



## CUSTOMER CASE STUDY

# Todd Energy: Optimizing emissions reporting and energy usage in real time

Todd Energy - [toddenenergy.co.nz](http://toddenenergy.co.nz)  
Industry - Energy

## Challenges

- Manual emissions calculations and records
- Regulatory requirement to report emissions under NZ Emissions Trading Scheme
- Lack of insight into energy usage

## Solution

- Deployed AVEVA™ PI System™ to understand emissions of equipment, embed legislative calculations, and use real-time and historical data to estimate flow and emissions rate

## Results

- Emissions calculated in real time, eliminating the need for manual intervention and reducing workload by about 1,000 hours
- More accurate source of emissions data to help ensure compliance with regulations
- Insight into the true value of emission reduction projects

The New Zealand Emissions Trading Scheme (NZ ETS) was established to help the country meet its international climate change obligations and reduce greenhouse gas emissions. The NZ ETS sets a cap on the total amount of greenhouse gases different sectors can emit. Producers of hydrocarbons, for example, must pay for the emissions they produce and submit detailed reports of their emissions to the government. If there's missing or inaccurate information, these producers can be audited by the Ministry for the Environment.

Since Todd Energy is one of New Zealand's leading natural gas providers, the company needs to accurately track and mitigate its emissions—not only to comply with government regulations, but also because the company is taking steps to ensure sustainability is at the forefront of its operations. Using real-time data to gain a single source of truth for emissions, the company has been able to operate more efficiently, identify opportunities to reduce emissions, ensure accurate data is available to comply with regulatory requirements, and get crucial insight into its processes.

“Using AVEVA PI system has made calculating our emissions data simpler. The team has much greater insight now that we have visualizations to show us the real-time data. This gives us confidence in our decision-making, as we're basing it on real data in real time.”

Mike Brophy

Emissions Reduction Lead, Todd Energy

## Tracking flow and emissions in real time

The company's challenge was the absence of a centralized system to track all its emission sources and their impact on the greenhouse gas inventory. To calculate plant emissions, the team was using Excel workbooks that had to be manually updated every day.

This resulted in workbooks becoming slow and prone to crashing, as well as challenges ensuring data accuracy. This left the company open to the risk of human error occurring and did not provide any real insight into behavior at the plant.

So Todd Energy worked with Dimension Software, an AVEVA partner in New Zealand, to implement a solution to automate the capture and calculation of real-time emissions data. Todd Energy's new Emissions Accounting System—which they call EASE—allowed the team to track flow rates and emissions rates in real time and, combining real-time data with historical data, even predict these rates, leading to more efficient operations and helping Todd Energy comply with regulatory requirements.



Real-time emissions dashboards enable Todd Energy to optimize the efficiency of equipment and cut back on emissions.



## Ensuring regulatory compliance with standardized calculations

Using AVEVA PI System, the team at Todd Energy embedded legislative calculations in AVEVA PI System Explorer to perform the work that they were previously doing manually in Excel workbooks. Now, emissions are calculated in real time automatically, saving over 1,000 worker hours. The person who previously performed these calculations manually can instead focus on reviewing the work, adding an extra level of assurance that the calculations are accurate.

Todd Energy has achieved one source of truth for emissions. The team doesn't have to worry about the risk of errors introduced by manual calculations, and they can be sure that all data is up to date. Changes to static values—the legislative factors that the company must comply with—are made in one place and are immediately applied to all calculations. And the risk of getting a calculation incorrect is negligible, and is mitigated by manual assurance review. The team now can populate legislative factors, ensuring emissions data is complete and accurate, providing a consistent record for analysis and reporting. Energy and mass are now calculated using the latest standards, removing the need to upgrade the company's gas chromatograph firmware.

