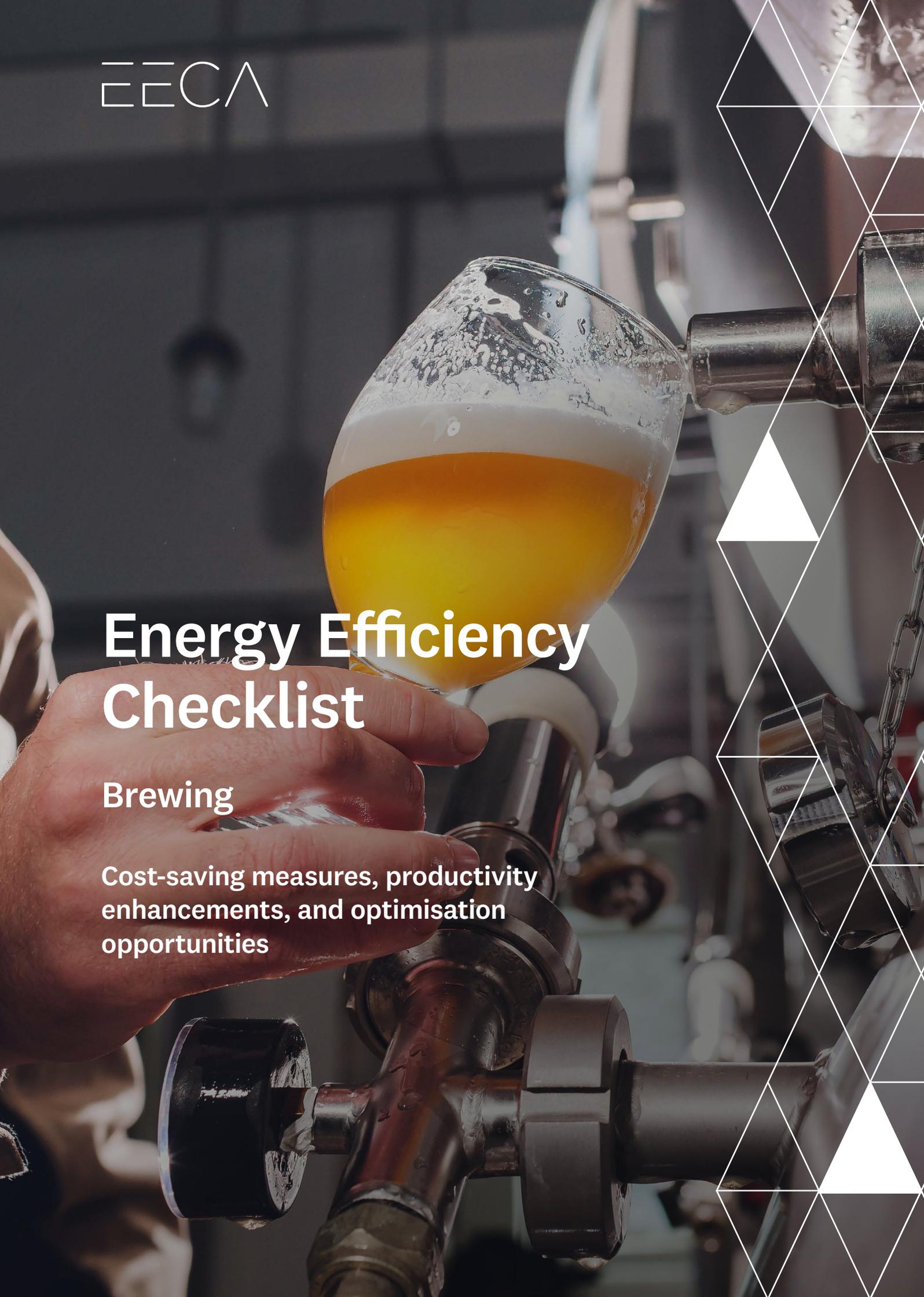


Energy Efficiency Checklist

Brewing

Cost-saving measures, productivity enhancements, and optimisation opportunities



The Energy Efficiency Checklist is a practical guide for breweries to help the industry establish energy efficient opportunities. It has been developed as part of the Sector Decarbonisation Programme, which is a joint initiative between the Energy Efficiency & Conservation Authority (EECA), and the Brewers Guild of New Zealand.

This checklist sets out both low and high-cost energy efficient opportunities which can be taken when embarking on a process towards lowering your onsite emissions.

There are ten different sections focusing on:

1. Measuring Energy Usage
2. Energy Maintenance
3. Steam Boiler Operations
4. Mash Tun
5. Kettle
6. Wort Cooler
7. Hot Water Storage
8. Refrigeration
9. Clean in place/out of place
10. Fermentation

Before you start this guide, you can set the foundations and start with purpose by:

1. Putting in place a climate action plan with regular feedback from stakeholders and staff around how to improve your performance
2. Assign energy management responsibilities to staff
3. Maintain an updated action list of energy efficient opportunities
4. Meet regularly and report on actions – provide the opportunity for staff feedback

TASK	DETAIL	COMPLETE?
Measure energy intensity	Calculate the energy required per hL of beer produced.	
	Get relevant utilities bills production output.	
	Input your data into EECA's Energy Intensity Calculator.	
Basic energy saving maintenance	Conduct energy awareness training for staff to be efficient energy users.	
	Switch off equipment to when not in use either manually or programmed.	
	Check for leaking utilities (steam/air/CO2/glycol).	
	Check insulation is in good condition on pipes and equipment.	
	Implement appropriate scheduling to regularly perform basic energy maintenance.	
	Regular inspection of steam traps and safety valves for correct operation.	
Steam Boiler operations	Measure and monitor the boiler efficiency.	
	Check your boiler is operating at the optimum efficacy according to OEM specifications.	
	Check your steam distribution system is at optimised pressure.	
	Check the boilers are operated under strict boiler water quality controls.	
	Optimise boiler blow down and cycle rates.	
	Ensure annual maintenance and cleaning has been undertaken.	
	Check condensate is recovered and at a target 95% recovery.	
Mash Tun	Optimise malt transfer and conveying to reduce damage to malt and dust creation.	
	Ensure mash strike temperature is as high as it can be.	
	Target mash in temperature without the need for live steam.	
Kettle <i>*heat recovery opportunity (webinar)</i>	Measure and monitor the kettle evaporation regularly.	
	Check variability with kettle evaporation is within 1%.	
	Check evaporation rate is averaging 4% or lower over consecutive brews.	
	Calculate hop utilisation.	
	Further optimise boil times for hop utilisation and volatile removal.	
Wort Cooler	Measure and monitor the wort cooler hot water ratio.	
	Check this ratio is less than 1:1.	
	Check the heat exchanger efficiency is known and +95%.	

