Local Power

Bringing Renewable Energy to Our Locality

Russ Holmes, Rob Farago and Helen Beazley

Local Power: Bringing renewable energy to our locality
by Russ Holmes, Rob Farago, and Helen Beazley

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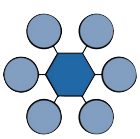

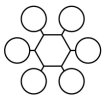

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Community Initiatives Resource Association, for taking Local Power under its wing.

Councillor Helen Abrahams for her support and encouragement.

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Janet Davenport and Carmel Rosella for letterbox dropping in 4101.

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Sannie Pritchard for letterbox dropping 4101 and her diligent proofreading, but we are to blame for all the remaining errors and non-standard phrasing!

Fiona Ellwood for graphic design.

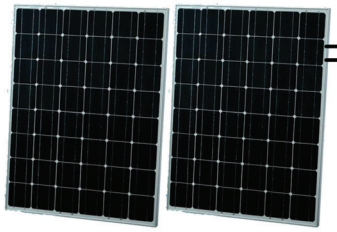
Table of Contents

Between April and July 2008, almost 140 home owners in Brisbane began generating their own renewable energy as a result of participating in the largest Australian PV solar panel buying collective at that time. This is the nuts and bolts story of the Local Power Buying Group.

This practical account might be useful to others who want to join with neighbours, friends and family to make their community's energy consumption more planet-friendly. Our story is also a keepsake for the Buying Group and all of its supporters, to remind ourselves that we do not have to accept inaction – that we can make a difference together – now!

How PV Solar Works

Local Power – PV solar system diagram (simplified conceptual only)



1) Solar panels array on the north facing roof generating power when the sun is shining
6 (1kW) , 9 (1.5kW) or 12 (2kW) panels mounted on aluminum rails which are in turn mounted on the roof

2) DC cabling from array to the inverter
One or two "strings" of cabling, depending on the inverter model and size of the panel array

5) Energex meter
Second energex meter in your meter box measures how much solar electricity has been generated and will reduce your electricity bill

3) PV Inverter
Located inside or under your home the inverter converts DC power to 240V AC power.

4) 240V AC cabling from inverter to energex meter
Power can now be used in your home or "exported" to the grid

The Public Meeting

Local Power Buying Group: Applicants Plotted

Meterboxes Needing Upgrade

The ***Local Power*** Van

Buying Group #1 Offer

fully installed cost* without PVRP financing fee								
system name	cost of system	deposit payment	balance payment	total upfront payment	PVRP rebate	cost less PVRP	cost less PVRP and REC at $15	cost less PVRP and REC at $39
1kW	$10,461	$1,500	$8,961	$10,461	$8,000	$2,461	$2,146	$1,642
1.5kW	$14,906	$2,500	$12,406	$14,906	$8,000	$6,906	$6,426	$5,658
2kW	$19,100	$3,500	$15,600	$19,100	$8,000	$11,100	$10,455	$9,423
3kW	$26,361	$5,500	$20,861	$26,361	$8,000	$18,361	$17,386	$15,826
fully installed cost* with PVRP financing fee								
system name	cost of system	deposit payment	balance payment	total upfront payment	PVRP rebate	cost less PVRP	cost less PVRP and REC at $15	cost less PVRP and REC at $39
1kW	$10,626	$1,500	$1,126	$2,626	$8,000	$2,626	$2,311	$1,807
1.5kW	$15,071	$2,500	$4,571	$7,071	$8,000	$7,071	$6,591	$5,823
2kW	$19,265	$3,500	$7,765	$11,265	$8,000	$11,265	$10,620	$9,588
3kW	$26,526	$5,500	$13,026	$18,526	$8,000	$18,526	$17,551	$15,991

The Installation Process (the 3kW System)

Local Power

http://localpower.net.au

2 The idea

In mid 2007, we began to explore the idea of a Buying Group for PhotoVoltaic (PV) solar panels in West End, Brisbane.[1]

Almost every day we were being confronted with media stories about climate change, the need to reduce our carbon emissions and live more sustainably. Queensland had been in a drought for several years and dams were at record lows. Public campaigns encouraging people to conserve water had worked very well, halving mains water use per person and giving Brisbane one of the lowest per capita water usages of any city in the developed world. If only Brisbane residents could be as committed to reducing their fossil fuel energy use. Perhaps a PV solar panel Buying Group could help instill such a passion for energy conservation and self-sufficiency.

3 PV solar panels in the Queensland context

In the southern hemisphere PV solar panels are installed on north (or sometimes east or west) facing roofs and convert solar energy directly into electricity, which can then be used in the house. No greenhouse gases are produced in this process.

With a grid connection, a household can put any excess electricity it produces into the electricity grid (and get paid for it). It can then draw electricity back from the grid when household use exceeds supply, and when the sun isn't out.

Contrary to several myths, PV solar panels produce several times the energy in their lifetime than is used in their manufacture and installation. After the first three or so years, the energy produced by the panels fully compensates for the fossil-based energy used to manufacture and install them.[2] Energy produced in the remaining 20+ years can be regarded as greenhouse gas free.

In Australia, 84%of electricity comes from coal-fired power stations.[3] And because of Australia's abundance of coal, electricity is cheap for the consumer against world standards. However, burning coal releases more greenhouse gases than just about any other form of mass energy production, making Australia's electricity supply a key contributor to greenhouse gas production.

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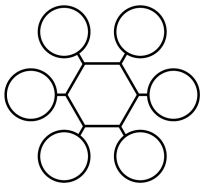
[1] "We" are Russ, Rob and Helen. Helen participated in the early stages of the first Buying Group, helping set up administrative processes, as well as drafting much of this account. Rob and Russ rolled out the Buying Groups: Rob worked about 20 hours a week and Russ full time, from March to July 2008.

[2] http://www.ecn.nl/docs/library/report/2006/rx06016.pdf

[3] http://www.nemmco.com.au/about/057-0428.pdf



At the time we began thinking about this project, in mid 2007, the number of PV installations in Australia was low compared to many developed countries. Even worse, our very sunny state of Queensland had a very low uptake compared to other Australian states.

4 Our dream

We wanted to buy panels ourselves and wanted to encourage our neighbours in inner city Brisbane to do the same. That way we could all significantly reduce greenhouse gas emissions and sell back to the grid so that other people in our community would be using green electricity even without panels. We would also be re-locating a fair bit of energy production in the local community, giving us greater ownership and control over energy assets.

In addition, we were hoping that by generating our own renewable energy we would become more determined to moderate our electricity use to get as close as possible to self-sufficiency in electricity. We had already seen how the take up of water tanks had helped people become more conscious of their overall water use.

However, PV solar panels were expensive to install, even with the $8,000 rebate offered by the Federal Government. We thought that if we could get the price down for households through a bulk buy, and so entice another 50 or so households to install panels, we would be doing something much more valuable than just getting the panels by ourselves.

Although a bulk Buying Group for solar hot water installation may have resulted in a 'better' environmental outcome (others had done this), generating electricity really captured the imagination of hundreds of Queenslanders. So we started along the path of a large community based PV solar panel rollout.

We knew that running a Buying Group would take a lot of time and energy (that now seems like an understatement) and we were not going to sink effort into the project just so that people could get a 'bargain'. Our dream embraced a range of equity, community, sustainability and business desires.

- ☼ Participants would include those who could not afford the normal retail price of PV solar panels, or did not have the technical confidence to work through all the product issues and options - people who would not have joined the solar energy revolution otherwise.

- ☼ Localities, and in particular our locality in inner city Brisbane, would embrace the idea of localising energy production and demonstrate that 'the burbs' could add thousands of kilowatt hours of clean energy to our energy production.

- We would be sending a message to Government that ordinary people were making a political statement against fossil fuel and the nuclear alternative.

- Instead of acting as individual consumers, we would experience the camaraderie and strength that comes from doing something collectively and consequently move beyond the 'self-interested' nature of consumption towards acting cooperatively. We thought that there was also a possibility that members of the Buying Group might become an advocacy group for green energy, hence moving from consumer to citizen action.

- People would reduce their consumption to reduce the difference between their household's consumption and their solar energy production. We assumed most people would purchase a 1kilowatt (kW) system, which usually covers a third of an average family's energy use. But we hoped that, as people tracked their energy production, they would be enthused to find ways of reducing their energy use to bring consumption and production levels closer together, and so reduce their environmental footprint even more.

- The Buying Group would provide a financial boost to the local PV industry and increase the number of experienced installers in the local area.

- We would achieve our objectives within an ethical business framework – strengthening rather than 'squeezing' the small local business installers, developing good partnerships with distributors, keeping our promises to Buying Group members realistic, delivering on quality as well as price, delivering well, and building rather than detracting from the reputation of the industry.

5 Was our idea any good?

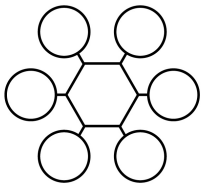
Before we could commit to the project we had to do our market research.

- Had a PV solar panel Buying Group happened before?

- What did we have to know about the technology to pull it off?

- What did we have to know about the industry to work out if a Buying Group could produce significant savings?

