

**Senate Standing Committee on Environment,
Communications and the Arts**

**Renewable Energy (Electricity) Amendment (Feed-in-Tariff)
Bill 2008**

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**Community Power Schemes - Implications of advances in small
gasification systems and the the role of a FiT in developing
natural synergies for community benefit**

Current and proposed FiT schemes are aimed at the individual user and installation of micro scale generation, and in their simplest form discourage participation by businesses and corporates in the ownership by limiting scale of such systems.

Well and good, but what about community organisations, charities and not-for profit groups that do not operate for individual shareholder benefit but which fund important community services? What if community and sporting clubs for example had the potential to raise revenue outside legalised but still problematic gambling activities? Or charities who could supplement their income from door knocking and good will?

There is an argument then to extend a FiT to single ownership of multiple domestic systems or larger scale power plant where that ownership is vested in a registered organisation whose profits are returned to the community in various forms and not for private benefit.

Thus a charity might (through corporate or Utility sponsorship for example) install roof mounted solar or other renewable energy systems to private dwellings where the owners could not afford to do so for themselves but where the system and income are owned by the managing group, with the home owner getting some offset in electricity costs. Larger systems might be installed at organisation owned buildings and club premises with the scale no longer dictated by an arbitrary cut-off point for a FiT.

Many of these charities and groups also deal with the disadvantaged in the community, those who arguably would benefit the most from offset power bills but which have the least opportunity to install eligible renewable power systems in the first place.

Current advances in Gasification Technology of "Stored Solar" power:

It is important to note that the first gasification patent was taken out in 1788, and that the original internal combustion engines designs were based on fueling with "producer gas" from these early designs before fossil fuels in the form of petrol and diesel became cheap and plentiful and took over. Since then only in times of national emergency or crisis have the earlier technologies become prominent thus we see that more than a million gasifiers were operational in the second world war and in Sweden alone 20,000 tractors were operated using the technology during this period.

Thus the technology itself is well understood and proven. We have been involved in the development of a simple yet robust and flexible biomass gasification system for some time and are pleased to be now at the point of public release. The "Powerhearth"™ system uses modern materials and design to overcome most of the traditional limitations of the technology to provide clean high octane gas from biomass sources to run a internal combustion engine, boiler or gas turbine.

Moreover it is designed from the outset for mass production, greatly reducing its unit costs from an industry standard >\$3000kWe installed to less \$1800kWe including optimised and automatically managed IC engine and generator. The future promises even better conversion systems for the gas produced in the form of quiet and reliable closed cycle steam engines through to advanced fuel cells.

These systems inherently provide base load power and can provide all of a dwellings space heating and hot water requirements almost as a side benefit.

The first local demonstration system is complete and has performed above expectations. Three new production systems for different scales are now in building with more to follow and the first overseas and domestic orders are in the final stages of negotiation.

In short a new viable renewable energy option based on older proven technology is now available and is capable of transforming the renewable energy marketplace in the near future. At broader scales it is no exaggeration to state that the proposed 10% or even 20% reduction in greenhouse emissions by 2020 can now be readily achieved without undue impost on industry. (Please see attachment for a more complete overview.)

Incorporating the community based approach on a FiT using this technology might then allow a local council or other community focused group to reduce community costs of services and provide improved sustainable living conditions for its residents.

Thus community focused organisations could fill a niche in providing renewable power and encouraging appropriate technology uptake yet not otherwise be in a competitive position with normal business or free market development. We call this approach Community Power Schemes. The premise itself is simple - communities respond well when they have a common concern and a more direct financial and management interest in their own affairs.

The implementation of a Community Power Scheme is equally simple: A local community organisation is provided with a financial vehicle, perhaps Community Bonds through a local community trust, or some form of regional/local superannuation scheme, to invest in a renewable energy power plant for their town or area in the 50kWe - 1 MWe size range. Ideally this investment should also be matched dollar for dollar with State and/or Federal

funds under complementary schemes although this is not strictly required for viability but would indicate and support government interest in assisting development of sustainable communities. The power plant would be managed on a business basis with the profits distributed or re-invested in other community projects through some form of agreed mechanism.

Such plants based on "stored solar" energy of biomass across towns and communities would efficiently capture otherwise diffuse and normally inaccessible renewable fuel sources and provide a high degree of redundancy in the grid system with benefits flowing backwards to major centres.

A 1 MWe rated integrated power plant would cost in the order of \$1.8 million to establish and employ the equivalent of two to five persons within the community with other flow on benefits increasing with scale. Thus it could per MWe of installed capacity:

- Provide power for up to 1000 homes.

It would require up to 10,000 tonnes per year of biomass from locally available sources and recycled fuels including:

- Local Government and private green waste,
- Other urban waste derived fuel including paper, used cooking oils etc.
- Commercial timber wastes (pallets, builders spoil etc).
- Local plantation residues or purpose grown plantation fuel.
- Crop residues.

Such systems would provide a high degree of reliable, distributed power security whilst also providing a means of direct group action by local communities towards more sustainable living and active GHG reduction, greatly extending the effectiveness of the proposed FiT legislation.

Where suitable sites were available adjacent to public or private hospitals then other public benefits could be captured, particularly as a Gasification driven plant could meet all of a hospital's hot water and space heating needs as well. All of the above would reduce a range of community service costs whilst also distributing surpluses back to the same community for use in common purposes.

Using community capital in combination with a FiT also greatly extends the value of these public funds deriving similar benefits to private capital initiatives in public infrastructure of recent years without the potential negatives and adverse public perceptions of such private investment.

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