



USAID | SOUTH AFRICA

FROM THE AMERICAN PEOPLE

GENERAL MANAGEMENT ASSISTANCE CONTRACT (GMAC)

Contract No: 674-C-00-01-00051-00

“Public-private partnership for the inclusion of LPG in a total energy solution for South Africa’s low-income households”

Contract or Grantee number: 0169-0206-G-GA56



IIEC

This report was produced for review by the USAID. It was prepared as a performance milestone under Mega-Tech, Inc.’s prime contract.

The contents of this report address activities performed under USAID/South Africa’s Strategic Objective No. 6: Increased Access to Shelter and Environmentally Sound Municipal Services

Please direct all queries regarding this report to:

Mega-Tech/South Africa
Bank Forum Building
Lobby 1, Second Floor
337 Veale Street
New Muckleneuk
0181 Pretoria RSA
Tel. 012 452 0060
Fax 012 452 0070
Email megatech@intekom.co.za

Or

Mega-Tech, Inc.
180 South Washington Street, Suite 200
Falls Church, VA 22046
Tel. (703) 534-1629
Fax (703) 534-7208
Email info@mgtech-world.com

Activity Summary and achievements:

The primary goal of IIEC's LPG program is that LPG fulfils its potential in the suite of options available to low-income households in the targeted communities. The goal is not to 'promote' LPG per se, but to 'level the playing field' by overcoming the barriers to LPG adoption, which currently result in usage levels being well below what would be expected in a country like South Africa. A benchmark for the role that LPG could play as a household fuel is provided by its adoption levels in other countries. For example, over 90% of Brazilian households use LPG, while in urban areas of Senegal, Egypt, India and Vietnam, LPG is the main cooking fuel for between 60-70% of households. Over 20% of households in Botswana and in the Ghanaian capital Accra also rely on LPG. Meanwhile, the corresponding figure for South Africa is of the order of 1%.

It is not meaningful or even possible to state that a particular percentage figure represents the full potential for LPG in South African households, as there are too many other factors to take into account – primarily the future price and availability of electricity. However, it is clear that current usage levels are well below those that could be considered normal. It is therefore felt that a realistic goal for this project is that LPG is adopted by 20% of the households in the targeted communities within two years of the initiation of familiarity-building activities.

Within the context of IIEC's broader LPG program, the goal of this grant activity is to lay the foundations for the creation of strong and sustainable municipality-NGO-industry partnerships for enhancing the uptake of LPG among low-income households.


Contents of this report:

- 1) Grant Activity Completion Report; (September 2006)
- 2) Final Closeout Report (September 2006)

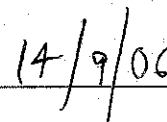
Grant Activity Completion Report

1. Name of Organisation	IIEC Africa
2. Grant Activity	Public-private partnerships for promoting the adoption of LPG in low-income households
3. Briefly describe the grant objectives achievements and impact as a result of the grant activities implemented during the grant period.	
<p>Objectives: The objective of this grant was to undertake preparatory activities that would prepare the ground for a larger programme, for which support was being sought under USAID GDA. This larger programme would involve the development and implementation of municipality-run schemes to provide liquefied petroleum gas (LPG) to low-income communities as part of a 'free basic alternative energy' policy. Specifically, this grant was used for engaging the involvement of partner municipalities and beginning the process of building their capacity to implement such schemes.</p> <p>Achievements: A total of approximately 40 municipalities received training and awareness-raising on the subject of free basic alternative energy for low-income communities. Six municipalities have indicated a willingness to proceed further with the implementation of free basic LPG schemes.</p> <p>Impact: Unfortunately, support for implementing the larger programme was not secured from GDA. As a consequence, the impact of this project has been somewhat limited. However, if timely support for the larger programme can be secured from alternative sources, this project will have provided a valuable foundation on which to build.</p>	
4. Briefly discuss the implementation process, including lessons learned and recommendations	
<p>The implementation process was one of working in partnership with the LPG Association to identify potential candidate municipalities, who were then approached for discussions, leading to the making of a commitment to implement a free basic alternative energy scheme. Unfortunately, the agenda of a private sector industry partner is not always transparent, does not always coincide with the needs of a project like this one, and may also be subject to sudden changes. In the case of this project, the sudden switch of focus by the LPG industry to the Western Cape area, in response to the power crisis there, had the effect of throwing this project off course. Although a partnership with the private sector is essential in a project like this one, in retrospect it may have been preferable to have tied the process of project implementation less closely to the agenda of the private sector partner.</p>	
5. Public Dissemination: GMAC requires that all grant activity deliverable(s) of the grant activity (e.g., a report or survey) must be made available to the general public. Briefly discuss how the grants activities and results were made accessible to interested parties.	
<p>The project has been, and will continue to be, featured in IIEC's e-mail publication 'E-Notes' as well as on our Website, www.iiec.org.</p>	