With some Googling, we found a successful, installer-driven, Buying Group model in Mountain View, California, by a company called Solar City. The installation company offered special discounted deals for towns where 50 households agreed to purchase PV solar arrays. Rob was able to talk with people involved (from both the company and the community), and now we had concrete evidence that savings could be significant through a Buying Group.



The model's success also confirmed that 'geographic clusters' of households could be a major source of cost reduction and this eventually became a central part of the approach we developed. As time progressed, we also made contact with several companies in Australia attempting an even more adventurous manufacturer/installer-driven bulk installation model compared to ours.

Rob and Russ spent hours researching the PV solar panel industry: PV Solar technology (e.g., conventional panels, sliver cells, thin film, sunballs), the manufacturers (from the market leaders to the new kids on the block), manufacturing processes, the global and local supply chain, global supply issues, countries leading the take up of solar electricity and why, Government incentives to increase uptake throughout the world, Australian manufacturers and distributors, cost structure and pricing of the industry, and the technicalities and practicalities of installation. The following key questions were answered through this process.

What government financial incentives were available? In Queensland we could take advantage of three incentives.

- ☼ The Federal Government residential PVRP (now SHCP) rebate, which was a maximum of $8,000 ($8/Watt starting at 450W and to a maximum of 1kW), and the community use building competitive rebate of 50% of a 2kW system.

- ☼ Selling Renewable Energy Certificates (RECs) once the solar panels were installed. The price of RECs can vary week to week. We eventually sold the RECs for Buying Group members at a bulk rate of almost $1 per Watt.

- ☼ Feed in Tariff. In the middle of the rollout, the Queensland Government announced a Feed in Tariff (FiT) called the Solar Bonus Scheme. This pays 44c/kW for any renewable electricity exported to the grid, unlike European schemes which pay the higher rates for all electricity produced. The Queensland FiT helps in financial payback of the system, but mainly for homes that don't use much electricity during daylight hours.

What kind of savings could we expect from a bulk buy? Because international supply of panels and components was tight, it was unlikely that there would be huge savings through bulk buying panels only. So for a Buying Group to achieve savings, these savings would have to come from other economies of scale as well.

Would current technologies be usurped by new technologies in the next few years? There is a lot of ongoing innovation in the area (as many subscribers pointed out – have you considered sliver cells, what about ……) with the promise of prices coming down significantly. But at the time they were untested innovations, and even the most advanced developments were some time away from mass commercialisation. We could have waited another two years to see

what happened with these technological developments, but meanwhile our personal contribution to greenhouse gases continued to mount. So we decided it made sense to stick to the conventional technology that had been around for decades.

Would the price come down in the next few years as supply ramped up? We expected that prices would come down because of increasing supply (especially increased production of refined silicon). But the other part of this equation was the Government rebate of $8000. We expected that the rebate would be reduced as the price of the product came down so that the consumer would not be in any better position over the next few years at least.

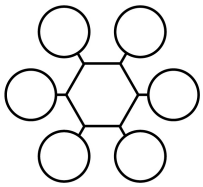
What does the local installer industry look like? Any electrical work related to the grid must be performed by an electrical contractor. In addition, the 'specialised' or technical part of home PV installation (affixing the panels, connecting cables from the panels to the inverter and then to the meter box) can only be performed by an individual who has undergone mandatory certification for solar system design and installation. There seemed to be enough electricians who had become accredited PV installers with the necessary certification to get some competitive pricing on the installation, especially if we could convince them that a Buying Group model would lead to efficiencies in installation.

Further into the process, some industry insiders told us that the PV industry needed to change from a low volume 'cottage industry' model where many hours were often spent on sales and marketing for each and every customer, sometimes involving energy audits and other services, which meant each installation was almost a completely customised design and tended to be more expensive. The established industry participants were not always happy with the newer higher volume and more standardised model that was able to significantly reduce the price.

In summary, several months of research revealed that the Buying Group idea was workable, but that there needed to be a number of strategies to reduce the price for consumers (not just relying on a bulk buy of components). The industry knowledge we developed through this research also put us in a much better negotiating position when it came time to talk to distributors and installers as we knew what we were talking about!

6 Fine tuning outcomes and working out the model

Through our research, and by applying our understanding of community development and business principles, we decided that we wanted the following specific outcomes from the project.



For individuals

- ☼ Significant savings compared to going with a retailer. Not 10% off the best retail price, more in the vicinity of 20-30%.
- ☼ Good quality installation, using products and installers with a good track record.
- ☼ Participation by people who would not otherwise have installed PV solar panels due to price. This crystallized into our aim to provide an entry level price for a 1kW array at under $2000, the nearest best retail price at the time, being around $3700.
- ☼ Participation by people who would not otherwise have installed PV solar panels due to the complexity of product choice and paperwork process.
- ☼ Maximising the size of PV Solar arrays that participants could purchase (e.g., enabling people to have a 1.5kW system for not much more than the cost of a 1kW system from retailers).

For the community

- ☼ Transforming isolated individuals into groups of householders that were role modeling green power generation in their neighbourhood.
- ☼ Opening up the opportunity for a green energy household producers network to influence government policy.
- ☼ Pioneering a grassroots, not-for-profit community group approach to tackling household generated greenhouse gas emissions.

For the industry

- ☼ Providing installers with a decent wage rather than 'squeezing' them as we suspected some large installation companies were doing, but on the other hand not letting the old models and higher prices reduce the level of take up.
- ☼ Improving the local skills base for installing systems. This would be done by employing local family run businesses.

For the planet

- ☼ Reducing greenhouse gases due to a far greater take up of PV Solar technology than would have occurred without the Buying Group (some people would have gone ahead with PV regardless of the Buying Group, but the savings of the Buying Group allowed them to purchase a larger system than they could otherwise afford).

- Reducing greenhouse gases due to people changing their behaviour, through the educational process of becoming members, working out how much energy they used compared to PV Solar power generation and trying to reduce the gap.

7 Could we pull it off?

To pull it off, we needed:

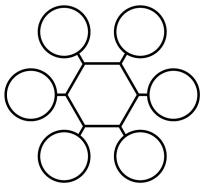
- a simple idea to communicate,
- a good deal to offer,
- a quality product,
- customer trust,
- a simple, controlled Buying Group process,
- relevant knowledge and skills,
- access to capital, equipment and helpful services at low cost,
- hours to give voluntarily or at a modest wage compared to trade rates, and
- willingness and capacity to bear risks that we couldn't avoid or minimise.

A simple idea to communicate

The public's experience with the concept of Buying Groups meant that people could readily understand what we were trying to achieve. However, an educative process was still required as some members expected us to operate with the flexibility expected from a retailer.

We sometimes had to reinforce two limitations in particular, of Buying Groups.

- Limited choice. To achieve savings through volume there could only be a few options in terms of panel type and inverter type. We explained in our website FAQs *you may find your component preferences or needs differ from the options available (you may want components that are cheaper, more expensive, have different features, or are just different for whatever reason). Unfortunately we cannot cater for all these variations because Local Power would not be operating as a Buying Group, but more as a retailer. People who join Buying Groups have to be able to tolerate this limitation in choice.*



- ☼ Waiting. The larger the Buying Group the better the savings, but it also means patience has to be exercised for those who are at the tail end of inspections or installation schedules.

Unlike the relatively easy to understand concept of a Buying Group, electricity generation has its technical complexities. There was a wide range of levels of understanding (from electrical engineers to those struggling with the notion of a kilowatt) and we needed to tailor our communication accordingly.

A good deal

We needed to both identify how we could intervene in the normal solar panel retail process to achieve savings and to structure 'products' that would appeal to potential Buying Group members.

We spoke to Australian manufacturers and distributors, installation businesses and electricians. Installation involves purchase of the components from a supplier, design of the system by a certified designer, labour and a skilled installer to get the panels attached to the roof, and some electrical work requiring an electrician.

Once we started speaking to suppliers and installers, we gained a sense of the costs of the various elements of the installation process. We realised we could adopt one of three broad models.

1. Negotiate a bulk installation with a supplier or installation business that would project manage the entire installation including rebate paperwork.

2. Negotiate a bulk installation with a supplier or installation business that would project manage the entire installation, but do the rebate paperwork ourselves.

3. Negotiate a bulk buy of components and project manage the installation process and rebate paperwork ourselves, contracting the PV installers and electricians to install the systems.

We quickly worked out from talking to key industry players, including talking to a large installation company, that if we were just offering a large number of customers to a supplier or installer we would only be given a small discount off the regular commercial price of installation. This is probably because no one had installed a large group in a short period of time and didn't appreciate the efficiency advantages of geographic clustering for inspections and installations.

We found we had to pull the whole process apart and use some innovation plus take on the administration and logistics work at below commercial rates to achieve significant savings. So option three was the option we decided to pursue. In hindsight, it would have been much less work and possibly risk if we

had chosen option two, which is probably what we would recommend other community groups wanting to go down our path. Nowadays with many commercial companies running community based clustering, option one is also viable to someone who can find nine other friends in their suburb wanting PV solar panels.

