

Mass SWH Implementation in the Western Cape:

A strategic analysis for the Provincial Government of the
Western Cape

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Prepared by



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INTRODUCTION

Solar water heaters (SWHs) have become one of the most attractive demand side interventions in South Africa. They have the potential to reduce an average mid-high income household's electricity use by typically 20-25%, and to provide a low income household with a 100l of warm to hot water per day (typically saving 12l of electrically boiled water/day). A mass rollout of SWHs in the country would save energy equivalent to a large coal power station, create jobs, reduce carbon emissions and be financially beneficial to the end users.

Given these benefits, national government has set a target of 1 million SWHs by 2014/15. However, it is the responsibility of all spheres of government to aid in the rollout of SWHs within their mandated regions

In the light of this the Provincial Government of the Western Cape (PGWC) identified a need to develop a strategic action plan around how best it can assist in SWH mass rollout in the province. The strategic action plan must take into account the market potential, the national SWH context and international best practice in order to be realistic and practical.

This document provides a summary of these requirements, and recommends the key actions for the PGWC and local municipalities to ensure mass SWH rollout occurs in the province.

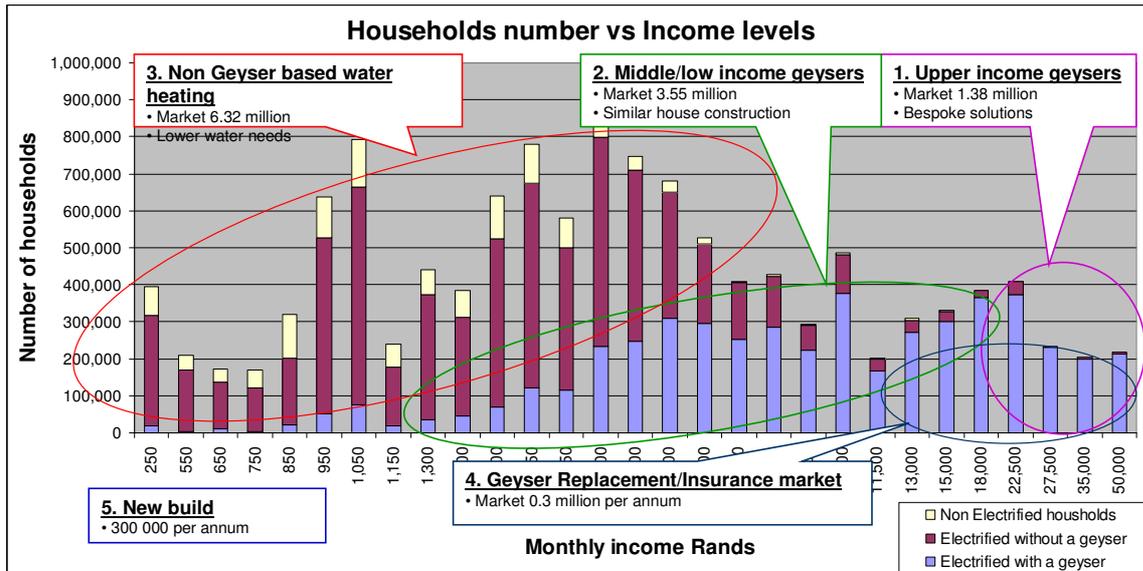
OVERVIEW OF SWH IMPLEMENTATION POTENTIAL IN SOUTH AFRICA AND SPECIFICALLY IN THE WESTERN CAPE PROVINCE

RESIDENTIAL MARKET ANALYSIS

NATIONAL

The recently produced Draft South African National SWH Strategy and Implementation Plan provided some very interesting insights into current national hot water usage patterns. The graph below, produced with 2009 AMPS data shows the national residential water heating market with the following breakdown:

Existing household methods of water heating by LSM	Number of Households
Upper income households with geysers	1.38 million
Middle and low income houses with geysers	3.55 million
Low income households which use stoves or kettles for water heating	6.32 million
Total households	11.25 million



The following conclusions can be drawn from this data:

- i. At prices currently between R15 000 – R30 000 the majority of residential SWH suppliers and installers typically cater only for the high income market (12% of households). Interestingly this means that the current Eskom incentive is supporting the subsidising of wealthy households.
- ii. The majority of the potential national SWH market is effectively not being attended to.
- iii. A more affordable solution needs to be found for current mid-low income households with geysers (32% of households)
- iv. A low to no cost solution needs to be found for current low income households with no geysers (56% of households).

THE WESTERN CAPE

The Western Cape has 1.369 million households (Stats SA 2010). However its geyser usage profile differs from the national picture. 2006 AMPS data indicates that the Western Cape had geysers in 68% of the province's households, **some 24% above the national average**. Interestingly in 2006, this electric geyser distribution in Cape Town stood at 70%, indicating that the spread between the Metro and the rest of the province was fairly consistent. As the 2010 AMPS data is not available for this study, the following assumptions have been made in determining the hot water market breakdown of the Western Cape for 2010:

- i. The difference between the 2006 (AMPS) and 2010 (Stats SA) Western Cape housing figures available is 308 000 households.
- ii. Cape Town averages 8500 new households per year above RDP level (CCT Building inspectorate approval statistics). Extrapolating that to the Western Cape this would mean approximately 12 500 new households per year (CT is 66% of all households in the province).
- iii. Given a 4 year period has elapsed since 2006, it is therefore assumed that 50 000 houses above RDP level have been built since 2006 in the Western Cape.
- iv. Therefore the remaining 258 000 new households are RDP or informal dwellings
- v. As most RDP and informal household growth in the Western Cape has occurred in Cape Town, is assumed that 80% of the 258 000 have occurred in Cape Town and the balance has been distributed evenly around the province.
- vi. Applying this aligns the geyser distribution in the Western Cape to the Cape Town's to 56% with geysers and 44% without in 2010.

