Eskom	SCOPE OF WORK AND TECHNICAL EVALUATION	**GAS & RENEWABLES**

Title: Request for information on a service to collect, recycle, and dispose of old or damaged solar panels in compliance with the e-waste management regulations of South Africa.

Compiled by	**Functional Responsibility**	**Authorized by**
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1 Description of the Product

1.1 Executive overview

This request is for market information (including costs) to collect, recycle, and dispose of solar panels in compliance with the e-waste management regulations of South Africa.

1.2 Background

Eskom's Research Testing and Development, Rosherville facility has a 400-kW capacity solar PV plant. The plant consists of 1180 thin film and 784 polycrystalline solar panels.

Solar PV plants usually have minimum operating and maintenance requirements. Solar PV plants usually have self-operating systems and little mechanical operations. However, solar panels are fragile components which can be damaged due to several causes such as hailstorms, lightning strike, stones, or hard object hitting the surface of the panels.

Therefore, as part of the operation and maintenance of a solar plant, panels that are broken/damaged or have reached their end of life will have to be removed from the plant as they become a safety hazard. Broken panels continue to produce electricity even when not installed and therefore have current flowing in their cells and can have current leaks that could cause a shock to humans and animals.

Removing decommissioned panels from the solar plant structure is the first step to mitigating the harm that such panels can cause; the next step would be to dispose of the panels in an environmentally responsible manner. Decommissioned/ Broken solar panels are classified as electronic waste which requires legally compliant handling, storing, and recycling to ensure compliance with the National environmental management Act: Waste Act (Act 59 of 2008).

Solar panels are not allowed to be disposed of at a landfill or any other way, this is a ban that South African government has put on e-waste disposal at landfills as of August 2021. South African regulations stipulate that Solar Panels can only be recycled at a licensed recycling facility.

1.3 Scope

The objective of this RFI is to obtain information on the processes and cost of disposing of solar panels. The following is therefore requested.

1. The service provider is to provide information on the method they use for:
    a. Dismantling
    b. Recycling
    c. Safe disposal
    d. Re-use of recycled material
2. The cost associated with the collection, recycling, and disposal of PV modules at a certified e-waste handling facility/site.
3. The service provider must comply with the South African legislative requirements of Waste Act 59 of 2008.
4. The service provider must provide the employer with a recycling/disposal certificate.
5. The information supplied needs to cover the following panel type and sizes, especially if there are cost variations expected due to panel type and size. Eskom currently has panel types and sizes as indicated in Table 1

Table 1: Panel Types and Sizes

Panel Description	Panel Output (W)
Thin Film	145
Polycrystalline	300
Monocrystalline	350

SHEQ Requirements

As part of this request for information, the service provider needs to take the SHEQ requirements into considerations, especially when providing information on the costing.

a) The service provider must have a Waste Management License as per the NEMA: Waste Act (Act 59 of 2008).
b) Comply with the requirements of NEMA: Waste Act (Act 59 of 2008).
c) The service provider must be registered as a recycler.
d) The service provider must be registered as a waste transporter.
e) The service provider must be compliant with the requirements of ISO (14001, 45001, and 9001).

2 Technical Returnable

The following documents/information is required with each service providers submission:

Company Profile

- Company Profile of the service provider, including core business area, passed and active projects, local/global footprint, etc
- Company Profile of any subcontractor that would be involved in any aspect for recycling and disposal process, including core business area, passed and active projects, local/global footprint, etc (if applicable)

Reference letters

- References for disposal of solar panels, for the primary company or any of the sub-contractors
- If there are no reference letter for the disposal of PV panels, please provide reference letters for disposal of e-waste (5 letters).

Methodology Statement

- The service provider is to provide information on the method they plan to use for each stage of the disposal process including dismantling, recycling, safe disposal and re-use of recyclable materials.
- Each stage should be covered in detail addressing the following aspects:
- Are processes conducted in house or via a subcontractor, locally or internationally
- Methodology statement detailing the method for each stage (dismantling, recycling, safe disposal and re-use of recyclable materials), and how the product of each stage are handled. Which components are reused, recycled or disposed of.
- Provide details on any restriction or limitation of the process. This will include any restriction in panel type or size
- Technology Readiness level of method being used with details of how long the technology has been available in the market
- Operational performance (local and international), with detail of where the technology is used and case studies where successful PV disposal has taken place.
- Welcome to submit a video with the soft returnable or a link for demo video.