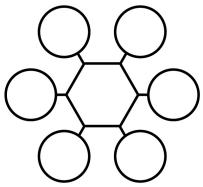
A bit of the chicken and egg scenario emerged in negotiating a price for components: it is hard to get a good price when you can't be definitive about the size of the bulk buy, but it is difficult to work out the scale of interest until you offer a good deal. We experienced a high degree of unresponsiveness to a bulk order from some component suppliers and installation businesses we approached, with absolutely no or insubstantial discounts.

We settled on Choice Electric Co., a local distributor of Sharp panels. Our negotiations led to a successful win-win deal and we succeeded in getting a good saving off the regular wholesale component price providing we achieved a Buying Group size of 50 (30x1kW, 10x1.5kW and 10x2kW). The discount was increased slightly once the reality of the savings was apparent to Choice, after about 50 installations with over 80 more installations to go.

In the end, savings came from the following areas.

- ☼ Bulk buying one brand of solar panels (and related components) from one component supplier/distributor.
- ☼ Taking on tasks that would normally be done by the installer at a higher fee, in particular administration, initial house inspections, and component delivery to the place of installation.
- ☼ Geographically clustering Buying Group members to bring down installer price (mainly through the advantages of reduced travel time and enabling installers to have teams in same area).
- ☼ Bulk selling Renewable Energy Certificates.
- ☼ Renegotiating supplier and installer prices down slightly after about 50 installations when they were more confident in the financial benefits of bulk buying and geographic clustering for installation, and after we had realised we under-budgeted for the hours needed to do the administration, logistics work and the insurance costs. This importantly also allowed Local Power workers to earn more sustainable community hourly rates rather than poverty rates that our under-budgeting would have entailed.

As part of the process of determining savings on components and installation, we had to work out the specific products and their price points which would appeal to householders.



Our fully installed price for each size of PV solar system needed to take into account the following costs.

- Components.
- The fee that installers charged to install a particular sized system.
- Component storage (we would need to keep the components stored somewhere when they were delivered by the supplier).
- Delivering components to the installation location.
- Insurance (this part was more complicated and expensive than we thought and included public liability, storage and transit insurance).
- Capital (we needed a loan to cover cash flow deficits as we had to pay suppliers and installers before receiving money from members and rebates from the Federal Government).
- Modest community hourly rate wages to cover our project management, logistics and administration work.

We decided to offer four solar array sizes (usually with the option for a larger inverter so that the householder could easily expand their array in the future). We paid particular attention to reducing the barriers to purchase at the entry level with three strategies.

- Creating an under $2000 option.
  We decided on a configuration to achieve the best entry level price we could (without eroding quality), believing that an option under $2000 would enable people to participate who otherwise wouldn't be able to consider PV solar panels. The one limitation for the entry level installation was that it wasn't technically feasible to offer a larger inverter, thus removing the option to easily expand the installation later. In the end we were able to offer $2461 for a 'standard install' not including selling the RECs, and after selling RECs our lowest price became just under $1500.
- Carrying the rebate if members required this.
  We charged a $165 finance fee for those who could not wait the six weeks or so between full payment of the panels and payment of the Federal Government rebate. However, we did ask that people carry their own rebate if at all possible to reduce the amount of capital we needed to find to enable Local Power to carry the rebate.
- Imposing a higher administration fee on the larger systems as a form of cross-subsidisation for the smaller systems, although the larger systems did cost more to inspect, store, deliver and insure.

Quality conventional product

We deliberately chose Sharp panels over cheaper Chinese panels. While this probably added 10% to the price, we wanted the security of knowing that these panels would have the best chance of lasting the 25 years of their performance warranty.

Sharp was until 2007 the largest PV manufacturer in the world, had many decades of PV manufacturing experience and a reputation to protect if there was a bad batch needing warranty replacement. Also, as we would have to bear the cost of getting faulty panels off roofs and returning them to the distributor for the first year and provide warranty advice to members for possibly the next 25 years, we didn't want to create a nightmare for ourselves if cheaper panels failed.

Our choice did not go unqueried.

- We received unsolicited offers from other distributors offering cheaper (Chinese or Taiwanese) panels.

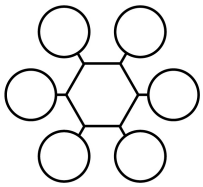
- We received questions about why we weren't buying Australian made panels. We couldn't secure Australian made panels at a competitive price. The only Australian manufacturer of PV panels, BP, has since stated they are shutting down their Sydney factory in 2009 because Australia is not a big enough solar market and they aren't willing to invest in making their factory 20 times bigger to compete with their other factories in the US, India and Europe. At least our 1kW inverter was Australian made, manufactured on the Sunshine Coast.

- We received advice that we should be looking at newer PV technologies (people erroneously believed these technologies were already commercialised). One technology that we could have considered more was thin film amorphous silicon panels because of their lower embodied energy, better tolerance to shade and better performance at high temperatures. A good idea, but because this technology needs approximately twice the roof area to generate the same electricity, it didn't suit many of our members who lived in the inner city with smaller than 'average' roof areas.

Gaining customer trust

A rip off?

We believed that two concerns would need to be addressed before an interested community member would commit to joining our Buying Group. Firstly, individuals who did not know us personally may have been concerned whether we were bona fide – particularly because we were asking people to pay



a considerable deposit on joining, and to pay the full amount before they had solar panels on their roofs.

This concern may have been heightened because of our decision to limit the possibility of personal contact in order to make the project doable (see later). In addition, the media was exposing rip offs in the rainwater tank industry at the time (another sustainable industry augmented by rebates).

We hoped that organising as a community group rather than as a business would reduce fears. While the work would provide a modest community hourly rate income for us and would involve us running the project along business lines, we wanted to be clear about our motivation – to empower neighbours to make a dent in their neighbourhood's non-renewable energy use – not trying to make a profit out of the Government rebate. So we negotiated to be auspiced by Community Initiatives Resource Association (CIRA), an incorporated association that we knew well. Later, partly for insurance reasons, we actually became a program of CIRA.

We also decided to hold a public meeting so that people could get a sense of who we were. In addition, the media coverage we received may have equated to 'these people can be trusted because they have been on TV'.

Another positive for our credibility was that, as individuals, we were involved in various local volunteer networks, and we actively sought to engage with other local networks. We were confident that the Local Councillor, and people in such groups as CIRA, Spiral Community Hub, the Greens, West End Community Association, The Ashgrove Solar Hot Water Buying Group, the Alternative Technology Association (ATA), and Food Connect, could vouch for us when people started to think about joining the Buying Group.

However, we still must admit that we were quite staggered that people, particularly in suburbs away from West End, were willing to give their money to strangers. We had people that we didn't know delivering flyers on our behalf, getting local news coverage on our behalf, nominating us for the monthly Telstra environmental award, and entrusting us with almost $2 million in funds for their PV systems. We were very encouraged that trust was so high and we suspect that it came largely from people who were also involved in volunteer networks.

So most people trusted or hoped we were legitimate. A handful asked for CIRA's audited accounts – and almost all of the people making that request joined (although one missed out because we closed the Buying Group early). Of course, some people were not able to exercise the trust needed to join a Buying Group with no track record. One person tracked down our home phone number to talk to us, rang up CIRA, called the Local Councillor who we gave as our reference, but just couldn't take the step. In fact we found ourselves saying please don't join us, it is just not for you, it is beyond your tolerance level of

uncertainty. We don't know how many others failed to take the step for the same reasons.

Well-intentioned but incompetent?

In addition to the question of our motivation was the equally important issue of whether we had the skills, expertise, knowledge and time. We engendered trust through a reasonably professional looking and hopefully informative website, swift responses to email and telephone inquiries, a smooth administration process, regular newsletters, and the public meeting at which we hopefully demonstrated our depth of understanding and ability to answer just about any reasonable question. Of course we weren't perfect, there were always the occasions where we did make errors but people were generally kind about that.

We did have a bit of feedback that we could have pushed our credentials as business people and technically literate due to qualifications and experience, but we wanted to avoid the 'hard sell' and let the Buying Group model speak for itself.

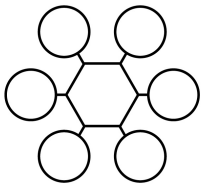
Initial inspections probably also had a role to play in relieving the anxieties of members. Householders could form a judgement about our capacity to deliver.

There was a long wait for some members for installation, depending where their cluster of houses fell on our installation schedule. Deposits were paid as early as January and the last houses installed in July. To assure members that Local Power was delivering, we posted a photo collage incorporating each installation, updated at least weekly, on the website.

Keeping the process simple and controlled

Paperwork for the installation process is a big barrier for the good intentioned but faint hearted (and especially the non-technical consumer). Official forms included two rebate-related forms, one electricity distributor related-form and one REC form. One person interested in joining the Buying Group said he wanted someone he could trust to just hand over the money to, who would do all the thinking and research for him (akin to wanting to buy a TV or microwave but not at all interested in its internal workings, which is quite reasonable to a degree).

Although time consuming, controlling the flow of paperwork was also beneficial for us. We wanted to eliminate nightmare scenarios, like inventory costs burning a hole in our pocket because members were late submitting rebate applications, or a few members in one cluster being late with their forms, thus wiping out savings we hoped to get from clustering installations.