vii. A 3:8 ratio between high and mid-low income households with geysers, as per the national water usage profile has been applied

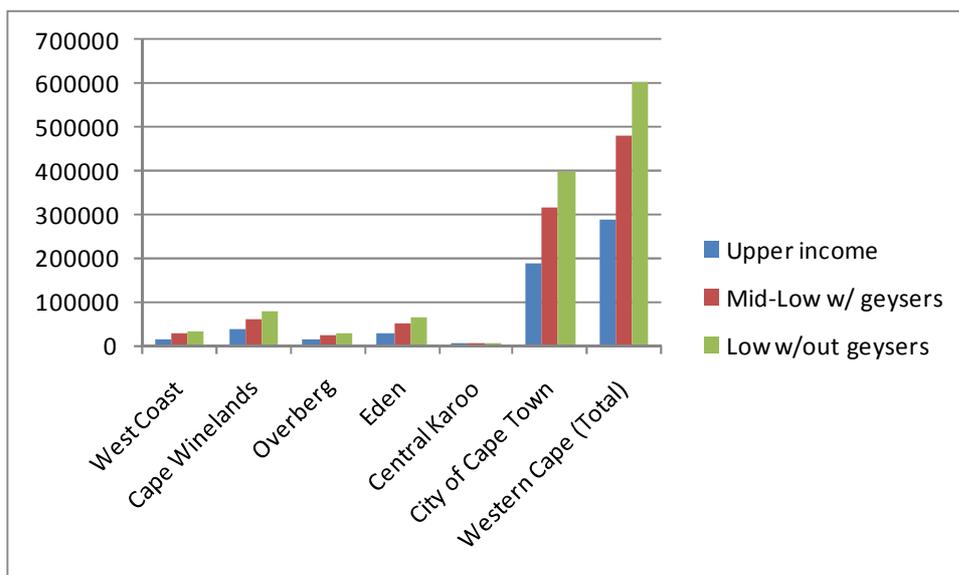
Based on the above assumptions the following provincial breakdown can be obtained:

Existing household methods of water heating by LSM	Number of Households
Upper income households with geysers	289 248
Middle and low income houses with geysers	482 081
Low income households which use stoves or kettles for water heating	598 282
Total households	1.369 million

The Western Cape has been politically divided up into 5 District Municipalities and 1 Metropolitan Municipality (Cape Town). Further applying the assumptions above with Stats SA data available a close approximation of the LSM market breakdown per municipality can be obtained:

	West Coast	Cape Winelands	Overberg	Eden	Central Karoo	City of Cape Town	Western Cape (Total)
Upper income	16005	36403	12612	29732	3297	189478	287527
Mid-Low w/ geysers	26676	60671	21020	49553	5495	315797	479212
Low w/out geysers	33535	76272	26425	62295	6908	397001	602437
Total Households	76216	173346	60057	141580	15701	902276	1369176
% of Western Cape	6%	13%	4%	10%	1%	66%	100%

Source: Stats SA 2010, AMPS 2006 data, assumptions in this report



This table and graph shows that Cape Town is by far the most populated area of Western Cape , making up some 66% of households in the Province. However significant household numbers are found in the other district municipalities, with the exception of the Central Karoo Municipality.

MARKET CHALLENGES

While the City of Cape Town clearly has the potential for a big business mass rollout of solar water heaters due to its high population, the smaller municipalities may find this trickier. Essentially the market challenge is **to determine what the optimum setup for a rollout to these wider dispersed and less populated areas will be.**

The remainder of this report will attempt to provide insight into this.

CURRENT SWH INITIATIVES, POLICY AND LEGISLATION AND THEIR RELEVANCE TO SWH ROLLOUT IN THE WESTERN CAPE

It is important to note the current SWH initiatives running in South Africa in order to contextualise the proposed solution for the Western Cape correctly. Only those which are deemed relevant have been included in this list:

ESKOM SWH INCENTIVE PROGRAMME

The current incentive offered by Eskom subsidises qualifying high pressure SWH systems by up to 40%, and low pressure systems by up to 100%. This programme was initially set up to reduce high pressure costs by up to 20%, and was not very successful in its first few years of operation. However, the inclusion of low pressure subsidies and an overall increased subsidy instituted in 2010, coupled with the 25% increase in the price of electricity has resulted in a dramatic increase in SWH sales within the programme for 2010. The programme has been planned to remain active for at least the next 5 years. However Eskom can only make firm capital commitments over three year cycles as per the Multi Year Price Determination (MYPD) process. Therefore guarantees to 2013 have been made.

Current funding allocation is as follows:

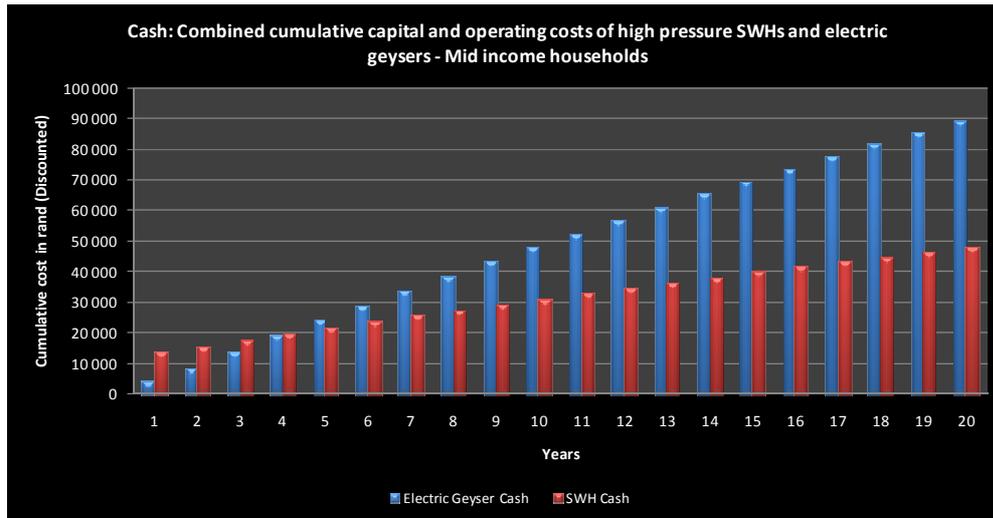
- Of the R5.2 billion allocated to EEDSM by the MYPD, R1.24 billion has been allocated to solar water heaters
- Of the R1.24 billion, R650 million has been allocated to high pressure systems, and R484 million to low pressure systems. These equate to subsidizing approximately 100 000 high pressure systems and approximately 120 000 low pressure systems in the next 3 years

Positive benefits from the programme have included the enforced standardizing of SWH quality through the SABS and the standardizing of quality SWH installation procedures through the establishment of the Plumbing Industry Regulatory Board (PIRB).

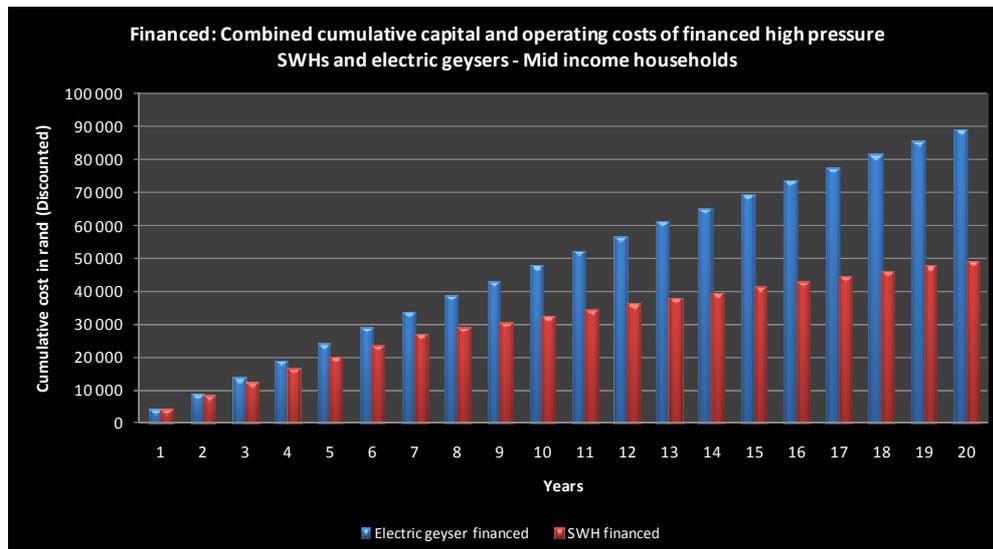
FINANCIAL BENEFITS TO END USER FROM PROGRAMME¹

The low pressure subsidy allows SWHs to be sustainably installed at no cost to the end user for the first time in South Africa. The current subsidy allocation of approximately R4200 per system covers the supply and installation costs of a mass rollout scheme. It is expected that the allocated money for this scheme will be rapidly utilized in the next few years.

In financial payback terms, a typical high pressure SWH will now pay for itself in 4 years in electricity saved, as opposed to a 6-8 year payback prior to these changes occurring.



Financing this SWH over 7 years or more, for example through a bond, will result in immediate savings for the end user (ie monthly electricity savings will exceed monthly repayments).



¹ Note that all financial analysis has been produced by SEA in September 2010 and uses the following assumptions: 150l system, 150l of 60 degree hot water per day, SWH efficiency of 60%, electricity price rising 25% in next 2 years, then set at 8% per annum, discount rate 10%, finance rate 10.5%, current electricity price 85c/kWh

POTENTIAL ISSUES WITH THE PROGRAMME

1. The Draft rules for Energy Efficiency and Demand Side Management (EEDSM) published for comment by NERSA in July 2010 propose to take the management of NERSA allocated EEDSM funds **away from Eskom**, and give it to the Department of Energy, the DBSA and the National Energy Efficiency Agency (NEEA) to manage. The model proposed would benefit low pressure (low income) and smaller high pressure SWHs, but not be as attractive as the current Eskom incentive to typical SWHs used by mid-upper income households. The current status of negotiations between Eskom and DoE is that an agreement has been reached in terms of programme management: Eskom will continue to manage its current low and high income schemes, while the DoE will initiate a mid income rollout scheme separate from the current Eskom managed EEDSM funds. As the EEDSM rules are not finalized, this information is subject to change.
2. Eskom is currently very focused on reducing energy consumption due to the pressure on its network. Once the new coal power station, Medupi, is brought online, their urgency will decrease. Therefore Eskom is only a good place to house an EEDSM programme, until such time as new generation capacity is introduced.
3. Changes in the subsidy have a direct impact on the market. A stable subsidy that is guaranteed will allow less risky and larger investment in the SWH market. The current unstable situation described above seems to be improving, but if any radical changes do happen in the future, it will be very negative for the industry as a whole.

