

Biomass boiler heats greenhouses through the VEU program: Van Wyk Flowers

Canonical: <https://northmoregordon.com/case-studies/van-wyk-flowers-watch-energy-savings-bloom/>

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Case-study summary

This historical case study records the project, delivery approach and reported results behind Biomass boiler heats greenhouses through the VEU program: Van Wyk Flowers . It has been reorganised for clearer reading and linked to current Northmore Gordon guidance so the project evidence can be used without treating an earlier result as a present-day quote.

Evidence note: The source page is dated December 2, 2020. Figures, scheme names, equipment assumptions and client circumstances belong to that project period. Opportunities, targets and forecasts remain distinct from implemented or verified outcomes, and current eligibility should be checked before using the case as a new-project benchmark.

Project record

With the unpredictable price rises surrounding natural gas, the move to this renewable energy (renewable biomass from waste wood which is part of the natural carbon cycle) is not just great for our bottom line, but even more importantly, has allowed us to reduce our carbon (CO₂) footprint by a massive margin. Wattly and Northmore Gordon provided a very professional service and the value from the VEU significantly contributed to the capital costs reducing the payback. – Paul Purcell, Van Wyk Flower Supply Pty Ltd

The Client

Van Wyk Flower Supply Pty Ltd is a longstanding family owned cutflower/plant farm based southwest of Melbourne. For many years they have grown and sold produce to the flower industry. The intense horticulture used a large amount electricity and natural gas and Van Wyk had already invested in a 350 kW solar system to help power irrigation and onsite functions. Heating is a necessary component of growing to ensure the consistency in quality and numbers. To heat the expansive glasshouse areas the farm had two natural gas boilers (total 7MW) and were looking for alternative solutions.

Key Facts

Equipment Upgraded: Replacement of 3MW gas-fired boiler to biomass

Annual Energy Savings: 41,000 GJ A joule is a measure of the energy required to send an electrical current of one ampere through a resistance of one ohm for one second. One GJ is equal to 277.8 kilowatt hours (kWh), 1.055 million British thermal units (Btu) or 0.17 barrels of oil. Gas

Abatement: 2,131 tCO₂e, OPEX: ~300,000

Certificate Value: >\$ 450,000 / <5 year payback

Program: Victorian Energy Upgrades (VEU)

Method: Project Based Activities (PBAProject Based Activities)

Wattly Partner: Northmore Gordon (Consulting)

The Project

Industry leaders in biomass boilers and energy systems (Enriva Pty Ltd) delivered substantial energy savings by replacing the existing gas-fired boilers to a single 2.95MW biomass plant fuelled by timber residues from Victorian forestry & timber operations. Through a network of heating pipes, the boiler runs continuously and feeds hot water into a large insulated buffer (2,000,000 litre tank). This is a highly innovative and important part of the solution. The tank acts as a large thermal battery allowing the system to deliver very high peak loads and is drawn down overnight and during cold weather.

Challenges

Competitive pressures from international growers airfreighting flowers and herbs to Australia

Unstable price of natural gas, due to the world demand increased uncertainty

Drastic increase of gas prices in 2016-2018

Little room to increase flower & herb prices

Outcomes

Gas boiler was fully shutoff

Natural Gas Supply to the boilers was decommissioned

Our Role

Wattly and Northmore Gordon provided an end to end service to ensure the project complied with the Victorian Energy Upgrade Program to maximise the financial incentives. Northmore Gordon's Certified Measurement & Verification Professionals (CMVPs) created the M&V; plan, collected site data & supporting evidence, and built the baseline and operating energy models to calculate the energy savings. Subsequently we wrote the M&V; report, then created and traded the VEECs on behalf of the client.

A family-owned cut-flower farm in Lyndhurst, Victoria, specialising in sustainably grown seasonal flowers for wholesale markets across Australia.

Using the results for a new project

Start with the site's current operating profile, asset condition and business objective. Define the baseline, project boundary, variables that affect energy use and the evidence available before selecting a technology or incentive pathway. This makes the comparison auditable and keeps physical savings separate from grants, certificate revenue and other financial benefits.

For a comparable project, confirm current program rules and product requirements, document installation and commissioning, and plan post-project measurement early. Historical results can show what was possible in one setting, but they do not establish current eligibility, pricing, payback or emissions outcomes.

Related guidance

Measurement and verification

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Why was the biomass boiler upgrade strategically important for Van Wyk Flowers' competitive position?