Signature of Grantee



Date





International Institute for Energy Conservation

IIEC

67 Fourth, Melville
Johannesburg, South Africa
Tel: + 27 (0) 11 482-5990
Fax: + 27 (0) 11 482-4723

PUBLIC-PRIVATE PARTNERSHIPS FOR LPG IN LOW- INCOME HOUSHOLDS

Capacity Building for the Successful Implementation of LPG Programmes

Prepared for:

USAID

Prepared by:

Ian Househam

IIEC - Africa

Date:

August 2006

INTRODUCTION

This report constitutes Milestones 5-7 under Grant Agreement No. 0169-0206-G-GA56. These Milestones were concerned with beginning the process of capacitating municipalities in the delivery of clean energy services to low-income populations, particularly through the mechanism of free basic alternative energy schemes based around liquefied petroleum gas (LPG).

BACKGROUND

The purpose of the project supported by this grant agreement was to lay the foundations for a larger project proposed under the USAID Global Development Alliance (GDA). The larger GDA project would couple IIEC's proven approach of conducting hands-on familiarity-building activities in target communities, with the development of LPG-based free basic alternative energy schemes as a means of introducing a high-quality, modern and affordable fuel to low-income households. The GDA project would be a two-year initiative in partnership with the LPG industry and participating municipalities.

The concept of free basic alternative energy is set to become an integral part of South Africa's drive to ensure that free basic services are available to all low-income and vulnerable citizens. Until recently, the policy was confined to free basic electricity. However, large sections of the population do not yet have access to electricity, and so are unfairly excluded from the programme. Some pilot initiatives have been implemented to experiment with extending the policy to include all other energy carriers – for example, off-grid solar PV installations in Limpopo Province. More recently, Tshwane Municipality in partnership with Shell-Easigas launched a scheme based around LPG in Winterfeld, north of Pretoria.

In fact, there are strong reasons for introducing free basic LPG even in areas that are already served by the electricity grid. Electricity is poorly suited to serving the thermal energy needs of households, being more appropriate for lighting and communications. Electrical demand for thermal applications contributes to the system peak demand, which South Africa's electricity infrastructure is finding increasingly difficult to meet. Furthermore, from a climate change perspective, the direct combustion of a fossil fuel to meet thermal needs is far more rational than using fossil fuels at about 35% efficiency to generate electricity, which is then used to meet those same needs after being transmitted through a grid with further losses of another 10%.

Western Cape power crisis

The impact of the Western Cape power crisis has continued to influence the entire LPG sector, including implementation of this project. Eskom, in partnership with the LPG industry, introduced an emergency demand-side management (DSM) programme in the affected areas in March of this year. The programme had the challenging and somewhat unrealistic target of switching 100,000 low-income households who currently cook with electricity

over to LPG by the beginning of June 2006. Furthermore, the programme envisaged a total of 500,000 low-income households being switched by September 2006, along with 60,000 higher income households.

An undertaking this ambitious understandably meant that the focus of the LPG industry was placed almost entirely on the Western Cape, with very little effort or attention being devoted to other regions or initiatives. This in turn had an unavoidable impact on the implementation of this project, as the active involvement of industry partners was difficult to secure.

Impact of crude oil prices

In the nine months since this project was conceived, world prices of crude oil have increased by approximately 40%. Since the refinery gate price of LPG is directly linked to the price of crude oil, this has had a severe knock-on effect on the retail price of LPG, which is currently unregulated. The cost competitiveness of LPG relative to both paraffin (the price of which is regulated, and hence less affected by changes in crude oil price) and electricity has therefore declined severely. This represents a major challenge when attempting to promote the adoption of LPG as a clean and affordable alternative to current unsustainable energy usage patterns, particularly in the context of free basic energy. There is a danger that, with drastically increased prices, the free monthly allocation of LPG would have to be reduced considerably. More seriously, participating households may then need to purchase additional fuel to supplement the free basic allocation, at a price that would place a difficult financial burden on already vulnerable households.