RELEVANCE TO SWH ROLLOUT IN THE WESTERN CAPE

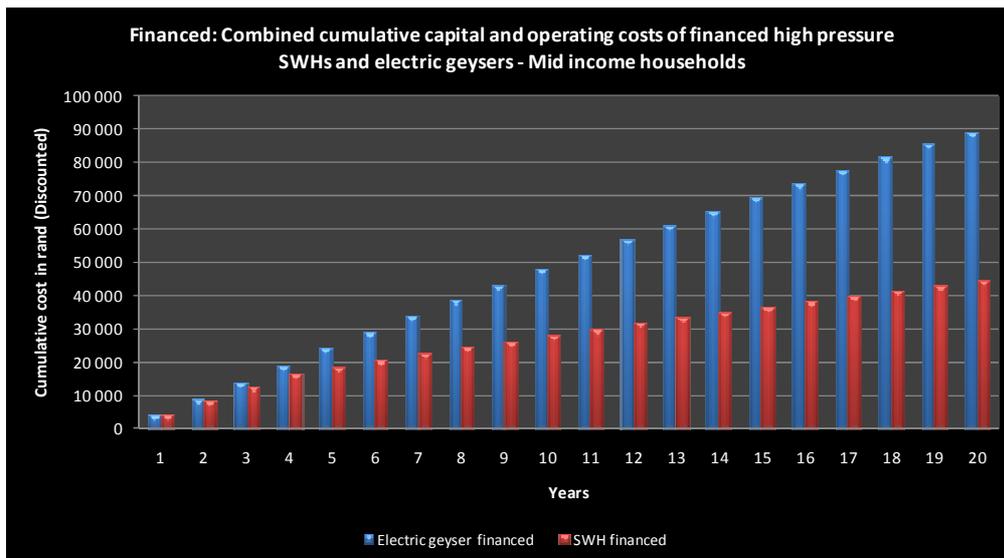
1. The Eskom SWH programme applies to all potential SWHs installed in the residential sector in the Western Cape. Systems qualifying for the subsidy meet SABS standards for manufacture, performance and installation. This subsidy incentivizes SWHs in all market areas, and will be a key component for all SWH rollout initiatives in municipalities in the Western Cape.

CITY DRIVEN OR FACILITATED MASS ROLLOUT INITIATIVES FOR RATES PAYING CUSTOMERS

Currently most of the Metros in South Africa are going ahead with SWH mass rollout initiatives for rates paying customers. This entails offering end users attractive monthly financed solutions for SWHs, which will typically be collected through the rates bills. Most Metros are looking merely to facilitate this, allowing private business to run it, but eThekweni (Durban) are looking to run the programme internally. Nelson Mandela Bay Metro (PE) have made the most progress in the country, and are due to start their pilot programme in late 2010. Interestingly, this programme has resulted in the expected reduction in SWH unit prices from mass procurement. Cape Town is looking to run a programme similar to that of NMB. For more information on these, go to www.cityenergy.org.za

FINANCIAL BENEFITS TO END USER FROM PROGRAMMES

Benefits between programmes will differ, depending on repayment periods and unit prices. However typical costings indicate that on a four year repayment scheme, additional monthly costs will be minimal in the first two years, after which net savings will be achieved. This type of financing will make SWHs accessible to the mid-low income households with geysers.



POTENTIAL ISSUES WITH PROGRAMMES

1. Getting these programmes started is often a long and slow process in cities. It is unclear when they will be fully operational
2. These programmes will depend on a stable national incentive scheme. Uncertainty in this area will result in cautious business planning and higher monthly repayments which will hinder rollout.
3. There is an increasingly strong financial case for businesses to provide this service independently of cities. Teljoy is one such example. However cities can still support these businesses by offering to collect on their behalf, giving them access to good rate paying clients and endorsing their business plans.

RELEVANCE TO SWH ROLLOUT IN THE WESTERN CAPE

1. The City of Cape Town is currently preparing to call for proposals from industry to perform this work. Other municipalities can benefit from Cape Town, either by using the implementers working in Cape Town should the implementing agent be amenable to the idea, or by using the Cape Town documentation to secure their own implementing agent for the municipality. Municipalities closer to Nelson Mandela Bay may also wish to use the implementing agent operating there.

LOW INCOME ROLLOUT INITIATIVES

In low income areas where free basic service grants are available and services are generally not paid for by the end user, the rollout of solar water heaters cannot occur without complete or close to complete subsidization. Most of the households in these areas do not have electric geysers and heat up their water with kettles and stoves.

There still are questions around whether rolling out solar water heaters to low income areas is the most useful intervention in this sector. A strong argument can be made that the installation of ceilings and insulation provides better value in the form of indoor comfort, health and energy savings from reduced heating costs. The introduction of SWHs in low income areas will probably also result in increased water usage due to more 'free' hot water being available for the household. These negative impacts need to be weighed up against the positive

economic (energy savings, local employment), environmental (CO2 reduction) and social benefits (saved time, health benefits) of free hot water in a household.

All key low income SWH initiatives to date have been fully subsidized, with the closest approximation to a payback coming from the Kuyasa project in Cape Town, where staff employed by the project were also SWH beneficiaries, and had R30 per month removed from their salaries to pay for their SWHs.

RDP HOUSING

The key to making SWHs available to low income RDP households lies in a combination of **sustainable funding for avoided generation costs and carbon income**, making the cost of a suitable SWH negligible. Most projects (Kuyasa, Zanemvula, Joe Slovo and Cosmo City) to date have not been sustainably funded and are of interest only from a technology choice, implementation approach and community acceptance perspective. Some of the key lessons learnt from these projects have been

- User acceptance is high, and generally users report an improvement in quality of life
- No cases of vandalism or theft have been reported to date
- Implementation must go hand in hand with education and maintenance programmes.