So keeping the paperwork process as simple as possible for the householder was a key value-add for our members and reduced some of the more significant financial risks for Local Power.

Relevant knowledge and skills

We found the following technical and business skills helped us make good decisions, undertake project management efficiently, and saved some dollars.

- ☼ Technical background in electrical engineering and the building industry helped us come up to speed in the industry quickly (thanks to the internet). This was assisted by being linked into helpful networks such as the Alternative Technology Association (ATA), universities, the Environmental Protection Agency (EPA), and the PV solar industry.

- ☼ Business background, together with technical knowledge, assisted in negotiations with suppliers and installers to achieve mutually agreeable prices and partnerships.

- ☼ Web design skills allowed us to build our website for free, saving thousands of dollars. The website reduced time spent on person to person inquiries as we included as much information as possible to explain the Buying Group process together with a FAQ page which we added to as we received inquiries.

- ☼ Database and 'mail merge' skills removed a lot of the grunt work by allowing customers to provide all necessary data online, which we downloaded to a spreadsheet. We then modified all the necessary forms so that the applicant data they required was automatically filled in from the spreadsheet. This saved us many hours of work, but would have cost thousands of dollars if we had to pay for this system to be created. We also automated receipts and tax invoices in this way.

- ☼ Project management experience assisted in developing and implementing efficient and cost effective processes around stock control of inventory, deliveries, and invoicing. This ensured the 22 line items per system plus panels were correctly delivered to installers, to complete each job as scheduled.

Access to capital

The Buying Group was to be self-financing in the sense that the total cost of components and installation would be passed onto the Buying Group members. The administration fee went to cover the labour of the Buying Group organisers, insurance, inspection and delivery petrol costs, and storage. The finance fee covered the cost of capital. We were successful in attracting capital to cover two main cashflow issues.

- ☼ Paying component suppliers before receiving payment from self-financing Local Power members.

- ☼ Paying our suppliers, installers, Local Power wages and other costs in advance of receiving the rebates of 35 members ($280,000 all up) who asked us to carry the rebate.

While we had planned for several hundred thousand dollars being required for several months (depending on the timing of rebate payments and the number of members requiring financing), in the end we only needed $100,000 for a month to cover the cash flow requirements for the following reasons.

- ☼ Instead of having to pay for the entire order at the commencement of the project, we negotiated to pay the supplier for each weekly delivery.

- ☼ Deposits, plus balances paid before installation (often more promptly than requested), from households scheduled for later in the process covered the cost of deliveries and the cost of carrying rebates for two out of the three months of roll out.

Vehicles and Equipment

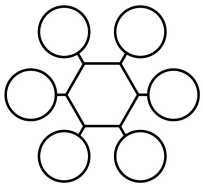
We were able to use the van owned by one of the organisers for deliveries, saving $1500/month to hire, and computer equipment and our home offices for administration. We also had the support of a friendly ISP, OntheNet, for the website space and email services. We did however, have to pay for secure storage.

We were grateful for the support of our Local Councillor throughout the process. A small grant from the Dutton Park Ward Livability Grant Committee paid for Local Power signage on the 'delivery van', a commercial grade scanner so that we could keep records without photocopying, and some mobile display equipment.

Hours to give voluntarily or at a community sector/below trade rates

The project could not have been accomplished without significant altruistic effort. It was only achievable because one of the organisers devoted about six months full time, forgoing regular income for a community hourly wage, while the other main organiser reduced his normal paid hours of work to spend about 20 hours a week on the project, again on a modest hourly rate of pay. However, we also tried to work smart, mainly through the use of technology. We made the following decisions and harnessed technology to deliberately minimise time spent talking to potentially hundreds of interested people.

- ☼ Minimising queries with an informative website.



- Providing a self-assessment on the website rather than having to talk through each order over the phone.
- Providing an answering service number rather than our personal phone numbers and even using our first names only to prevent us being found in the white pages (a few sleuths uncovered our home phone number) and removing caller ID when we returned phone calls.
- Using emails as the primary form of interaction.
- Emailing forms for signature rather than posting or making face to face contact (though we sought signatures from members in close proximity face to face most of the time).
- Asking for paperwork to always be sent via our PO Box. Several people who were late in returning their paperwork helpfully offered to drop it off at a street address, but as we worked from our homes the interruption of potentially 100+ visits to our family life would not have been sustainable.

The Buying Group would probably have failed if we put these gatekeeping processes in place without prompt response times to emails and answering machine queries. We did everything we could during the expression of interest phase to contact people as quickly as we could, usually within 24 hours.

Other computer and internet processes that saved time included the following.

- Google notebook and documents for collaboration.
- Digital photos for capturing onsite information.
- Document pdf scanner to save paper.
- Google maps for clustering and planning inspections and deliveries.
- Lots of emails, ‘mail merge’ and spreadsheets.
- Clustering also worked to reduce our time, not just for the PV installers. Local Power was able to use its time more efficiently when undertaking site inspections and making deliveries.

Bearing risk

Much thought and strategising went into eliminating risks. For example, the risk of bad debts was eliminated by requiring payment before installation (a week before to ensure cheques cleared). But some risks we had to be prepared to bear, the most significant as follows.

- The risk of one of the two main organisers of the Buying Group unable to complete their role in the project.
- The risk of negative changes in the regulatory and rebate system before the installation rollout was completed.
- The risk of a large number of orders being withdrawn before the final payment was made, destroying the viability of the Buying Group as a whole.
- The warranty risk. Local Power is responsible for removing and returning any faulty components to the distributor for the first year and for providing warranty advice to members for possibly the next 25 years.
- The risk that our supplier and installer partnerships would let us down even though we did our due diligence on all our partners and firmed up these relationships with formal agreements (as it turned out we had very positive experiences with our supplier and installers with no major issues threatening the ability of the project delivering what we promised).

8 Local Power gets underway: From orders to installation

By about November 2007, after a few months of research, which confirmed the feasibility of the idea, the Local Power Buying Group offer was ready to launch. We had already registered the 'local power' business name and had the localpower.net.au website live since June.

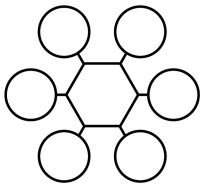
Setting up the website and inviting email subscriptions

Before finalising the Buying Group offer, Local Power set up a web page with the following features.

- An explanation of what we were trying to achieve.
- A facility for those interested to receive news via email on Buying Group developments, with email and post code as mandatory fields.
- A Local Power email address for inquiries.
- Some general information web pages about how PV solar panels work, tips on lowering energy consumption, and a comprehensive links page.

Once the deal had been brokered with the supplier and installers we invited people to order online by providing the following features the website.

- Pricing.



- Steps that a potential member needed to take from ordering to installation.
- Conditions for the Local Buying Group to go ahead, and for an individual to be accepted as a member.
- A terms and conditions agreement.
- A self-assessment calculator so that potential members could work out how much the system would cost them (if the install was standard).
- An online form to fill in which became the core of our database. We developed the form fields from scouring all the rebate and electricity utility forms so that we could collect the necessary information in the most time efficient manner.

Attracting publicity

We were lucky to attract good publicity through a number of strategies.

- A letter box drop. Volunteers helped us saturate West End and Highgate Hill, our home suburbs.
- A media release. We distributed a media release to a media email list given to us from a small local media organisation.
- Email distribution lists. Our initiative was circulated on the email broadcast lists of West End Community Association, other community based email networks, the support network of an aid and development agency, several internal environment email lists at large companies and institutions by employees who were interested in the Buying Group, Alternative Technology Association, Australian Conservation Foundation, and others.
- Newspapers. Thanks to a great photo, we ended up on the front page of the local newspaper, with a follow up article towards the end of the offer period. In addition, a friend who runs a local e-newspaper gave us top billing, we were asked to provide an article profiling one of the organisers for the *Courier Mail* (Queensland's major newspaper), and we were invited to provide a short blurb and photo of another organiser in an inner-city magazine.
- Radio. We were interviewed by local ABC 612 radio during their breakfast program and by 4ZZZ.
- Television. Local Power had a story on the main nightly news bulletin of ABC news and Channel 10 news.

Making the offer

The offer opened on 8 January 2008. We stated that the offer would remain open until February 15, but could close early if orders exceeded expectations.

The offer was as standardised as possible. A price was based on a standard house installation with the following variations.

- ☼ Size of installation (1kW, 1.5kW, 2kW, with 3kW added later because of requests).
- ☼ Tin or tile roof.
- ☼ Finance option (where Local Power would carry the rebate for the member).
- ☼ Normal warranty or warranty extension for 1.5kW and above inverters.
- ☼ Inverter upgrade (1.5kW to 2kW and 2kW to 3kW).

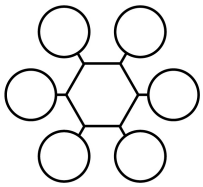
At inspections other options were given, including tilting frames for south facing and flat roofs.

Despite sometimes repeated and quite disappointed requests, we didn't offer variations such as systems with batteries, offgrid water pumping systems, camping systems, and selling just component kits as we wanted to draw a clear distinction between Local Power as a Buying Group, and a normal PV retailer and system-customising installation company.