It is therefore understandable that the current level of the crude oil price has caused the LPG industry – in particular the LPGSASA – to focus its attention in recent months on the affordability of LPG. Discussions between the LPG industry and the DME are revolving around issues of VAT (to which LPG is currently subject, but paraffin is not), the LPG supply chain (there is a huge difference between the refinery gate price of LPG and its final retail price) and the possibility of regulating either the refinery gate or the retail price of LPG.

CAPACITY BUILDING

It was apparent when this project was conceived that a significant amount of capacity building would be required to facilitate the implementation of LPG low-income household programmes in general, and LPG-based free basic alternative energy schemes in particular. While the main focus of this capacity building was intended to be training aimed at participating municipalities, a significant effort was also devoted to working with various stakeholders during the period when the Western Cape emergency DSM programme was being developed. Valuable lessons were learned during this process, that will inform the design of FBAE schemes in future. This is discussed in more detail in the section 'Commencing Design of FBAE Schemes' below.

It was originally envisaged that training and capacity building of municipalities would be provided in smaller-scale workshops conducted locally. However, following extensive discussions with the LPG Safety Association of Southern Africa (LPGSASA) and the South African Local Government Association (SALGA), a consensus was reached that it would be more effective to bring interested municipalities together into a national event. One advantage of this approach is that it facilitates input from key national stakeholders (e.g. from the DME) who might otherwise not be available to attend several smaller, locally staged events.

To this end, IIEC worked in partnership LPGSASA and SALGA to stage a national training workshop. All commitments from IIEC with regard to financial support and level of effort for this workshop were made in late July. However, several delays occurred (primarily relating to the availability of key people) that prevented the workshop from being staged at the preferred time in early August. As a result, the workshop was unavoidably delayed until the first week of September.

The aim of this workshop is to provide participating municipalities with sufficient knowledge to be able to explore the possibilities for implementing free basic alternative energy schemes in their own areas. It is expected that 120 municipalities will be represented at the workshop. The letter of invitation and agenda for the workshop are presented in Annex 1.

IDENTIFYING TARGET COMMUNITIES

Following discussions with representatives of the Na-Dene local municipality in Eastern Cape, it was decided that one particular target community should be considered a priority for the initial implementation of a free basic alternative energy scheme based on LPG. This was Lucingweni, which is the site of a mini-grid systems that provides basic electricity to 220 households from a combination of solar PVs and wind turbines. At a total installed capacity of 86 kW, this system clearly cannot provide enough electricity to meet thermal needs, so coupling with a project to provide free basic LPG would provide good complementarity. The combination of mini-grid electricity for lighting and communications needs, with LPG for basic thermal needs would constitute a clean, modern and safe way of meeting household energy demands.

Some caution must be exercised, in that there are some difficulties with the reliability of the mini-grid system at present. If these problems became sufficient to cause disillusionment among the households in question, the community may not be particularly receptive to another initiative that promises to solve their energy problems. Early evidence from an impact assessment being undertaken by IIEC's partners suggests that in fact there remains a very positive attitude towards the mini-grid, despite its problems. Lucingweni would therefore appear to be an ideal location for a free basic LPG scheme.

Unfortunately, the 220 households at Lucingweni that benefit from the mini-grid do not constitute a sufficiently large nucleus of demand to merit the creation of an LPG distribution centre. For this reason, it would be necessary to introduce free basic LPG schemes in the four communities adjacent to the area served by the mini-grid. In total, these communities consist of over 1,000

households, which would make a local LPG distribution point viable. These five contiguous communities should therefore provide the locations for the first free basic LPG schemes to be implemented under the full-scale GDA project.

The enthusiasm with which the Nyandeni local municipality has received the concept of free basic LPG suggests that other communities in the area may also provide favourable locations for conducting free basic LPG schemes. Since the recent changes in personnel in the municipality, IIEC has been endeavouring to build relationships with the new officials.