Current and future sustainable funding sources include:

1. Eskom Subsidy
The Eskom subsidy currently does subsidise four low pressure SWHs. Subsidy levels of around R4000 are sufficient to ensure free rollout on a mass implementation basis. Additional carbon funding could be used for maintenance into the future.
2. Division of Revenue Act (DoRA) funding
Currently R300 million has been allocated by Treasury for low pressure SWH rollout in smaller municipalities. This fund is being managed by Eskom, who are currently targeting Sol Plaatje and Naledi municipalities for their initial programmes.

The learnings from the current mass rollout programme in Nelson Mandela Bay show that units can be bulk procured, delivered and installed for approximately R4000. However this does not cover maintenance costs. If no carbon funding is forthcoming for the project, there will be maintenance issues into the future.

The DoRA funded projects are still to be rolled out, and it remains to be seen if a suitable awareness raising and maintenance programme will be put in place for it.

RELEVANCE TO SWH ROLLOUT IN THE WESTERN CAPE

1. The current Eskom subsidy can allow low income SWHs to be rolled out on a mass implementation basis anywhere in the country. However there are concerns over whether this is sufficient to ensure effective maintenance of the systems into the future. It is expected that money from the offset carbon could finance this. However, no approved SWH carbon credit methodology exists and is proving to be problematic
2. There is potential for smaller municipalities in the Western Cape to access the DoRA funding and roll out low income SWHs with the support of Eskom. These programmes must also have a maintenance component.
- 3.

LEGISLATION FOR NEW BUILDINGS

In July 2010, proposed additions to the National Building Regulations (NBRs) to include energy efficiency were put out for comment. One of the key new requirements is that all new households provide a minimum of 50% of the energy used to heat their water from a sustainable source. In this case the only relevant technologies to achieve this are solar water heating and heat pumps. It is expected that the legislation will be promulgated shortly, after which an 8 month building inspectorate training period will ensue prior to enforcement.

Concurrent changes to SANS 10400 will also need to be provided to provide technical support to the NBR changes.

Implementation of this legislation will result in approximately **12 500 SWHs or heat pumps** being installed annually in the Western Cape.

The City of Cape Town has drafted an energy efficiency bylaw which will be implemented should the national legislation not materialize. Legal opinion has been obtained to support municipal implementation, and is a feasible option.

RELEVANCE TO SWH ROLLOUT IN THE WESTERN CAPE

1. Municipal building inspectors will be required to enforce this legislation. It is critical that these staff members are trained and empowered to ensure enforcement.
2. SWH bylaw drafted by City of Cape Town implementable by municipalities subject to national enforcement not materialising

INDUSTRY INCENTIVES

SOLTRAIN

An Austrian funded programme working in partnership with the Sustainable Energy Society of South Africa (SESSA) and the University of Stellenbosch which is looking to support the SWH industry around optimizing product manufacture, design, installation and maintenance. It is doing this through industry courses and system testing through the University.

INDUSTRIAL DEVELOPMENT CORPORATION (IDC) LOAN

The IDC has R9 billion allocated to RE and EEDSM business development. This can be accessed to support the upscaling of the SWH industry.

RELEVANCE TO SWH ROLLOUT IN THE WESTERN CAPE

1. Both incentives above can assist in making the Western Cape the hub of SWH industry excellence and manufacture. Provincial and local government support for such initiatives can help to facilitate growth of the SWH manufacturing industry in the Western Cape

INSURANCE REPLACEMENT MODEL

Insurance companies are working closely with Eskom to give customers the option to replace blown geysers with SWHs. This does require additional financing though, and mechanisms to achieve this are still being finalized.

Optimally, house owners can pay the balance from their home loan, whereupon the monthly repayments will typically be less than the electricity saved.

RELEVANCE TO SWH ROLLOUT IN THE WESTERN CAPE

1. Excellent mechanism for mass SWH rollout, but attractive financial product not currently in insurance industry mainstream. If successful, will lead towards full electric geyser replacement in insured households in next 10 years

SWH MANUFACTURE AND INSTALLATION STANDARDS

Currently SABS standards for the design, performance and installation of both low and high pressure SWHs are in place. This has largely been driven by the Eskom SWH rebate scheme, where all eligible units must be SABS approved, and all units must be installed according to SABS installation standards

RELEVANCE TO SWH ROLLOUT IN THE WESTERN CAPE

1. Comfort that SWH products being used are reliable and can be supported by government policies and programmes.

RELEVANT POLICY

PROVINCIAL WHITE PAPER AND ACT

The Provincial Government of the Western Cape gazetted the first provincial white paper on Sustainable Energy for the Western Cape in 2010. This includes amongst other items targets for residential energy efficiency (10% reduction by 2014) and an overall energy efficiency of 15% by 2020. Solar water heating will play a key role in achieving this target. To support this an act is being drafted which aims to get local government within the province to develop their own sustainable energy and climate change action plans. These plans will need to include approaches to facilitate the implementation of SWHs within their specific municipality. Typical actions which will need to take place will be:

1. Enforcement of national legislation requiring SWHs or heat pumps in new buildings
2. Facilitating rollout of SWHs in all households in line with Eskom, private industry, national and municipal initiatives
3. Ensuring all local government buildings are retrofitted with SWHs

NATIONAL SWH TARGETS AND NERSA EEDSM RULES

The Minister of Energy announced a national target of 1 million SWHs by 2014/15 in November 2009, and the programme was officially launched in April 2010 by the President. However it is still not clear what the mechanism to achieve this will be. A draft South African SWH Strategy and Implementation Plan has been submitted to the Department of Energy (DoE), but to date no official strategy has been forthcoming. However based on the proposed revised EEDSM rules submitted by NERSA in July 2010, the DoE seems to be intent on running its own standard offer SWH programme aimed at the mid-low income market with geysers.

