cost Opportunities for Greenhouses

Quick ways you can reduce your energy costs right now:

- Repair greenhouse/poly-tunnel glazing leaks to avoid unnecessary heat loss.
- Shut off zone heating pumps unless there is a need for heating in the zone.
- If you have multiple boilers, isolate any which are in standby mode using isolation valves to reduce losses.
- Conduct boiler flue gas tests and tuning at least annually.
- Insulate the perimeter walls below the height of the bench to minimize heat loss.
- Ensure any fans are clean and free from obstructions, balanced and in good condition.

What are the next steps?

1. Implement low cost/no cost energy saving opportunities immediately.
2. Contact the **LiveSmart BC Agriculture Energy Advisor** to evaluate additional energy saving opportunities for your operation.
3. Use the LiveSmart BC Agriculture Energy Advisor to help you access incentive funding.
4. Implement projects and benefit from energy cost savings!

LiveSmart BC Agriculture Energy Advisor

The BC Agriculture Energy Advisor is a **FREE** resource available to assist producers with the following:

- Provide direction and guidance to reduce on-farm energy consumption;
- Visit farms to identify and quantify energy saving opportunities;
- Help to access financial incentives for energy upgrades where possible;
- Support with implementing energy efficiency measures;
- Monitor and verify energy savings;
- Provide technical information and fact sheets.

Agricultural producers are encouraged to contact the Energy Advisor at any time.

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Additional Opportunities for Greenhouses

Opportunity	Savings Potential*	Incentives**	Capital Cost	Payback
Disable zone heating pumps if no heating is required in the greenhouse zone.	Expect around \$110/acre/yr in electricity savings over continuous pump operation.	None	Very low if pumps are already controlled by the greenhouse automation system.	0 - 6 months
Install thermal curtains in greenhouses without any curtains or upgrade old curtains with new.	For a greenhouse without thermal curtains expect around \$18,000/acre/yr in natural gas savings.	None (at present)	For single layer thermal curtains, approximately \$50,000 /acre installed. For double layer, approximately \$95,000 /acre installed.	Typically 3 – 5 years for sites without existing curtains
Lighting upgrades: Replace incandescent lamps with compact fluorescents or LED. Replace T12 fluorescent lamps with T8 or T5 lamps.	Variable, but as an example, for 2 x 110 watt T12 lamps (magnetic ballast), replacement with 4 x 32 watt T8 lamps will save approximately \$40/yr if used 12 hrs/day.	BC Hydro PIP / LiveSmart BC – varies depending on lamp type – \$30 per fixture for this example.	Approximately \$200 per fixture installed for this example.	4.8 yrs for this example.
Retrofit end-of-life atmospheric boilers with condensing boilers (high-efficiency) over forced draft (mid-efficiency). Applies if your return water temperature is less than approx. 55°C.	For a 5 acre greenhouse with a 1,000 MBH condensing boiler, expect around \$2,400/yr*** in gas savings over forced draft.	Fortis BC (\$12/MBH plant input for condensing and \$4/MBH for forced draft). \$8,000 more for a 1,000 MBH condensing boiler over forced draft.	For the 1,000 MBH boiler used in this example, the cost is approximately \$25,000 more to use a condensing boiler in comparison to a forced draft boiler.	7.1 yrs (on the additional cost to go to condensing rather than forced draft)

* Savings are estimates only. Savings are based on the following energy costs: Electricity \$0.08/kWh, Gas: \$8/GJ, Diesel: \$1.10/litre

** Incentives may change without notice. Check with the BC Agriculture Energy Advisor for current incentive amounts.

*** Savings based on average gas use of 1,000 GJ/acre/year, and conditions suitable for condensing boilers.

Other Resources

- BC Agriculture Energy Advisor: www.bcagclimateaction.ca/energy
- LiveSmart BC Incentive Program: www.livesmartbc.ca/incentives
- BC Hydro Product Incentive Program: www.bchydro.com/rebates_savings/product_incentive_program.html
- Fortis BC Incentive Program: www.fortisbc.com/NaturalGas/Business/Offers



DISCLAIMER: All savings, capital costs, and incentive amounts shown in this fact sheet are estimates only and are not guaranteed. It is recommended that the producer contacts the BC Agriculture Energy Advisor to better quantify these for their own site before proceeding with a project.