## Reducing emissions, operating more sustainably, and saving money

The company's EASE system provides more granular data that allows Todd Energy to look at trends and gain insights into the behavior of equipment and processes at the plant. EASE gives the team more frequent measurement of emissions intensity, with visual representations of emissions data and trends that allow for any irregularities to be promptly investigated. With EASE, the company can better understand which equipment is running more efficiently, so the team can prioritize the use of this equipment. Using AVEVA PI Server's asset framework, they can perform plant trials on two identical pieces of equipment to see if one is emitting more emissions than the other for the same production throughput. Historical data also allows the Todd Energy team to track emissions of assets over time to get a more holistic picture.

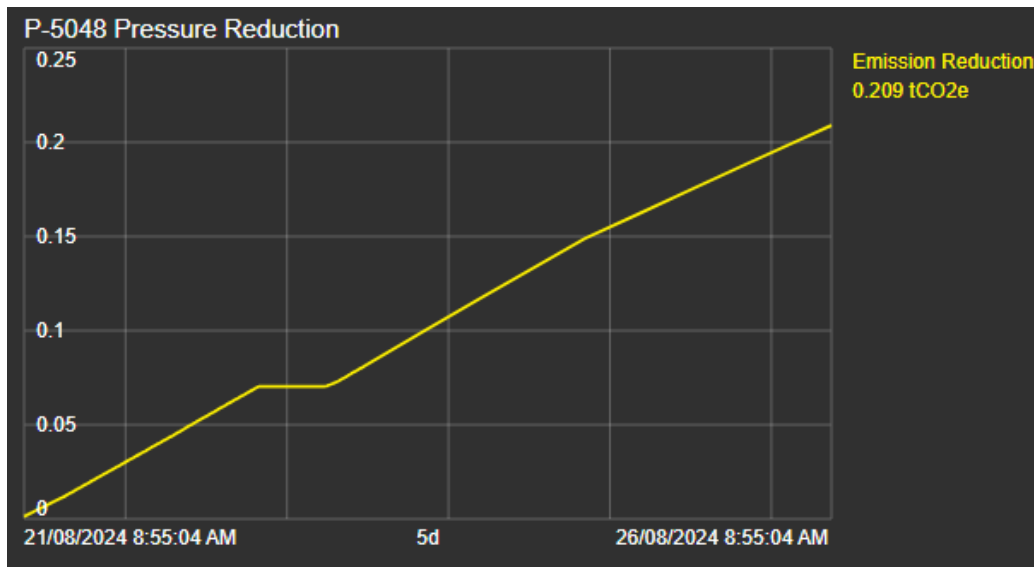
This access to accurate real-time data has saved Todd Energy money as well as helped it operate more efficiently and sustainably. Flow meters are usually required to understand how much emissions are being produced by equipment. But flow meters can be expensive, anywhere from NZ\$50,000-NZ\$250,000.



Real-time data has given the Todd Energy emissions reduction team greater confidence in decision-making

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“Todd’s intermediate emissions target aims to reduce its locally produced Scope 1, 2, and 3 (category 11) emissions by 41% by 2030, starting from a 2020 base year.”



This graph shows Todd Energy's Scope 2 emission reduction for its electric water pump power

But using AVEVA PI Server's asset framework and System Explorer, the team at Todd Energy can perform engineering calculations using other real-time plant data and historic emissions rates to estimate flow rates and emissions rates. And because of the system's templates, they can add new meters that are instantly compliant with regulations and easily track new emissions sources.

“Tracking emission reductions is incredibly important for the business and our stakeholders. One of the emission accounting principles is accuracy, and AVEVA PI Server's asset framework allows us to do that. It allows us to take actual plant data, such as run hours and horsepower, and calculate these reductions compared to a reference scenario.”

- Mike Brophy

Emissions Reduction Lead, Todd Energy

The team's original vision was to better record its emissions. But they realized the solution could do so much more than that—they can now accurately calculate emissions reduction based on real data in real time, giving them confidence in the numbers and confidence in their decision-making.

This also builds customer trust, as emissions calculations are more precise and based on site inputs. Evaluating the benefits of these projects is now much easier. Todd Energy can now explore new projects that will help it reduce emissions without having to invest a lot of money or create new infrastructure. This helps the company put sustainability at the forefront of its operations.