CITY OF CAPE TOWN ENERGY ACTION PLAN

The City of Cape Town has a target of installing 300 000 SWHs by 2015. The main vehicle for this will be through city endorsed mass rollout implementing agents and low income programmes like that currently being run in Nelson Mandela Bay.

INTERNATIONAL EXPERIENCE AND BEST PRACTICE

This section summarises the various international initiatives employed to increase the uptake of SWHs, and provides a summary of what would be considered best practice based on experience gained. An overview is also given of the international SWH production and its capacity to cope with increased demand from South Africa.

COUNTRY-SPECIFIC EXPERIENCE

Country	Initiative	Type	Description	Result
Australia	<i>Building Code of Australia</i> (2003)	Legislation/ regulation	Thermal building performance standards (did not explicitly include SWHs)	Adoption of water heater requirements by the 5 largest states (all prevent or limit use of electric geysers)
	<i>National Hot Water Strategic Framework</i> (2008) <i>National Strategy on Energy Efficiency</i> (2009)	Legislation/ regulation	Objective of preventing electric geyser installation in new homes	
	Revise the <i>Building Code of Australia</i> (proposed)	Legislation/ regulation	Addition of new (stricter) performance requirements for water heaters	Provision will become mandatory for new construction in all jurisdictions
	Various rebate programmes (nationally or by state)	Rebate	Rebate if household meets various requirements.	Reduction of the federal government rebate at the end of 2009 caused a dramatic slowdown of the SWH industry. In the state of New South Wales, this was compounded by a reduction of the state rebate, which all but stalled the SWH industry. In Queensland the announcement of a planned rebate caused the immediate collapse of sales, as customers awaited the introduction of the scheme.

Barbados	Tax concession (since 1980s)	Tax	Tax concession for households that install SWHs	2 out of 5 households with SWHs.
	Import duties (since 1980s)	Tax	Higher import duties for gas and electric water heaters	
Brazil	Public campaign (2006)	Awareness	Information from websites and manuals, and DSM actions by electricity utilities.	40% of annual hot water demand supplied through SWHs
	Qualisol quality mark	Quality control	Ensures system quality.	
	National Institute of Metrology, Standardization and Quality Industrial (INMETRO)	Quality control	Accredits SWHs after efficiency test	
	Prosolar	Legislation/regulation	Legal compulsion for planning permission. Focus: urban middle-class and low-income components.	
China	Industry support	Government support	Research and testing	Largest quantity of SWHs in world. Total capacity: over 79,000 MW
	Renewable energy law (2005)	Legislation/regulation	Mandates use of SWHs in certain buildings	
Cyprus	SWH promotion by government	Tax	Duty-free SWH production materials.	Leading country i.t.o SWH collectors per capita (0.86 m ²). SWHs on 92% of households & 50% of hotels in 1999.
		Government support	Technical support for preparation of relevant standards.	

		Legislation/ regulation	SWH installation compulsory on state-built housing	
	Industry support	Industry support	Identified prime SWH application, boosted technology improvement, technical support, system testing, advising industry/consumers & SWH promotion.	
France	Plan Solar (1999-2008) national promotion programme	Awareness	Major publicity campaign.	25,000 units installed per year
		Rebate	Tiered subsidisation of roughly 30% of SWH capital cost to household.	
		Quality control	“Qualisol” mark for approved units, which are then eligible for the subsidy.	
		Tax (proposed)	Consumers deduct capital cost of SWH from taxable income	
	Grants	Grants	Additional grants often supplied by local authorities	
	Renewable energy programme	DSM	Aims to move 21% of national electricity demand to renewable energy	
Germany	100-million programme (mid-1990s), now the	Grants	Direct grants cover smaller residential systems according to	SWH installed capacity leader in Europe (3 million units)

	Programme for Market Stimulation		collector area.	
		Low-interest loans	Applicable to larger systems.	
	City of Vellmar initiative	Legislation/regulation	SWH installation as condition for construction authorisation.	
		Awareness	Public campaign	
Greece	Rising electricity costs (1970s)	Electricity tariff increase	Acted as catalyst for SWH use	Second-largest installed SWH capacity in Europe (2,500 MW)
	Tax deductions	Tax	Up to 40% of SWH capital cost as tax deductible (before 1991). 75% of SWH capital cost tax deductible (1995-2002)	
	Programme to achieve 10% renewable energy share of consumption (launched 2000)			Growth of SWH installation in 2004 and 2005 of 34%. Rapid consolidation of operators (from around 300 to 45)
	Solar industry support	Awareness	Publicity campaigns.	Supply side very responsive to increased demand
Israel	Planning and Construction Act (1980)	Legislation/regulation	Requires mandatory SWH installation on all new residential buildings.	SWHs installed on 95% of households (2 million units). Leading country in per capita installation.
	SWH in industrial buildings	Legislation/regulation	Planned to make installation on industrial buildings mandatory.	NA