COMMENCING DESIGN OF FBAE SCHEMES

Western Cape emergency DSM programme

As observed above, the occurrence of the Western Cape power crisis distorted somewhat the focus of this project relative to what was envisaged at the outset. A very challenging target was set by Eskom for the introduction of LPG in the affected region, through a free basic LPG programme intended to displace electricity for cooking.

The programme involved the provision of a free two-burner LPG stove, cylinder plus regulator and a free fill of gas to each participating household. Colour-coded vouchers were also provided, entitling participating households to one refill per month for three months. Since the purpose of this scheme was to reduce the usage of electricity for cooking, in order to receive this equipment, householders had to surrender an electric hotplate. The surrendered hotplates were then returned to Eskom for scrapping.

By late August, only about 40-50,000 stoves had been distributed to low-income households, representing about 10% of the targeted level. Part of the reason for this shortfall was a shortage of gas supplies resulting from scheduled closures of refineries. However, in large part it was due to the fact that the original targets set were simply too ambitious.

A number of flaws were identified in the design of the programme, which IIEC endeavoured to have recognised and addressed during the period that the scheme was being developed. While it is not being claimed that failure to address these flaws was the main reason that the programme failed to reach its target, it is imperative that any future scheme with similar goals does not make the same mistakes.

Price volatility

The free monthly allowance of LPG provided under the scheme is generally insufficient to provide all the thermal energy needs of households. This is not in itself a criticism, since the same generally applies to free basic electricity schemes that have been implemented elsewhere. Households are expected to purchase at market prices any energy that they require beyond the free basic allocation.

However, as observed above, the price of LPG is linked to the price of crude oil, and is thus prone to price fluctuation. While the LPG provided under this emergency DSM measure was price-capped to make it cheaper than the alternatives, this price capping was to last only for the 90-day duration of the

emergency measures. Households making the commitment to switch to LPG would therefore be exposed to the full market price of LPG once the scheme ended. At the current high world prices for crude oil, the retail price of LPG is significantly higher than that of electricity per unit of delivered energy. It is therefore expected that most if not all of those making the switch to LPG will switch back to electricity as soon as the emergency DSM scheme finishes.

BEE involvement

A further shortcoming of the scheme as designed was the lack of opportunity for smaller BEE firms to participate. The mechanism for arranging payment to the providers of gas and equipment required participating companies to carry the costs for a significant period before they could be reimbursed out of DSM funds. This was simply not feasible for smaller BEE players, who lack the cash reserves to be able to operate in this way. IIEC worked closely with the BEE Forum of the LPGSASA (a division that was established specifically to facilitate greater involvement by smaller BEE players in the LPG industry) to have the design of the programme modified. Unfortunately, the original programme design was retained, with the result that only the large industry players were able to participate.

Verifiable impact

It was apparent from the design of the programme that no mechanism was in place to verify:

(i) that households receiving LPG equipment were actually using electricity for cooking previously. IIEC's experience is that many households keep their options open with regard to cooking, by retaining a number of appliances that are rarely used. It is very likely that many of the electric hotplates surrendered under this scheme were not being used anyway.

(ii) that households who were using electricity for cooking stopped doing so upon receiving LPG equipment. Equally, experience shows that many households that use electricity for cooking have easy access to a surplus stove, which may be either partly or totally non-functioning. It is likely that many households surrendered stoves that were surplus to requirements, but continued using their main electric stove even after receiving LPG equipment.

In fact, it is difficult to design a programme that would prevent these two outcomes from occurring. One possible additional step that could have been taken – but was not – would have been to test the electric stoves surrendered, and to accept only those that were functional. The most realistic approach, however, is to conduct studies to assess the impact of the scheme, and the extent to which the events described above actually occurred. IIEC partners were requested to perform an impact study, under which about 10% of the households receiving LPG equipment were randomly selected for interviewing by locally recruited fieldworkers. A full analysis of the findings is still in progress. However, preliminary findings indicate that both of the events described above occurred to a significant degree.

Familiarity building

It has long been IIEC's contention, based on verifiable experience from earlier phases of the LPG initiative, that fuel switching to LPG will only occur if effort

is devoted to familiarity-building among the target communities *before* the fuel and equipment is made available. It is acknowledged that, in an emergency programme of this nature, speed is of the essence. However, there was sufficient time and opportunity to prepare the target communities for the provision of LPG, through the types of approach that IIEC has demonstrated in the past.

