

Feeling a bit gassy & bloated? Increase your energy efficiency, reduce costs and support the environment

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Details:

Home > Articles > Feeling a bit gassy & bloated? Increase your energy efficiency, reduce costs and support the environment

Feeling a bit gassy & bloated? Increase your energy efficiency, reduce costs and support the environment

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We recommend: (1) making current equipment as efficient as possible through upgrades like economizers and controls; (2) considering what equipment can be electrified, particularly hot water systems where heat pumps now produce lower emissions than gas boilers; (3) looking for biogas or green gas opportunities from anaerobic digestion, covered lagoons, or pyrolysis; and (4) monitoring green hydrogen development, which is receiving substantial investment but remains early-stage. The appropriate strategy depends on your operating requirements, available energy sources, and funding eligibility under NSW ESS or Victorian Energy Upgrades programs.

Publication context: This article reflects its publication date. Market prices, program rules, reporting duties and deadlines may have changed. Confirm current official guidance before making a decision.

Let us prescribe you a way to reduce your Gas Emissions!

The path to decarbonising the electrical grid is well underway. Now it's time to think about gas. If you have high gas consumption, there are few things you need to be considering.

Make your current equipment as efficient as possible

Consider what equipment can be electrified

Look for biogas or green gas opportunities

Green hydrogen is getting massive investment

The Victorian Industrial sector used over 110 PJ (30 TWh) of energy in 2017 and 65% of that came from gas. The predominant use of that gas is steam boilers. The story is the same in other states. The Industrial sector is primarily fueled by gas and the commercial sector also has substantial gas usage for hot water.

The trends bring gas into the spotlight are as follows:

Electricity is getting greener. In Australia, 25% of the electrical energy is now sourced from renewables. The grid emissions (the emissions factor) are dropping every year.

Many companies are setting goals to decarbonize, or their customers are demanding they do.

The gas is getting greener (less emissions), but it is hard and slow, however there are state and federal programs accelerating this.

Green hydrogen (electrolysis from renewable electricity) is forecast to explode

The message for C&I; (Commercial & Industrial) is clear if you want to decarbonize you've got to look at your gas emissions as well.

Gas Efficiency: In NSW and VIC business there are lots of old steam boilers it's a no brainer to add economizers and O2 trim, electronic air/fuel ration and blowdown controls or to upgrade the whole unit. The NSW Energy Saving Scheme and Victorian Energy Upgrades programs provide funding for both calculated and measured savings. For economizers up to 50% of the full costs will be covered by the programs.

Electrification: For hot water, we've reached the cutover point. You'll now generate hot water with lower emissions by using heat pump systems using grid electricity than a gas boiler.

Using gas at 90% efficiency condensing boiler to put 1GJ of energy into hot water would produce $0.05523 / 0.9 = 0.0061 \times 1000 = 61 \text{ kg CO}_2\text{te}$

To put 1GJ of energy into hot water using an electric heat pump with a COP of 5 and grid source energy with an emissions factor of 0.8 tonnes / MWh. 1GJ of energy into hot water. ($1\text{GJ} = 1/3.6 \text{ MWh}$) $0.8 / 5 \text{ COP} \times 1000 \text{ kg} = 44 \text{ kg CO}_2\text{te}$. And when the grid reaches 0.5 tonnes / MWh this falls to 27 kg CO₂te and potentially better with some heat pumps having even higher COP

The NSW ESS (Energy Savings Scheme) and VIC VEU (Victorian Energy Upgrade) have recently released new methods for Commercial & Industrial heat pumps. Dairy farms and industrial processes using large volumes of hot water can substantially lower their emissions by using heat pumps and much more so if they have behind the Meter Solar PV.