Mexico	Building regulations (2007-2012)	Legislation/regulation	30% of hot water in new & refurbishing buildings to be supplied by SWHs.	310 MW of SWH capacity
Namibia	Directive (2007)	Cabinet directive	Orders that SWHs to be included on all government & parastatal buildings	
Spain	Barcelona Solar Ordinance (2000)	Legislation/regulation	Requires 60% of hot water demand in Barcelona commercial & residential sectors supplied by SWHs in new & refurbishing buildings. No financial incentives.	Dramatic increase in SWH use, stimulation of market not covered by ordinance, widespread public support, and approval of solar regulations by dozens of other municipalities.
		Awareness	Campaign aimed at getting SWH industry buy-in	
	Spanish Technical Buildings Code (2006)	Legislation/regulation	Application of Barcelona Solar Ordinance to entire Spain.	90,000 m ² collector area installed at present.
Tunisia	SWH Stimulation Programme (1997-2004)	Subsidy	35% of capital costs	Systems sold per year went up from 2000 m ² (1996) to 17,000 m ² (2001). This dynamic was interrupted in 2002 when subsidy funds ran out.
		Quality control	Aimed at developing global product quality (product, installation, after-sales service, etc.)	
		Tax	Removal of trade barriers & VAT	
	Prosol (2004)	Low-interest loans	Interest rate subsidy on low-interest loans. Loan period: 5 years. Interest paid	

			on loan effectively zero.	
USA	Varies by state	Varied	Includes grants, low-interest loans, public campaigns, production/import incentives, regulations and tax deductions.	
	Federal Tax Incentive (1 Jan 2006-31 Dec 2007)	Rebate	Federal tax credit covering 30% system & installation costs.	

International production and installation capacity

Variable	Responses
Global manufacturing growth (2008)	30%
Units produced globally per year (conservative)	5-million
Units installed in SA in 2008 year	15,000 (double 2007 figure)
Potential number of units that can be supplied to SA if international and local producers increase production to full capacity	250,000 per year

INTERNATIONAL BEST PRACTICE – CONCLUSIONS

The one factor that is common to most countries leading in SWH installations is the implementation of legislation that requires the mandatory installation of SWHs for new and/or refurbished buildings. The introduction of such legislation is not only the lowest cost option to government, but also leads to the most dramatic increase in SWH installations. It is notable that Barcelona (Spain) and Israel both achieved a profound increase in SWH installations in the complete absence of subsidies and through SWH legislation as the main driver. Israel now stands as the world leader in terms of SWHs installed per capita.

The deployment of subsidies, which is a major feature of international experience, has led to problems in many countries, with significant distortions in SWH markets and legacies of long-term problems. In Tunisia the previously strong increase in the number of SWHs sold per year abruptly slowed after subsidy funds ran out in 2001. In Australia the announcement of a planned SWH rebate scheme caused an immediate collapse in all SWH sales. Countries where the rebate approach has shown a measure of success are mainly developed countries, which have greater and more reliable access to funds. Yet, even here, subsidies often form part of a suite of SWH incentives that include tax rebates, low-interest loans, public campaigns, and production and import incentives.

The price of alternative water-heating energy sources, such as electricity, has a great influence on SWH installation and government support of such an initiative. Demand for SWHs across all countries generally track oil

and electricity price increases. The implementation of SWH legislation in Israel was as a result of high electricity prices. Electricity shortage, likewise, has the same effect. South Africa experienced a SWH demand spike after the black-outs of 2008. The country also faces significant electricity price increases in the near future, which will further drive demand.

Another notable conclusion from international experience is the role of large consolidated supply bodies once market development begins to get under way in earnest. During this phase in market development, when larger volumes, keener prices and streamlined delivery and installation activities come into play, many of the smaller suppliers either disappear or are consolidated into the larger suppliers. This was experienced in Greece, where a renewable energy programme caused the rapid consolidation of SWH operator numbers from roughly 300 to 45.

The role of imported components and complete systems also plays a major role in successful SWH programmes elsewhere, with just a few major centres of large volume equipment manufacture such as China and Austria. Common features of the more successful overseas programmes have been both the lead given by central government, federal or other agencies, and standardised rollout terms and conditions either reflected in building codes or in the various subsidy schemes.

Overall there is little mention of carbon offset trading and revenue streams supporting the various subsidy schemes, where they exist.

International evidence indicates that each country must design its own dedicated supply approach that specifically meets the needs of the market(s) to be served and the unique local country landscape. The “low-hanging fruit” (i.e. the intervention with the lowest cost in relation to its impact) in the case of South Africa is the implementation of SWH legislation. Meanwhile, other rollout systems need to be considered, as the implementation of legislation could take some time, especially on the national level, and will initially only be financially viable and therefore applicable to the mid- to high-income residential sectors. In a country where service-delivery is seen as a key factor of delivery, the low-income residential sector cannot be excluded.

Aside from the implementation of SWH legislation, an international review conducted by Roulleau and Lloyd for the New Zealand Government, published in January 2008, identified several necessary features of a successful solar water heating approach to achieve high levels of market penetration and these lessons are highly pertinent to our current SA situation, namely, the urgent need for:

- Transparency: any financial incentives must be clear, well known and comprehensible to everyone.
- Well defined objectives: they need to be clear and precise.
- Well defined resources and well proven technology.
- Appropriately applied subsidies and incentives to achieve specific and audited outcomes.
- Adequacy in terms of affordability to boost householder uptake
- Stability in terms of being well defined and having a long time frame
- Contextual framework: **an overarching national energy policy or body which guides and co ordinates policies and programme arrangements**
- Industry support in terms of competent manufacturers, associated standards and installation resources
- Simplicity to ensure understanding and participation while also reducing overhead costs

RECOMMENDED ACTIONS TO FACILITATE SWH IMPLEMENTATION IN THE WESTERN CAPE

The information collected for this report provides the following conclusions and recommendations with regards to optimal SWH rollout in the Western Cape, particularly outside of the Metro:

NEW BUILD

It is clear from international experience that legislation for SWH implementation in new buildings in the country is critical for local industry growth. Current efforts at national level to implement this legislation will most likely come to fruition in 2011. From a municipal perspective this means that they will be required to enforce this legislation through their building inspectorates. The National Regulator for Compulsory Specifications who are responsible for the National Building Regulations will implement a nationwide training programme to skill up the relevant municipal staff in this area. Municipalities in the Western Cape should be aware of when this training occurs and ensure that relevant staff are brought up to speed.