Van Wyk Flowers faced intense competition from international growers airfreighting flowers to Australia and volatile natural gas prices that spiked dramatically between 2016–2018 due to global demand. By replacing gas-fired heating with biomass fuelled by Victorian timber residues, the farm reduced exposure to unpredictable energy costs while improving its sustainability profile. The \$300,000 annual OPEX savings provided operational resilience, allowing the business to compete on cost without sacrificing margin. The project addressed a fundamental business vulnerability—energy price exposure—through a technology shift that aligned with market expectations for sustainable produce.

How did the buffer tank system enable reliable heating delivery despite biomass boiler operating characteristics?

The 2.95MW biomass boiler runs continuously and delivers hot water into a 2,000,000-litre insulated buffer tank, which functions as a thermal battery. This design allows the system to meet very high peak heating loads that would otherwise require oversized equipment, then draws down the stored thermal energy overnight and during cold weather. This approach decouples the boiler's steady-state operation from the farm's variable heating demand, improving efficiency and reducing equipment cycling while maintaining service reliability for temperature-sensitive flower and plant production.

What measurement and verification approach did Northmore Gordon employ to establish savings and certificate eligibility?

Our Certified Measurement & Verification Professionals (CMVPs) developed a formal M&V plan aligned with Victorian Energy Upgrades project-based activity requirements. They collected baseline energy data before the upgrade, built pre- and post-project energy models, and calculated documented savings of 41,000 GJ of gas annually. This M&V evidence formed the basis for creating and trading VEECs under the VEU program. The rigorous approach ensured that savings were verifiable, certificate quantity was defensible, and the project met scheme compliance—transforming estimated benefits into recognized financial value exceeding \$450,000.

How did the Victorian Energy Upgrades program contribution affect project economics and decision-making?

The VEU program generated certificate value greater than \$450,000, reducing the effective capital cost and enabling a payback period of less than 5 years for a substantial biomass heating system. This financial incentive was material to investment approval, particularly given the farm's competitive pressures and capital constraints. By maximizing VEEC generation through compliant design and rigorous M&V, Northmore Gordon and Wattly helped translate the business case from marginal to compelling. The certificate pathway preserved funding optionality and de-risked the investment, allowing management to commit capital with confidence in the declared financial returns.

What previous energy investment had Van Wyk Flowers made, and how did it relate to the biomass project?

Van Wyk Flowers had already installed a 350 kW solar system to power irrigation and onsite operations before undertaking the biomass boiler upgrade. This staged approach—renewable electricity

generation followed by renewable thermal energy—reflects a coordinated decarbonization strategy. The solar system addressed electrical loads while the biomass system addressed the dominant heating duty, creating a complementary portfolio. This progression illustrates how a business can sequence investments to align with technology readiness, capital availability, and scheme eligibility, rather than attempting a single large intervention.

What role did Enriva Pty Ltd play, and what made the biomass technology choice appropriate for this application?

Enriva Pty Ltd, an industry leader in biomass boilers and energy systems, delivered a 2.95MW biomass plant fuelled by Victorian timber residues. Biomass was suited to Van Wyk Flowers because the farm required sustained, high-temperature heating for flower and plant production—a heat duty that biomass could reliably provide. The use of timber residues from Victorian forestry operations created a closed carbon cycle, allowing the farm to claim emissions abatement of 2,131 tCO₂e annually while replacing reliance on fossil gas. For a heat-intensive horticultural operation, biomass offered both technical suitability and environmental credibility.

How did the decommissioning of the gas boiler system represent a complete transition rather than a hybrid approach?

Van Wyk Flowers fully shut down the gas-fired boiler and decommissioned the natural gas supply to the boiler system entirely. This represented a complete technology transition rather than a backup or hybrid strategy, demonstrating operational confidence in the biomass system's reliability and sizing. The full decommissioning eliminated gas supply costs and operational complexity, creating clear OPEX savings of approximately \$300,000 annually and ensuring that the farm could not revert to gas in response to short-term pressures. This decisive commitment strengthened the business case and aligned the farm's public positioning with its sustainability messaging.

What evidence supported the 41,000 GJ annual gas savings figure, and why is that distinction important?

The 41,000 GJ figure represents verified annual energy savings calculated through M&V; modelling by our CMVPs, not an unsupported engineering estimate. M&V; established pre-project baseline consumption, defined the post-upgrade operating conditions, and calculated the difference using agreed methodologies acceptable under the Victorian Energy Upgrades scheme. This verification was essential because it converted a hypothetical efficiency improvement into a scheme-recognized outcome, justifying the VEEC issuance of greater than \$450,000 and providing auditable evidence for reporting and stakeholder communication. The rigour prevented inflated claims and supported confidence in the financial returns.