Offer posted on the Local Power website

The prices were qualified by the following conditions which were explicit on the website.

- ☼ At least 50 homes overall participating in the Buying Group.
- ☼ At least 10 homes in each participating post code.
- ☼ Qualifying post codes were less than 50km from Brisbane CBD.
- ☼ Applicants were eligible for the Federal Government Rebate (owner occupier and the system is installed on their primary place of residence).
- ☼ Applicants allowed Local Power to sell their RECs entitlements on their behalf. We should note, however, with the current 'controversy' about selling RECs, Local Power allowed members to keep their RECs, but no one took up this option.



- There were no delays in the Buying Group process to cause supplier pricing to increase.
- The house was standard roof size and orientation (unshaded, north facing tin roof).
- The house had standard roof pitch (10-30 degrees) with panels mounted flush against the roof.
- The installation was of standard complexity as determined by the installer. This included the home being made of regular building materials, single or double storey, adequate room in meter box for additional meter, normal cabling distance to meter box, and no wiring, switchboard or meter box upgrade needed.
- The house had undercover space for an indoor inverter with adequate ventilation and out of direct sunlight.
- The house was ready to have the PV system installed as soon as Local Power obtained the components and the home owner obtained PVRP pre-approval.

To qualify as an order, applicants had to fill in the online order/registration form, pay a deposit and provide supporting documents. The deposits were $1,500 for a 1kW system, $2,500 for a 1.5kW system, $3,500 for a 2kW system and $5,500 for a 3kW system.

At the end of the offer period there were 152 orders in total, with 41 orders requesting finance and 119 orders with tin roofs. The following is a breakdown of size ordered.

- 94 orders of 1kW systems (no upgrade offered).
- 31 orders of 1.5kW systems (22 wanting it upgradable).
- 17 orders of 2kW systems (7 wanting it upgradable).
- 10 orders of 3kW systems (no upgrade offered).

We lost about 15 of these orders between sign up and installation due to the person pulling out or having to leave the Buying Group for various reasons.

- Being too far away from Brisbane, for example Gold or Sunshine Coast, or being too far away from other Buying Group members to cluster.
- Not having their roof renovations ready in time.
- Moving house or considering moving before installation.

- Not willing to risk the cost of a meterbox upgrade.
- Being affected by the 2008 Federal budget means testing of the rebate.
- A cheaper, installation company driven Buying Group forming in their community, which unfortunately for this former member didn't deliver before means testing commenced.
- Thinking we were offering solar hot water.

Terms and conditions for applicants

Local Power developed a terms and conditions policy, informed by other publicly available installer agreements, but tailored to suit the Local Power purchase process. While it safeguarded Local Power, we also tried to make it as fair as possible to the applicant, for example allowing the applicant to withdraw right up until obtaining rebate pre-approval, without any financial penalty except for an administration fee.

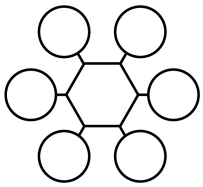
Briefly, the 2.5 page terms and conditions document asked applicants to agree to the following.

- Accept and cooperate with the processes and paperwork involved in the purchase of the installation (7 clauses).
- Accept the deposit and balance payment conditions (10 clauses).
- Give authority to Local Power and other relevant personnel to enter their premises (2 clauses).
- Bear a range of risks and liabilities related to the installation and rebate process and insurance (3 clauses).
- Accept product warranties (3 clauses).
- Accept the privacy policy (6 clauses).

Unfortunately, we went live with the terms and conditions document before we had written confirmation for one of the product warranties so within 36 hours we put up a corrected policy and explained the change to the first few applicants.

Terms and conditions for installers

While we had finalised the cost of components by the commencement of the offer, we were working off an estimate for installation that came from discussions with various Brisbane installers.



We reached an agreement with a couple of independently operating installers as we believed there were too many risks associated with having just one installer for such a large Buying Group. We also entered a written agreement with these installers that covered the price for each size of array and the guaranteed number in each post code. The installers were happy with the cost savings that came with four installations in one area, a lot less than our estimated 10 per cluster.

The great post code debate

We used post code as a proxy for homes being geographically close to each other and, as previously mentioned, set the bar at 10 orders per post code before installation would be guaranteed. Post codes that romped home were the ones we lived or were close to, 4101, 4102, and 4103. This is where we had intensively letterboxed, received intense local media coverage, and were aided by our community and friendship networks. There were many other smaller post codes, often in close proximity to each other that were unlikely to make 10 orders.

We received some 'cranky' emails. Some were quite legitimate concerns by anxious individuals whose post code wasn't going to reach 10 even though there appeared quite a lot of interest in a neighbouring post code that they could be grouped with. Some were a little offensive, claiming that we were silly (maybe a few panels short of an array an apt metaphor) for trying to cluster and quite put out by it.

During the offer we clarified our post code position further, explaining that post code was a proxy for a cluster. Consequently, we would be doing a clustering analysis that may group one post code with people physically close by, but in an adjacent post code. Also, while the offer was open our discussions with installers indicated that they were happy with the savings made by just a few clustered houses (although they really had no experience of the savings they would accrue through tight clustering).

Closing the offer

The rate of online sign ups for Buying Group membership was slow and steady at first. We received one or two a day, and some days none. If the sign up rate at the beginning was an indication, we were going to be hard pressed to make 50, which was the minimum to secure the deal with our supplier and installers. Our timing of the opening of the offer couldn't be helped but wasn't the best – during the summer holiday season. We suspected that people would sign up after returning from holidays or were waiting until they could meet the Local Power organisers in person at the public meeting. We had also been warned by our Californian Buying Group and EPA contacts that many people would wait to the last minute. Possibly there were also people who were looking at their post code tally (which was on the website and updated every few days),

imagining that they would only sign up and pay a deposit if there was momentum gathering – another chicken and egg scenario.

The public meeting was held two weeks before the expected date of closing the offer. Attendance was beyond our expectations, almost 200 people crammed into St Andrews hall in South Brisbane for two hours on a hot summer's afternoon. Even Channel 10 came and shot some footage. The meeting had three parts – an explanation of how PV solar panels worked, information about the offer, and a question time. We had positive feedback about the meeting and orders climbed steeply immediately after the meeting and during the next week.

In every newsletter we emailed (about one a week over the offer period), we warned that we would close early if we were inundated with orders. We were excited as orders passed 50 – the Local Power Buying Group was likely to be a reality. When orders reached 100 our confidence increased and as we approached 150 we were excited, but also concerned about our capacity if numbers soared towards 200. We decided that 150 would be the cut off, resulting in Local Power closing the offer a few days earlier than planned. Some people were bitterly disappointed, but we did not want the Buying Group to grow to a size that we couldn't manage well.

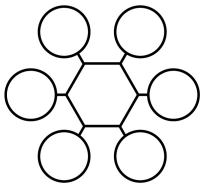
Who to include and who to exclude: the clustering analysis

As orders were received, Local Power plotted addresses on Google maps, thus beginning the process of geographic clustering. After the offer closed, we devoted serious time to this process, and came up with a geographic profile of the group.

In consultation with our installers, we arrived at several clusters so that an installer could have at least one full day (and often several days) of work with minimal travel between members. Clustering allowed almost all applicants in the Brisbane metropolitan area to remain in the Buying Group.

A small number were quite a distance from others, but if they were near to at least one other they could both remain in the Buying Group although they were each charged a little more for their installation.

It is always more of an art than a science in setting prices for the clustering process exceptions. Being community based and minded, we tried to incorporate as many households as we could, while recognising that much greater travel time for inspections, deliveries and installations had to be paid for somehow.



Some practicalities: storage and insurance

We would need to store deliveries from our supplier until the installation day for each home. Storage costs were kept down by taking weekly deliveries for components of between 10-15 installations instead of having to find storage for the components for 130+ households. After a few inquiries we decided the best solution was a self-storage yard, as the rates were reasonable and it provided a good level of security.

As we would be responsible for storing and transporting about $1.5m of components, we needed insurance. The installer's insurance covered any damage during installation. We needed insurance for storage and transit to the member's home, as well as public liability. We arranged insurance through the insurance collective that CIRA participated in.

Inspections

Local Power carried out all the initial inspections (on far lower wage rates than the PV installers would have charged) with a detailed checklist covering more than a dozen points (e.g., would the arrays fit, estimates of cable distances and potential shading issues), took photos of the roof, noted suggested locations for inverters, switchboards and meter boxes, and emailed all of this information to the installers. The purpose was to ensure, to the greatest extent possible, that there were no surprises on installation day which would lead to greater cost or installation delays, and to ensure a well performing system.

Except for some brief interactions at the public meeting, inspections were the first opportunity for the Local Power organisers to meet with most of the Buying Group applicants personally. We were very encouraged by the sincerity of many members in tackling climate change, and the sense of solidarity many had with friends and neighbours in doing something of consequence for the environment. We were frequently received with enthusiastic and appreciative, even emotional, goodwill. It made us feel the effort was very worthwhile.