Despite concerted efforts by IIEC, the implementers of this programme decided not to adopt this approach. However, in recognition of the fact that some familiarity-building was necessary, they recruited about 350 community-members who were trained as 'safety officers', and who made door-to-door visits to ensure that the recipients of LPG were instructed in its safe use. In many cases, it proved difficult to co-ordinate the timing of these visits to coincide with the provision of LPG equipment. In any case, instructing householders in the safe use of gas, although necessary, does not instil a wish to use it. It is IIEC's view that an opportunity was lost to maximise the impact of this initiative through the conducting of preparatory hands-on familiarity-building activities.

Other schemes

The need for IIEC to be involved in the Western Cape scheme described above was something of a distraction from focussing on the development of FBAE schemes in other areas. However, IIEC has entered into a process of designing schemes in two other areas, in partnership with the corresponding local municipality and other stakeholders including the National Energy Regulator. The schemes under development will be located in Atteridgeville, in the Tshwane Metropolitan Municipality, and Nyandeni, in the O R Tambo District Municipality, Eastern Cape.

In developing these schemes, many of the lessons learned from the Western Cape programme as well as the earlier initiative in Winterfeld will be drawn upon. Some design features that are recommended for future schemes are as follows:

- The approach adopted in the Winterfeld pilot of using the electoral roll as a means of identifying beneficiary households appeared to be too cumbersome and unreliable. If target communities are chosen where the vast majority of households qualify for the scheme in terms of their income, it is simpler to adopt a voucher scheme, and allocate vouchers to all households in the community. While this might mean that some non-qualifying households receive vouchers, this minor problem is more than offset by the administrative simplicity of the system.
- If LPG is to be used for providing space heat, this demand will only occur during the winter months, and monthly demand over the course of the year will vary. It would make more sense therefore to vary the free basic allowance in accordance with this seasonal variability. Another option to achieve the same end, if a voucher system is adopted, would be to permit householders some flexibility in the way that vouchers are redeemed, by allowing unused allocations to be carried forward into the next month.

- Conducting preparatory familiarity building in the proposed target communities is essential. In this way, beneficiary households are already receptive to LPG when it arrives. Any subsequent safety training that may be required can then be conducted with the minimum of difficulty. 'Energy champions' from the local community should be appointed and trained, whose role is to provide ongoing advice and assistance to beneficiary households when needed. A significant component of this would necessarily be safety oriented, but the advice and assistance should also cover energy efficiency. In this way, recipient households can derive the maximum benefit from the limited amount of free gas that is allocated.
- Payment mechanisms should be conducive to participation by BEE / SMMEs or other community-based enterprises. Enterprises providing the gas and equipment should not be required to carry significant costs while waiting for payments to be made from the free basic alternative energy budget.

THE WAY FORWARD

In the period that this report was being prepared, IIEC learned that the proposed GDA project had not been approved by USAID in Washington DC. Since the primary purpose of the activities supported under this grant agreement was to lay the foundations for effective implementation of the larger GDA project, this now creates a major challenge. The discussions held to date with various municipalities have raised expectations, and the top priority moving forward must be to follow up on those expectations as soon as possible.

More generally, the way forward should be to work towards the establishment of a clear and coherent policy with regard to free basic energy services. At present, although there is a well-established policy on free basic electricity, the concept of applying the same approach to other energy carriers is still regarded as something of a novelty. However, to provide South Africa's most vulnerable households with a complete solution to their basic energy needs, a package is required consisting of sufficient electricity to provide basic lighting and communications, with a clean and modern fuel (probably, but not necessarily, LPG) to provide for basic cooking and heating.

Greater co-ordination between the major players is also required. This could be achieved by assembling a steering committee on free basic energy services, comprising representatives from national, provincial and local government, the energy industry, the NGO sector and academics. This committee would have a clear mandate to co-ordinate the design and implementation of free basic energy schemes, disseminate the results of such schemes, issue joint position statements and make specific policy recommendations. IIEC will present these ideas to potential funders with a view to securing the necessary financial support to implement them.

