

## AUSTRALIA'S FIRST URBAN DISTRIBUTED ENERGY PRECINCT

We're partnering to build and deliver Australia's first precinct wide distributed energy project as a vital step in transforming Australia's energy landscape.

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### Dandenong Revitalisation

Places Victoria, the Victorian State Government's Urban Renewal Authority and Cogent Energy, a subsidiary of Origin have negotiated a Development and Operating Agreement (DOA) to establish Australia's first urban distributed energy precinct using cogeneration technology as a part of the Victorian Governments' Revitalising Central Dandenong (RCD) initiative.

The RCD initiative is a \$290m initiative which aims to bring new vibrancy and vitality to central Dandenong in the form of new investment, more jobs and an increased residential population. Places Victoria owns land within central Dandenong that covers 7 ha of future mixed-use development including commercial, retail and residential units. The key objective of the redevelopment is to provide a precinct with exemplary sustainability credentials. The Dandenong Precinct Energy Project (PEP) seeks to achieve this through the utilisation of a distributed energy cogeneration plant, providing an effective way for businesses in central Dandenong to access lower carbon electricity and thermal heating and cooling.

Central Dandenong building owners and tenants will be an integral part of Australia's first urban distributed energy precinct designed to deliver best practice sustainability outcomes. The PEP has been designed so there should be no additional capital or operating cost to building owners or tenants who connect to the PEP compared to a business as usual approach. Central Dandenong building owners and tenants who use energy (electricity and hot water) from the PEP will derive substantial environmental benefits, which can in turn provide improved Green Star and NABERS energy ratings.



# Cogeneration uses natural gas-powered engines to generate electricity on-site or for export.

## Key Benefits for Businesses and Community

- Energy competitively priced to grid and GreenPower<sup>^</sup>
- Electricity from a cogeneration plant emits about 60% less carbon than grid energy\*
- Improves energy efficiency and reduces carbon emissions of precinct buildings<sup>†</sup>
- Can be used to improve the NABERS Energy rating for precinct buildings by up to 1 star<sup>#</sup>
- Can be used to improve the Green Star rating for precinct buildings by up to 1 star<sup>#</sup>
- An in-building, near real time “Sustainability Monitor” to show staff and customers that the building or tenant is connected to the PEP and achieving best practice sustainability.

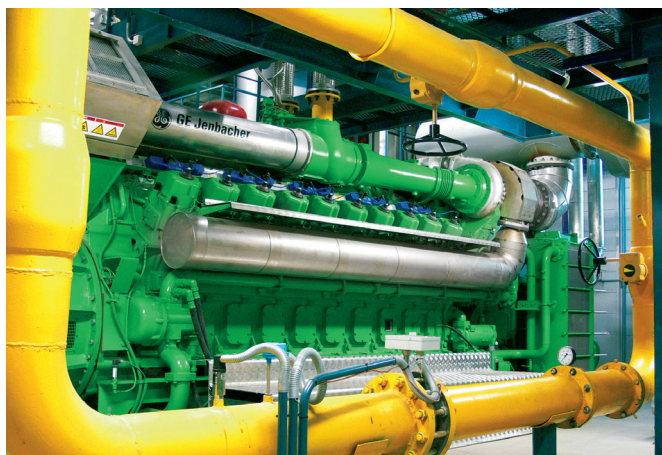
## The Dandenong Solution

The Dandenong Precinct Energy Project (PEP) will generate electricity from gas fired generators and the waste heat produced in this process will then be captured to heat water and provide heating and/or cooling to buildings within the development precinct.

The cogeneration facility will be constructed in a purpose designed building in the heart of the precinct. The facility will produce up to 6MW of gas fired generation capacity together with boilers and heat exchangers that will feed an underground hot water loop that runs through the entire precinct.

Electricity generated at the PEP building will be distributed via the grid network to precinct customers using Cogent Energy’s *cogentpower* solution.

Hot water will be distributed via a Hot Water Reticulation network to buildings within the precinct. The Hot Water can be used by the building’s domestic hot water, space heating circuits or via an absorption chiller to produce chilled water for cooling.



## The System

The Dandenong Precinct Energy Project Trigeneration installation comprises of:

- A new purpose built ‘Energy Centre’ in the heart of the precinct to house the PEP plant.
- 2MW (to be operational in 2012) and proposed 4MW (to be operational 2017 or sooner) cogeneration engines to provide electricity and hot water. The plant will incorporate back-up hot water boilers and heat exchange equipment that extracts thermal energy from engine jacket and exhaust heat. The heat is recovered and used to heat water and feed through the entire precinct.
- Reticulation Network (RN) – An underground hot water pipe network will run under the streets and laneways for buildings to receive hot water.
- Energy Transfer Stations (ETS) – Will be located within each building to transfer heat from the PEP into the building to produce heating or cooling.

## Key Facts

- Cogeneration plant size – up to 6 MW electrical
- Energy centre size – 344 m<sup>2</sup> by 16.5m<sup>2</sup> high
- Reticulation network length – Approx 1.5 km
- Hot water temperature – 96° C
- Carbon abatement – 18,000<sup>1</sup> tonnes pa.

## What is Cogeneration and Trigeneration?

Cogeneration uses natural gas-powered engines to generate electricity on-site or for export to other buildings in the area. The waste heat from the engine is captured to provide heating to the buildings mechanical services system or as used within the precinct via a distributed pipe network to other buildings in the area. The waste heat can also be used directly for hot water or converted to chilled water through an absorption chiller for cooling. Using gas as a fuel offers a significant reduction in carbon emissions when compared to coal-fired power generation, offering efficiency gains of up to 80% versus the grid average and compared to 38% for the best coal fired power station.\*

## Contact Us

To find out more about the Dandenong Precinct Energy Project and Cogent Energy’s unique solutions, contact one of our consultants on (03) 9652 5025 or visit [www.cogentenergy.com.au](http://www.cogentenergy.com.au).

<sup>^</sup>Cogent’s cost of energy (electricity, hot water and chilled water) is charged at rates that are price competitive to an equivalent accredited 50% GreenPower grid energy product (based on mid-2009 market rates).

\* CO2 savings estimations are calculated based on information from the Australian Government’s National Greenhouse Accounts Factors (June 2009). Calculation methodology externally reviewed by PAE Holmes.

<sup>†</sup> Climate Works and Property Council of Australia, Unlocking barriers to cogeneration – Project Outcomes Report (September 2011)

<sup>#</sup> Ratings achieved by connecting to the PEP Energy Centre are dependent on GreenStar and NABERS calculations for each individual building – contributing factors would be, but not limited to, pre-existing energy efficiency of the building and amount of energy it is supplied by PEP Centre.