On a more technical note the inspections showed that most people had done a fairly good job at self-assessment. There were occasions where a person had conservatively applied for a 1kW array and requested to upgrade to a larger array when they found out there was enough room. On other occasions people had overestimated their roof space, or had shading issues, and needed to reduce the size of the array they ordered. In at least one case, Local Power suggested that it would be better to put in a smaller PV system with solar hot water alongside.

We needed to set expectations for likely generation of electricity where there was a tree or two providing shading early or late in the day. Creativity was important in dealing with the possible panel configurations on small or trickily shaped roofs. Surprisingly, no people were 'knocked out' due to their home

being unsuitable during the inspection phase. Some householders were so committed to generating renewable electricity that they still wanted to go ahead even though the positioning would be less than ideal (e.g., only a west facing position could be used, possibly losing 10% of generation capacity) or the pricing would be higher due to installation complexity.

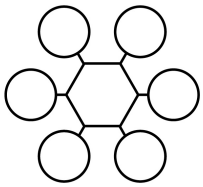
We were surprised by the number of meterboxes that required upgrading. Although there seems to be some discretion, Energex inspectors will not generally sign off on the work of the PV installer and electrician unless the meter box meets current safety standards. A meter, switch and fuses mounted on a piece of timber may have been alright 50 years ago, but is now considered unsuitable. Sometimes this was a borderline/judgement call by the electricians as they didn't know for certain whether Energex would fail not quite up to date meterboxes when they came to hang the new meter. Of the 140 inspections, 43 houses needed meter box upgrades, costing between $700 and $1,800. Only one household pulled out because of this possible additional cost.

We managed to complete the first 50 inspections (our initial target so that we could furnish our supplier with an order of 50 systems as originally agreed) in three weeks or 15 work days.

Project management

The following, nearly chronological list of activities, gives an idea of the intricate range of project management, administrative, and installation support tasks Local Power undertook to achieve a good price and service for Buying Group members.

- Transferring order information to our Mail Merge Document. This MS Excel spreadsheet perhaps holds the world record for the number of columns with 110 columns and 130+ rows at last count.
- Making a file for each order.
- Banking cheque deposits or tracking deposits directly transferred into the bank account.
- Generating a receipt using our Receipt Form Letter and Mail Merge Document, converting it to pdf and emailing it to the applicant.
- Chasing deposits of some who had placed an order but not sent a deposit.
- Chasing up information that had not been submitted correctly on the online order form.
- Verifying that applicants had sent in all documents requested (back and front of driver's license of owner occupier, electricity bill, rates notice, signed terms and conditions) and chasing up individuals who had not



submitted every document required. In the case where the name of the owner occupier was different to the name on the rates notice and/or driver's license (usually due to marriage or divorce) seeking a Marriage Certificate or similar evidence for the PVRP rebate pre-approval submission; where property was in the process of being purchased further evidence was sought.

- Organising suitable times for inspection and inspecting each site, filling out the Local Power Inspection Form, taking photos of roofs and meterboxes, and emailing them to the PV installers for confirmation of the standard installation price.

- Feeding back to members where non-standard costs applied (e.g., tilting on a steep or flat roof), or where a meter box upgrade would be required.

- Where meter box upgrades were recommended, frequently arranging for the household to get upgrade quotes from our electricians. To keep installations happening smoothly we recruited additional electricians for this work.

- Determining workable clusters and advising individuals falling outside these clusters that their application was unsuccessful.

- Generating PVRP Residential Application for Pre-Approval form from Form Letter and Mail Merge documents, obtaining signatures from home owner and installers, attaching copies of driver's license and rates, and forwarding to the Federal Department of Environment.

- Preparing a purchase order for a batch of components for 50 systems then preparing delivery schedules for suppliers that matched the installation sequence. This was broken down into quantities of panels, tilt legs, and inverter type, and components such as end clamps, rails, cables, circuit breakers, and fuses. Subsequent delivery schedules were prepared for following batches.

- Double checking supplier invoices and panel and inverter serial numbers and arranging payment, cheque generation and signatures.

- Checking components delivered against purchase order.

- Preparing the schedule of installations for PV installers.

- Chasing up PVRP Pre-Approvals that were not returned and sometimes resolving specific issues (e.g., some home owners had previously successfully submitted pre-approval forms but didn't go ahead and this caused problems for the Department's systems as the administration of

Queensland PVRP rebates moved from the Queensland EPA to the Federal Department of Environment).

- Generating tax invoices using the Invoice Form Letter and Mail Merge for the balance owing on installation.

- Following up any non-payments (cheques had to cleared before Local Power authorised installation).

- Scheduling installation times with members (roughly scheduled one week in advance and at a set time given after member's funds had cleared) according to clusters. Most members understood the need to accept our schedule to accommodate the installation clusters.

- Dealing with changes which included member related changes such as changing system sizes or upgrade options, changing which roof to put the panels on, moving house (which usually meant dropping out of the Buying Group), changing email addresses, and changing inspection and installation days (because of pre-booked holiday plans, rebate approval delays or bad weather).

- Delivering components to installers nearly every weekday morning for three months, checking the right components were loaded up and delivered to the right house.

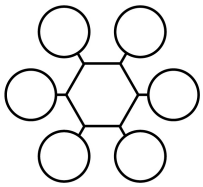
- Rescheduling due to supply issues, for example, delays in the supply of hanger bolts used to secure panel railings to tiled roofs, or a delay through Australian customs of a container of mounting rails. Admittedly our over achievement of 130+ systems versus our initial estimate of 50 systems on rare occasions caused some strains in our component supplier's systems and supply chain.

- Arranging installation reports which consisted of photos of the installation taken by the installer, Tax Invoice, and Certificate of Test (all set up as merge forms) as well as circuit diagram, and forwarding reports to the Department of Environment.

- Checking invoices from installers against Local Power installation records and arranging payment, cheque generation and signatures.

- Selling RECs on behalf of members. This involved merging individual data with the REC form, and including such information such as panel serial numbers and tax invoice.

- Generating Energex 'Application to Network Connect PV Generator' forms from our Form Letter and Mail Merge, arranging for signatures from the person named on the electricity account (not always the home owner) in



person if close and by email for further afield, then arranging for signature of the electrician and sending on to Energex (South East Queensland Electricity distribution network owner).

- ☼ Following up any glitches due to communication breakdown between Energex, the electricity retailer and the member, which resulted in Energex not installing its meter (which measures electricity exported to the grid), testing the solar system and turning the switch over to PV solar energy. There were many glitches at the beginning of the process until communication and rapport lessened these problems.

- ☼ Keeping members informed, by way of newsletters, with installation progress.

- ☼ Updating our installation photo collage on the Local Power website.

- ☼ Keeping detailed records on time and materials of each installer as quality assurance and to negotiate price reductions.

- ☼ Updating our extensive administration checklist to chart the progress of each member, from initial deposit to installation report and rebate received.

Threats

Some of the biggest risks for the Buying Group turned out to be the actions of Government at various levels and these were totally out of our control.

Queensland Government Solar Homes Program

In early March 2008, while having a regular mid morning Local Power meeting during the inspection period, having submitted just 21 rebate forms, and just weeks before the first installations were scheduled, news on the radio silenced discussion. The Queensland Premier was announcing her Government's intention for its own 1,000 strong Buying Group tender, quoting possible savings greater than our entry level deal of between $1,000 and $1,500 out of pocket.

While in itself a good direction, showing some serious action to address climate change, we were concerned that our members (most of them able to withdraw losing only the price of the small inspection fee at that stage), might be attracted to the possibility of a better deal, leading to the Buying Group dropping below 50 participants and collapsing.

We need not have been concerned. Fortunately and amazingly not one member of the Buying Group pulled out. One Buying Group member very humorously gave us the following feedback upon hearing about the Solar Homes Program:

"*When people ask if my [Local Power] deal is better than the State Government deal, I say maybe yes maybe not, but i bet i get ours 2yrs earlier!!!*"

We were approached by someone who was eager for us to partner with them to submit for the State Government's Solar Homes tender, but we gave our frequently delivered response to those who wanted us to do bigger things: "We just want to deliver on this Buying Group well."

The successful tenderer was announced in late July 2008 with the out of pocket price being just $185. At the time of writing (March 2009) we are still not sure about which brand of panels the winner is using, and according to the installation statistics on the EPA website, 282 installations have been completed.

Federal Government: PVRP rebate

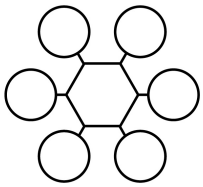
Like householders and the solar panel industry across the country, we were totally caught out by the announcement on Federal Budget night 13 May 2008, that households earning over $100,000 would be ineligible for the Federal Government rebate of $8,000 from midnight that night. This was due to the fact that the rebate program, which was increased a year before from $4/Watt to $8/Watt under the previous Government, was 'overheating'.

We thought that it was the planet that was overheating, and that the Government would welcome the enthusiastic take up of PV, but alas it had to be targeted like other social programs. We always considered that the PVRP program was an environmental policy and an industry development policy, and thought that the environment didn't know how much people earned.

We were watching the budget speech on television, which did not mention when the new policy would commence. Fortunately one of us checked our emails, and someone had sent Local Power an email specifying the midnight change reported by the ABC news website.