ANNEX 1 – INVITATION AND AGENDA FOR TRAINING WORKSHOP

TO: MUNICIPAL MANAGERS

INVITATION TO FREE BASIC ENERGY (FBE) AND ALTERNATIVE ENERGY WORKSHOP

You are cordially invited to the Free Basic Energy and Alternative Energy Workshop. The purpose of the workshop is to review progress and challenges in the provision of free basic energy to poor people in non electrified areas. The workshop is organized to assist Municipalities in prioritizing poor households in the provision of Free Basic Energy and will be held as follows :

DATE : 05 September 2006

VENUE : The Golden Pipit, Centurion, Gauteng

TIME : 08:00 – 16:00 (South African Time)

The workshop will provide a platform to:

- Discuss and show case alternative energy options that can be considered for roll-out in non electrified areas in line with the FBE policy.
- Share information by presenting selected case studies of municipalities providing alternative energy as part of FBE
- Discuss the process of developing guidelines for providing alternative energy to poor households in non electrified areas

Your municipality is requested to send a maximum of three delegates comprising of councillors and officials responsible for the following; finance, community services and energy/electricity. Participants to the workshop will include Municipalities, DPLG, DME, National Treasury and Alternative Energy Suppliers.

You are requested to choose five (5) municipalities from your province who will participate at the workshop and each municipality is allowed to bring three (3) delegates in the above mentioned or respective portfolios.

We emphasize though that there should be a fair balance between rural and urban municipalities especially those without electricity.

Registration forms to be faxed to Colleen Yeoman at 021 422-4320 or

E-mail: colleen@confinitive.com

For more information please contact Erna Mare at 011 886-9702

Thank you

Tebogo Moremi

HoU: Municipal Services

Preliminary Agenda

Venue: GOLDEN PIPIT CENTURION

A consultative forum aimed at reaching consensus on the mix of fuels and appliances for the provision of modern energy services to both low income and indigent households in South Africa.

Time	Agenda item	Resp
08h15	Registration and coffee	
09h00	Welcome and workshop opening	SALGA Rep
09h15	Keynote address “Energy provisions for indigent households – policy versus implementation” An expose based on real experience gained at a national policy level on the introduction of Free Basic services.	Mathews Bantsijang DME
09h40	DSM Funding policy	Lesley Fernando NERSA
10h.00	FBE implementation	Neliswa Ndabankulu DPLG
10h20	“LPG – the thermal fuel of choice – progress and promises” . An overview of the LPG developments over the past 3 years, the over riding vision, the Industry – DME Memorandum of Understanding, first stage roll out, the Eskom Cape 100 000 household LPG DSM programme, Free basic LPG lessons etc.	M. Gaba LPGSASA
10h55	Tea/coffee	
11h15	Technical paper – “Segmentation of the receivers, appliance fuel options, funding and relative costs, delivery mechanisms” including a segmentation framework (to deal with electrified versus non electrified households, urban versus rural, RDP versus existing and current versus future fuel choices), the options available (for each receiver segment, what are the appropriate/available choices in appliance and fuel type), capital requirements and sources (DSM, NEF etc.), relative running costs for the customer and delivery options (how to effectively bring about delivery on the ground)	P. Harris IES

12h00	Research paper – “ The customer’s perspective – delivery perspectives ”, including lessons from Orange farm, the Eskom Cape programme etc.	T. Makabane IIEC
12h45	Lunch	
13h45	<p>Breakaway sessions – each facilitated and drawing from a mixture of the attendees. Key questions for the sessions are:</p> <ol style="list-style-type: none"> 1. Should LPG be the fuel of choice for the low income and indigent households – be set as clear DME policy? What other practical options are there? What is the supporting Govt. policy and legislation? 2. How should the capital funding be tackled, what are the correct sources, who should do what? 3. What do local municipalities need in terms of an “implementation kit”? 4. Communication and implementation – how do we get the right message across, who are the key role players and receivers, who is going to make it happen, how can we support them, who needs to do what, timescales etc? 	<p>Facilitators</p> <p>Russel Baloyi</p> <p>Tieho Makabane</p> <p>Paul Harris</p> <p>Kevin Robertson</p>
14h45	Tea	
15h00	<p>Plenary session -</p> <ul style="list-style-type: none"> o Feedback on the group recommendations o Comments and inputs by the whole group on the recommendations o Consolidation of way forward, actions, time scales. o Action planning, who to do what by when, admin. support, facilitation, schedule of meetings? 	Russel Baloyi / Paul Harris
15h50	Workshop Review Questionnaire	PH
16h10	Closing remarks and work closure	SALGA Rep