Biogas, Biomethane and Green Gas: For the process that really needs gas (e.g. steam boilers), there significant funding can be obtained from capturing or generating biogas. Biogas can come from anaerobic digestion (AD) and covered anaerobic lagoons (CALs), from abattoirs, landfills, and syngas from pyrolysis (eg burning agricultural waste in the absence of oxygen). The VIC VEU program provides funding for switching from natural gas to biogas. The NSW ESS supports heat recovery from burning biogas. By using scrubbers and other methods can be used to upgrade biogas to biomethane and the Carbon Farming Initiative (CFI) recently added biomethane to many of the methods to support injection into the natural gas grid. With these advancements, we are just starting to see the development of in front of the meter PPAs to supply green gas and the energy retailers would love to be able to offer it broadly.

Green Hydrogen : There is a very substantial investment going into the hydrogen economy. The expectation is that electrolysis (using electricity to generate H₂) will see the same economy of scale benefits that resulted in Solar PV dropping massively in cost. This space is a watch and see as to how the gas industry will evolve to replace natural gas (methane) with hydrogen.

Northmore Gordon can support your business doing the activities above. Our consultants can help identify which of the opportunities above will have the highest PA payback and capture the greatest amount of funding under different programs.

More importantly, if you are feeling gassy and bloated, we'll identify the fastest way to reduce your gas emissions. Who wouldn't want that!!!

Scheme and certificate context

Before using a certificate or grant figure, confirm the current scheme method, eligible activity, effective date, evidence requirements, price date and registration or application process.

Related guidance

Certificate services

Government schemes

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Read the original article for the source publication and its full context.

What are the four main strategies Northmore Gordon recommends for businesses to reduce gas emissions?

We recommend: (1) making current equipment as efficient as possible through upgrades like economizers and controls; (2) considering what equipment can be electrified, particularly hot water systems where heat pumps now produce lower emissions than gas boilers; (3) looking for biogas or green gas opportunities from anaerobic digestion, covered lagoons, or pyrolysis; and (4) monitoring green hydrogen development, which is receiving substantial investment but remains early-stage. The appropriate strategy depends on your operating requirements, available energy sources, and funding eligibility under NSW ESS or Victorian Energy Upgrades programs.

Has electrification of hot water systems become cost-competitive with gas boilers?

Yes. For hot water production, the emissions cutover point has been reached: an electric heat pump powered by grid electricity now produces lower emissions than a gas condensing boiler. A 90% efficiency gas boiler producing 1GJ generates approximately 61 kg CO₂e, while an electric heat pump with a coefficient of performance (COP) of 5 using current grid electricity (0.8 tonnes CO₂e/MWh) generates about 44 kg CO₂e for the same output. As grid emissions decline, heat pumps become even more attractive. The NSW ESS and Victorian Energy Upgrades programs have released new methods specifically supporting Commercial & Industrial heat pump adoption, making this transition increasingly accessible financially.

What funding support exists for steam boiler efficiency improvements?

The NSW Energy Savings Scheme and Victorian Energy Upgrades programs provide funding for both calculated and measured savings from steam boiler upgrades including economizers, oxygen trim control, electronic air/fuel ratio controls, and blowdown optimization. For economizers specifically, these programs can cover up to 50% of full project costs. Funding is available as Energy Savings Certificates (NSW) or Victorian Energy Efficiency Certificates (Victoria), which can be traded or retired. We can help assess project eligibility, calculate potential certificate quantities, and coordinate evidence collection to maximize available funding while meeting scheme requirements.

What are the primary assessment areas when evaluating boiler efficiency opportunities?

Government guidance identifies four primary assessment areas: metering (understanding baseline consumption and operating patterns), controls (ensuring appropriate operation and response to load variations), insulation (reducing heat losses from pipes, vessels, and equipment surfaces), and maintenance (preserving equipment performance and reliability). These areas work together to identify efficiency opportunities and determine the cost-effectiveness of proposed upgrades. A Type 1 or Type 2 energy audit typically investigates these areas to establish which improvements offer the fastest payback. Our energy audits assess these factors systematically to support business case development and scheme eligibility.

How significant is gas use in Victorian industrial energy consumption, and what does this mean for decarbonization?