We had already submitted almost all of our rebate applications and with a quick dash managed to post another half dozen that evening at the Northgate Mail Centre, ensuring they were in the postal system before midnight. Still, these members were on edge for a while because it was not confirmed for several weeks that they were to be assessed under the old rules.

Unfortunately, a few forms had not yet come back from members for various reasons and they were submitted a few days after budget night. One was below the means test, one was above and pulled out and one was above and to their credit went ahead with their installation anyway, but with a slightly smaller system!



We suspected that something might change with the program on budget night, perhaps encouraging 1.5kW systems, rather than the entry level 1kW systems, to make it more sustainable, but didn't expect this. It created a storm on talkback radio and some political heat for the Government. Interestingly, instead of destroying the PV industry it continued to boom as single people, pensioners and others earning less than $100,000 flocked to order PV systems before the rebates 'ran out'.

9 From Buying Group to campaign group?

In mid March 2008, the Queensland Government announced it would implement a Solar Bonus Scheme or Feed in Tariff (FiT) of 44c/kilowatt hour (kWh). A FiT requires electricity retailers to pay more than the retail price for renewable electricity generated from PV solar systems.

This financial incentive is designed to encourage more PV solar panels to be installed, which helps the planet, helps the electricity grid and also helps to reduce the financial payback time of a PV solar system.

Local Power welcomed the introduction of the FiT. Most people who have installed PV systems until now have been motivated by environmental concerns rather than financial benefit, although it is still significant that a PV system can pay for itself over its life.

The proposed Queensland scheme was an 'import-export (or net) metering FiT', that is you are paid 44c for every kWh your PV system generates over and above what your house consumes at any point in time.

Local Power and many others believed the Queensland FiT could be improved. Germany has become the world leader in PV Solar adoption due to its superior FiT scheme, and in Australia where we have a much better solar resource, we are well placed to benefit from a German-like scheme.

Germany and every other country and jurisdiction which has implemented a FiT (except Texas) implemented a 'gross generation metering FiT', where you are paid 44c for every kWh your PV system generates.

The transcripts from Hansard announcing the scheme were at best ambiguous and many people thought the scheme was to be a gross metering scheme. BP, Australia's only solar panel manufacturer at the time, actually put out a press release and "congratulated Premier Anna Bligh and her Government for introducing Australia's first 'Gross' Solar Feed-In Tariff as the central part to this scheme." Oops!

Local Power started a letter writing campaign with the people on our email list. We posted a paper entitled '12 reasons for supporting gross metering FiT' and a form letter, requesting that our members and subscribers to our larger email list

write to their local Member of Parliament, the Minister for Mines and Energy, and the Minister for Sustainability, Climate Change and Innovation. Other groups also encouraged their members to campaign.

At least a dozen people notified us that they had written letters. This campaign (although failing!) showed the possibility that the Buying Group and the larger mailing list could be transformed into a voice representing the values and interests of the community of solar electricity households. It needs to be noted though, that not all our members supported the gross metering FiT push.

Local Power was invited to be a community representative on the FiT implementation steering group. It was interesting to participate in this process and it was good to see the technical decision makers being open to gross metering FiT. They had certainly not closed the door to future gross implementation and wanted to see PV solar succeed and make a strong contribution to renewable energy.

We believe the EPA and Department of Mines and Energy (DME) did not agree on which way to proceed. Alas the economists in the DME convinced the Department of Premier and Cabinet that the cost of a gross scheme would be too high. We ended up with an import-export (or net) scheme like South Australia had implemented and like Victoria will soon implement. Only the ACT has had the foresight to implement a gross scheme.

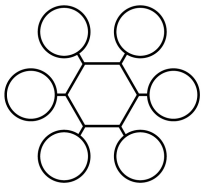
Some opposition political parties around the country have since taken the position that a gross FiT scheme is desirable, so the policy debate continues. Before the 2009 Queensland election, Premier Anna Bligh was quoted as saying “Queensland will certainly look favourably at moving to a gross feed-in tariff, if there is national agreement on that.”[4]

We only have a few data points so far about how much energy is actually exported. Of course it depends on how much energy is used in the home in daylight hours. Some people with 1kW systems are exporting a bit over 40% of their generation, while people with larger systems are exporting more (e.g., 1.5kW almost 50% and 3kW almost 80%).

10 What was achieved?

The last house was installed on 26 August 2008, 231 days after the offer opened. All but the last two installations of the Buying Group were completed by 30 July 2008, just 204 days after opening. The last two were later due to a late rebate application and awaiting an external inverter.

[4] http://www.brisbanetimes.com.au/news/queensland/bligh-makes-promises-while-the-sun-shines/2009/03/16/1237054706614.html



Did we achieve our goals?

For individuals

☼ Did we make significant savings compared to the best retail price?

The best retail price we came across was around $3,700 from Origin for a 1kW system. Our 1kW members (with 'standard' tin roofs) paid less than half that price.

☼ Did we offer a good quality installation, using products and installers with a good track record?

Sharp panels are one of the most reputable in the industry.

☼ Did people participate who would not otherwise have installed PV solar panels due to price?

While we don't have hard data, anecdotal information together with the low price we were able to achieve, suggest that many who participated would not have purchased a system through normal retail channels.

☼ Did people participate who would not otherwise have installed PV solar panels due to the complexity of product choice and paperwork process?

Again, anecdotal information suggests that 'making it easy' was one of the reasons people who could afford retail prices and had previously considered installations joined the Buying Group. However, we also acknowledge that the strongly online environment of the Buying Group process was a significant barrier for people unfamiliar with the internet.

☼ Did participants maximise the size of PV Solar arrays they could purchase?

The cost of a 1.5kW array in the Buying Group was about $1600 more that the 1kW price of the cheapest reputable retailer at the time. Initially 31 households ordered the 1.5kW array, 17 households the 2kW array, and 10 households the 3kW array. So 38% of the Buying Group in fact, purchased a larger than 1kW array, even though every Watt over 1kW had to be fully funded by the home owner (i.e. the rebate does not apply beyond 1kW).

For the community

☼ Did we transform isolated individuals into groups of householders role modeling green power generation in their neighbourhood?

We think we did to some extent. We know at least half a dozen people (strangers to us) who letter box dropped their neighbourhoods, and heard reports of neighbourly conversations about going solar. Some workmates applied together, as well as extended families. Another member (again, previously unknown to us) was profiled in their local newspaper.

☼ Have we become a green energy household producer's network influencing government policy?

The FiT letter campaign and our invitation to be part of the FiT implementation working party, showed our capacity to become one.

☼ Did we pioneer a grassroots, not-for-profit community group approach to tackling household generated greenhouse gas emissions?

We think we successfully blended social goals and a business-way of undertaking this task (see next section).

For the industry

☼ Did we provide installers with a decent wage rather than 'squeezing' them as we suspected some large retailers were doing, but on the other hand not letting old business models reduce the level of take up?

It shouldn't have surprised us (but it did) that Local Power wasn't so well received within the installer industry. It had been a low volume high margin cottage industry and we (and others) encouraged our installers to take a high volume moderate margins approach. However, we had no trouble in convincing our competent installers to undertake the work.

☼ Did we improve the local skills base through employing local family run businesses?

We dealt with small Brisbane based electrical contracting and solar installation firms with some (but not extensive) experience in PV solar panel installation. Apart from greatly enhancing our skills, half a dozen others developed invaluable skills and experience in working on installations varying significantly in complexity.

For the planet

☼ Did we achieve reduced green house gases because of a far greater take up of PV Solar technology than would have occurred without the Buying Group?

We achieved the installations of 20 tonnes of solar panels and components and 200kW worth of systems installed on the roofs of 130+

houses. We don't know who would have gone ahead without us within 12 months of our offer.

☼ Have green house gases been reduced because of people's greater awareness of their consumption?

We believe this is the case for many of our members. Friends have shared with us how they are far more aware of the stray light left on, turning off their computers and eliminating stand by power, for example. The more technically inclined share information about their energy production and consider ways of increasing it.

An unexpected outcome for the project was that Local Power was frequently asked to present at various gatherings in Brisbane and beyond about the Buying Group. We appreciated this opportunity to raise awareness about what could be achieved if people banded together to commit to renewable energy.

Of course, we do not want to overstate our achievement for the planet. It is infinitesimally small compared to the size of the problem and what yet has to be done.

4101 leads the way

The 4101 post code (South Brisbane, West End, Hill End, and Highgate Hill) had by far the biggest concentration of Local Power Buying Group members, due to the strength of our local networks and more intense promotion. We suspect that at the completion of the Buying Group, it had the highest concentration of residential PV Solar installations and renewable energy production of any urban residential post code in Australia. All up the 4101 area had achieved the following.

☼ 30 members in the Buying Group.

☼ 16 x 1kW, 9 x 1.5kW, 2 x 2kW, 3 x 3kW systems, with a number keen to upgrade in the Buying Group #2 process.

☼ a combined output of 42.5 kW.

Interestingly this post code is in the electorate of the current Queensland Premier and the Prime Minister of Australia.