However, there is a possibility that the national legislation process could stall or not be promulgated. It is then recommended that willing municipalities pass their own energy efficient water heating bylaws based on the Cape Town draft bylaw, which is freely available.

KEY ACTIONS

1. Municipalities to ensure that relevant staff are trained to enforce national legislation. Provincial government to support where relevant.
2. Provincial government to disseminate Draft Cape Town Energy Efficient Water Heating Bylaw and backing legal documentation to relevant municipal staff to cover for a lack of delivery from National government in this area. Expert support will be required to ensure implementation.

LOW INCOME ROLLOUT

Low income rollout as per the Nelson Mandela Bay model (including community awareness and maintenance support) is feasible while subsidy funding is available. This funding can come either through the Eskom DSM programme (currently sufficient for 120 000 units) or through the component of DoRA funding (currently R300 million) administered by Eskom. Municipalities can facilitate this rollout through ward councilor structures and MOU's with implementers to ensure that the needs of the community are met.

KEY ACTIONS

1. Distribute copy of MOU signed between private industry and Nelson Mandela Bay Metro around the low income SWH rollout there to all municipalities. MOU is a key requirement to ensure that the rollout is accompanied by a suitable community awareness campaign, local skills training component and acceptable maintenance plan
2. Provincial government to liaise with Eskom around allocation of current DoRA funding and determine how Western Cape municipalities can benefit from current or future rounds of funds.
3. Provincial government to discuss with SASSA, the current project implementers at Nelson Mandela Bay, around potentially rolling out to smaller municipalities in the Western Cape, possibly to those situated closer to Nelson Mandela Bay, notably the Eden district.

MID-HIGH INCOME ROLLOUT

Mid-high income rollout as per the Metro implementing agent model may be feasible depending on household numbers and additional operating costs incurred outside the Metro. As the City of Cape Town and Nelson Mandela Bay are due to embark on this route within the next year, it may be beneficial to learn from their experiences prior to considering a similar rollout in smaller municipalities. One of the key issues around a mass rollout is the size of the unit price reduction, and this should be clear once implementation is running.

There is a possibility that mass implementation businesses operating within the Metros will be able to expand into surrounding municipalities, starting with the larger centers first. One of the considerations here would be additional transport costs to deliver SWHs to the smaller urban centers in the Western Cape, and the wider distribution areas within these municipalities. The table below provides an indication of these distances per district, and the potential households in this market segment:

District Municipality/ Metro	Viable houses	Nearest Metro
Central Karoo	8,792	Cape Town/NMB, 400-450km
Overberg	33,632	Cape Town, 220-320km
West Coast	42,681	Cape Town, <300km
Eden	79,285	Nelson Mandela Bay, 230-350km
Cape Winelands	97,074	Cape Town <170km
Cape Town	505,275	-
Total	766,739	

Besides the Central Karoo area, the numbers of viable houses in this market segment are substantial enough to make a feasible mass rollout business case, particularly if it is linked to a larger Metro based programme. Additional transport costs could be offset by lower operating costs reduced rentals or purchase of commercial operating and storage space.

KEY ACTIONS

1. Provincial government to monitor the Metro based implementation businesses in Cape Town and Nelson Mandela Bay once operating, and determine if the programmes are effective, and open to expansion into the Western Cape.
2. Larger urban municipalities in the Western Cape outside of Cape Town to be capacitated around how the implementation model works, and what will be required from them to support it within their jurisdiction. This will be directly linked to the support currently offered by the Metros, and will include marketing through rates bills, business endorsement, access to creditworthy ratepayers and possible monthly collection on behalf of the business. The process to achieve this resolution from each council could take some time, so it is recommended that it starts as soon as possible in interested municipalities
3. Once council resolution has been obtained within these municipalities to embark on a SWH rollout programme, each can determine whether it is better to run it jointly with neighbouring municipalities, whether to link directly to the Metro programme, or start up their programme independently of the Metro. This will depend on factors such as viable houses within the municipality, and whether

neighbouring municipalities are at similar levels of advancement in this area. The current recommendation in the interests of keeping unit prices down through bulk procurement, is that the current Metro schemes are expanded provincially.

4. Provincial government to interact with the Department of Energy standard offer programme once finalized to determine how it can assist in facilitating the rolling out of SWHs to mid to low income areas in the Western Cape.

GROWTH OF SWH MANUFACTURING INDUSTRY IN THE WESTERN CAPE

It is anticipated that the increased demand for SWHs will result in the growth of the SWH supply and installation industry. There is however a risk that SWHs manufactured in China will be the predominant source of the supply. There is an excellent job creation opportunity through developing the local SWH manufacturing industry.

KEY ACTIONS

1. Government to incentivize local manufacturing through mechanisms at its disposal (concessionary land use, favourable zoning, tax incentives)
2. Link manufacturing to industry innovation and excellence programmes such as Soltrain
3. Facilitate concessionary financing for industry from IDC and other sources where relevant

CONCLUSION

This report has provided information to support the Provincial Government of the Western Cape in facilitating SWH mass rollout within its mandated area. This has included:-

- A national and provincial market analysis of the potential for SWH implementation
- An overview of the national solar water heating context including policy, financial incentives, government and private initiatives
- A summary of international experience and best practice recommendations
- Key actions for the Provincial Government of the Western Cape and associated municipalities to follow in order to ensure mass rollout of SWHs occurs in a sustainable manner, and that growth of the manufacturing industry is stimulated.