

**AUSTRALIA'S DILEMMA WITH HIGH
PENETRATIONS OF RENEWABLE ENERGY
AND
THE POTENTIAL IMPLICATIONS FOR THE
DISTRIBUTION GRID.**

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ABSTRACT

Traditional power systems have been based on large generation units connected to high voltage transmission systems which are subsequently connected to medium and low voltage distribution systems.

The reasons for this are obvious:

- a low levelised cost of electricity;
- good reliability of supply;
- relatively easy planning , analysis, protection and earthing;
- inherent transient storage; and
- safety is able to be handled in a sensible manner.

The advent of cheap solar panels combined with an explosion in the retail cost of electricity in Australia has meant that electricity consumers are now able to generate their own electricity at prices far below the retail price and even below the wholesale price offered by large generators. The first point in the list above is no longer true in Australia and this may have a profound affect on the viability of its energy systems.

This presentation investigates a scenario whereby the bulk of a system's energy is generated locally by small distributed generators and discusses various scenarios as to how the problem of controlling this multitude of distributed sources may be able to be achieved..