11 Some reflections

The following section brings together a bunch of reflections and learnings that came out of our experience.

Was this community development or was this business?

In the past few years a new generation of organisations has emerged that use business principles to achieve social and/or environmental aims. This new sector is particularly active around West End, some being operated as for-profit entities with very strong and visible social/environmental aims, others with not-for-profit structures with clear social or environmental mandate but competing in the market place to provide goods and services to consumers. Some local to West End examples are Food Connect (foodconnect.com.au), GWhizz (gwhiz.com.au), Reverse Garbage (reversegarbage.com.au), Justice Products (justiceproducts.org.au) and Blackstar (blackstarcoffee.com).

Commercial aims can include winning private and government contracts, being customer focused, improving efficiency and producing high quality goods and services, successfully competing against other businesses in the same market place, creating robust surpluses to reinvest in the enterprise, all with the ultimate objective of achieving financial sustainability. Social aims can include providing employment opportunities to people facing considerable barriers to finding paid work, strengthening the sustainability of a local community, or tackling climate change.

Local Power, we think, falls within this new community-commercial hybrid. The following features of the project that closely resemble traditional community organising.

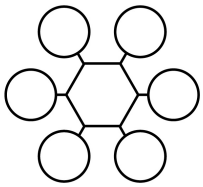
- ☼ The organisers' aim in undertaking the project was to create a local community movement challenging Brisbane's fossil fuel dependence. Furthermore, many of our specific outcomes we hoped for related to increasing access to this expensive technology by lower income earners.

- ☼ The organisers decided to fit that project within a traditional not-for-profit structure.

- ☼ The organisers were driven by a sense of vocation. This led to a high degree of voluntary effort right through the project and paid work at modest wages.

- ☼ The project was strengthened by alliances with community volunteer networks and was strongly promoted through these networks.

- ☼ The project relied on social capital – relationships were able to overcome 'stranger mistrust' – people would know someone who knew someone else who had faith in the organisers. And in a sense, it gained significant momentum through the robust social capital in a number of key geographic areas. We have also created some social capital in making space for neighbours to discuss their shared values and hopes for a better environmental future.



- ☼ The organisers negotiated with suppliers and installers as a community group, rather than trying to open doors through business credentials.

However, there were deliberate decisions and practices that were more along business lines, and sometimes in conflict with what is considered good community development practice. These decisions and practices included the following.

- ☼ Not broadening key decision making beyond the Local Power founders, including decisions about the model adopted, suppliers and installers partnered, and components chosen.

- ☼ Having more of a customer relationship with Buying Group members than a partnership relationship.

Being happy doing something small

During the process various people made suggestions about going 'bigger', for example, expanding our model to include other regions or tender for the Queensland Government 1000 Solar Homes. However, we didn't want to be caught up in grandiose dreams at the cost of our first Buying Group. Our answer to such suggestions (sometimes demands) was that "we just want to do this project well."

The truth about clustering – what were the real benefits?

Geographic clustering to generate savings was a brand new approach in the local PV Solar industry, so we could only theorise about the savings based on common sense. Even the installers were unsure about how much to discount their normal rates because of clustering. Now that the project is completed we can draw the following conclusions about the benefits of this approach.

- ☼ Reduced petrol costs. Local Power conducted the inspections and component delivery of all 150 applicants – that is about 2 trips for each of the 150 applicants. Our petrol cost per applicant averaged $8, and the installers similarly limited petrol costs.

- ☼ Completing two or more installations the same day (the larger installation team completed 2 X 2kW arrays or 3 x 1kW arrays on the same day, once their efficiency peaked).

- ☼ Being able to partially complete an installation on one day, due to bad weather for example, and return to finish that installation and do one or more others on the next day.

- ☼ Ability for an installation team to work on a number of installations in the same area concurrently.

Low loss of sign ups

At the close of the offer we had 150 orders, but did not know what level of drop out there would be. In fact the only applicants to actually change their mind were a small number who were not prepared to pay additional costs for meter upgrades.

Our impression of the people who joined

What 'market segments' joined the Local Power Buying Group? A large number were our kindred spirits - the 'true believers'. These were the people who have made significant lifestyle choices to reduce their environmental footprint. Typically they were members of environment related groups, preferred cycling, walking or public transport to the private car, had their garden patch and chooks in the backyard, had a solar hot water system, and walked the streets with our flyers. They had been dreaming about PV solar panels on their rooftop for years. They were our core supporters in the sense that they were cheering us on, would stick with Local Power through thick and thin. Their appreciation and their simple living choices humbled us.

Another group had just started making tentative steps towards a less energy intensive lifestyle. And there were our friends, neighbours, and relatives who probably would never have thought of generating their own electricity, but joined mostly to encourage us. We thank them too.

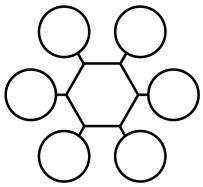
And there were those who were not yet ready. Like the man who rang Local Power to find out how big a system he needed to become self-sufficient. Even a 3kW system wouldn't cover half of his energy use but he was unwilling to change his lifestyle (like giving up the second and third fridge and heating the spa less frequently). At least he made the phone call, and consequently gained a keener awareness of his energy consumption.

Vulnerability when relying on Government subsidies

Until the price of PV solar panels comes down, initiatives that rely heavily on Government subsidies are risky. If we had delays in getting our rebate forms in, or the Buying Group offer had been one month later, the Federal Government decision to means test the rebate may have made the Buying Group much less viable.

Replicability

Earlier, we discussed the factors that came together to make it viable for Local Power organisers to run a Buying Group. In our opinion, the subset of factors required to run the project managed Buying Group model we adopted would be a technical understanding of PV solar panels and the PV solar industry, business skills and experience, access to capital, hours to give voluntarily or at



a modest wage compared to trade rates, good risk management strategies and the capacity to bear risks that couldn't be avoided or minimised.

From email conversations we are aware of a growing number of groups across Australia in the process of running a Buying Group or considering the process closely. Groups that do not have all the relevant experience, skills, time and money can still have a go though their approach would be modified. For example, without access to capital the group might need bigger up front payments, no finance option, or perhaps will need to deal with bigger installation companies that can offer finance. If the group doesn't have individuals that can work on the Buying Group full time, then the group would require the supplier/installer to do virtually all of the purchase, delivery and installation work. While such Buying Groups may not be able to achieve the same level of savings, they may still be able to make PV Solar significantly more affordable.

What we would have done differently

Hindsight is a wonderful thing. With a second chance we may have done the following differently.

- We would have used much clearer language to distinguish between 'signing up' for email newsletters and 'ordering online' a system in the Buying Group (some disappointed people thought they had signed up to the Buying Group when in fact they had only signed up to receive email updates).

- Receipt of correct documentation would have been a condition of a successfully received application. Too much time was spent on chasing bits of information required for the PRVP pre-approval form that applicants had failed to send us. For example, it was common for the back of the home owner's driver's license not to be submitted.

- An additional 1kW with 1.5kW inverter option would have been provided, allowing upgrade to 1.5kW. As previously stated, it was technically not feasible to offer an upgrade for our entry level 1kW array with our specific panels.

- Our offer would have required four (not 10) applicants per post code. This would have greatly reduced the number of anguished emails sent to us.

- We would not have published the post code totals while the offer was open to discourage people from only ordering once their post code has reached the threshold. Instead we would have told people that most homes in the Brisbane metropolitan area could be accommodated, for sometimes a small increase in cost, as long as there were some other homes near them.

- The website would have given a clearer warning that some people would have to pay between $400 and $1,200 if their meter boxes were not up to current standards of the electricity utility.

- The administration fee would have been set at double the price (the administration fee plus price reductions from the supplier and installer that we re-negotiated during the installation process covered the true cost of Local Power labour).

- We would have warned that inverters might interfere with AM radio reception as one household encountered this issue.

We didn't have the capacity to cater for people who were unable to order and communicate online and receive newsletters. We would have liked to set up a process (perhaps with the assistance of volunteers) to help less technologically equipped and confident individuals to join the Buying Group.

12 Postscript: Local Power Buying Group #2

Local Power's second Buying Group has been a more streamlined affair. With all we learnt from Buying Group #1, price negotiation protocols and business relationships in place, administration infrastructure already established, and less promotion required because of an extensive email list of potential members we had developed, the start up workload was greatly reduced.

Of course, the incentive structure change during Buying Group #1 (and another change on its way 1 July 2009) created some uncertainty as to whether enough people would be interested and eligible for the Federal Government rebate with its $100,000 income ceiling. We need not have been concerned. In two weeks, over 100 households had placed orders.

The most significant technical change from our first Buying Group was metering requirements due to the introduction of the net FiT. Net (or import-export) metering needs less meterbox space compared to gross metering, to access the FiT. Consequently, less meterbox upgrades were completed upfront. With the Commonwealth and State Governments collectively considering a change back to gross metering, sometimes we end up going full circle.

The two Buying Groups combined have involved about 250 households and are equivalent to building a 360 kW solar generator in the suburbs of Brisbane. Not a bad effort, thanks to the vision, passion and faith of our members. Building a better world, one rooftop, one street, at a time.