The Victorian Industrial sector used over 110 PJ (30 TWh) of energy in 2017, with 65% coming from gas predominantly used in steam boilers. This concentration indicates that gas boiler efficiency and conversion strategies represent the largest potential emissions reduction opportunity in the sector. Understanding your facility's share of steam versus hot water heating, and which processes genuinely require high-temperature heat versus those suitable for electrification, is essential to prioritizing

investment. Our energy assessments help identify which gas loads can be eliminated, which can be converted to lower-emission alternatives, and which efficiency improvements offer the fastest payback given current energy prices and available incentives.

What biogas and green gas sources are available for facilities that still require gas heating?

Biogas sources include anaerobic digestion (AD) and covered anaerobic lagoons (CALs) at abattoirs and landfills, which produce methane that can displace natural gas. Syngas from pyrolysis—burning agricultural or industrial waste in the absence of oxygen—offers another pathway. The Victorian Energy Upgrades program provides funding for switching from natural gas to biogas, and the NSW Energy Savings Scheme supports heat recovery from biogas combustion. The Carbon Farming Initiative has added biomethane methods to support injection into the natural gas grid. We can help assess whether your site has access to reliable biogas supply, evaluate the commercial viability of switching, and navigate the relevant funding and carbon-credit pathways.

What are the commercial and emissions benefits of combining heat pump installation with behind-the-meter solar PV?

Pairing heat pumps with behind-the-meter solar significantly improves both emissions and operating costs. During daylight hours, solar generation reduces grid electricity reliance and associated emissions; evening heating demands can be shifted where operational flexibility exists or supported by battery storage. This combination is particularly valuable for dairy farms and industrial processes using large volumes of hot water. The NSW ESS and Victorian Energy Upgrades programs have released new Commercial & Industrial heat pump methods that recognize this integration, potentially increasing available incentives. We can assess your thermal load profile, solar resource, and operational constraints to design an integrated approach that maximizes both cost savings and emissions reduction eligibility.

How should businesses evaluate whether to pursue boiler efficiency upgrades versus electrification or biogas conversion?

The decision depends on your specific heat requirement, available energy sources, existing equipment condition, and funded pathways. Efficiency upgrades (economizers, controls, maintenance) typically offer faster payback and lower capital requirements, making them suitable for near-term action. Electrification becomes attractive for hot water and lower-temperature steam where heat pumps are technically viable and where grid emissions are declining. Biogas conversion suits facilities with reliable supply access and appropriate heat loads. Green hydrogen remains developmental. Our consultants conduct energy audits and feasibility assessments to identify which opportunities have the highest payback for your facility, assess funding eligibility under NSW ESS and Victorian Energy Upgrades programs, and develop a sequenced implementation plan capturing the greatest emissions reduction and financial return.

What measurement and verification is required when upgrading boiler efficiency for funding purposes?

Measurement and verification (M&V;) requirements depend on the specific funding scheme and project pathway. Prescribed activities like economizer or oxygen-trim installation may use deemed savings calculations, while more complex projects may require measurement of baseline energy consumption before upgrade, detailed records of what was installed and when, and monitoring of post-installation performance under comparable operating conditions. M&V; must establish the relevant boundary, accounting for changes in production, operating hours, or other variables. We provide measurement-and-verification services including baseline modeling, savings calculation, and reporting to meet scheme requirements. Planning M&V; early—before equipment changes remove baseline evidence—is essential to preserving funding eligibility and demonstrating project success.

What is the outlook for green hydrogen as a gas replacement, and should businesses wait for it to develop?

Green hydrogen production through electrolysis is receiving very substantial investment, with expectations that economy-of-scale cost reductions will follow the pattern seen with solar PV. However, it remains a 'watch and see' area for practical deployment and cost competitiveness. Waiting for hydrogen development introduces risk: gas equipment will need replacement regardless, energy prices may change, and funding programs are available now for efficiency, electrification, and biogas. We recommend pursuing immediately viable improvements—efficiency upgrades, heat pump electrification where suitable, and biogas access where available—while monitoring hydrogen developments. This sequenced approach captures near-term emissions and cost reductions without betting the business on hydrogen timelines, and allows flexibility to integrate hydrogen later if deployment accelerates.