Cost

- The cost associated with the collection, recycling, and disposal of PV modules at a certified e-waste handling facility. Table 2 below can be used to indicate cost, however the service provider may also submit their typical cost breakdown (itemised costing structure). Please indicate if there will be any cost variations due to panel type, size or any other criteria that would result in a variation of the cost price.

Table 2: Proposed Cost Breakdown

No	Description	Cost per Thin Film	Cost per Poly-crystalline	Cost per Mono-crystalline
1a	PV panel dismantling	R	R	R
1b.	PV Panel component Recycling	R	R	R
2.	Rates are inclusive of all aspects of recycling (including transport for components that need to be shipped for recycling)	R	R	R

Compliance

- The service provider must provide evidence of compliance with the South African legislative requirements of Waste Act 59 of 2008.
- The service provider may also provide any other standards and regulation that they comply to.
- The service provider may submit any certifications, approval, awards, etc received in relation to PV disposal

Other

- Disposal time from collection to certification
- The service provider must provide an example of a recycling / disposal certificate that will be issued.

3 Technical Evaluation Criteria

3.1 Technical Evaluation Threshold

All tenders/proposals will be evaluated by the technical evaluation team and scored in terms of meeting the technical returnable. A minimum weighted final score required for a tender to be considered technically satisfactory is 70%. The following member will make up the technical evaluation team:

- Sello Phele – Mechanical Engineer
- Chantelle Moll – UCG Engineer
- Sibu Maphumulo – Engineering Manager
- Mike Beeslaar – Technology Consultant

3.2 Qualitative Technical Evaluation Criteria

The supplier is required to provide the technical returnable as detailed in section 2 with particular reference to the method statement and the cost. The technical evaluation team will assess each tender according to the criteria in Table 4. The criteria will be assessed on a scale of 0 – 5 as per Table 3, based on the extent to which submissions have complied with the requirements in the scope and the technical returnable. The score that each tenderer receives will provide a numeric basis for submission comparison.

Table 3: Qualitative Evaluation Criteria Rating

Description	% compliance	Score
Meets Eskom's requirements: no errors, risks, weaknesses, or	80 → 100	5

omissions.		
Meets Eskom's requirements with qualifications: some qualifications required from tenderer to eliminate the errors, risks, weaknesses and omissions.	60 → 79	4
Does not meet Eskom's requirements: some errors, risks, weaknesses or omissions which can be corrected or overcome with negotiation and cost impact.	40 → 59	3
Substantially does not meet Eskom's requirements: many errors, risks, weaknesses which may be difficult to be corrected or overcome and make acceptable.	20 → 39	2
No achievement of Eskom's requirements: existence of numerous errors, risks, weaknesses or omissions which cannot be corrected.	0 → 19	1
Totally deficient / non-responsive.	0	0

Table 4: Evaluation of Technical Returnables

Item No.	Specification	Weight
1	**Company Profile**	
1.1	Company Profile of the service provider, including core business area, passed and active projects, local/global footprint, etc Company Profile of any subcontractor that would be involved in any aspect for recycling and disposal process, including core business area, passed and active projects, local/global footprint, etc (if applicable)	5
2	**Reference letters**	
2.1	References letters for the disposal of solar panels, for the primary company or any of the sub-contractor. If there are no reference letter for the disposal of PV panels, please provide reference letters for disposal of e-waste (5 letters).	5
3	**Methodology Statement**	
3.1	Methodology for **dismantling** PV panels including information on: • In house or subcontracted • Method statement • Product handling, sale, re-use or recycle • Limitation of method • Technology maturity Operational performance information	15
3.2	Methodology for recycling PV panels including information on: • In house or subcontracted • Method statement • Product handling, sale, re-use or recycle • Limitation of method • Technology maturity Operational performance information	15
3.3	Methodology for re-use of recyclable materials including information on: • In house or subcontracted • Method statement • Product handling, sale, re-use or recycle	15

	• Limitation of method • Technology maturity • Operational performance information	
3.4	Methodology for safe disposal including the information on: • In house or subcontracted • Method statement • Product handling, sale, re-use or recycle • Limitation of method • Technology maturity • Operational performance information	15
3.5	Submission of a video with the soft returnable or a link for demo video.	
4	**Cost**	
4.1	Cost breakdown provided as per the proposed table or an alternative itemised costing structure	15
4.2	Indication of variations in costs due to panel type, size or any other criteria provided or confirmation that the costs are fixed.	5
5	**Compliance**	
5.1	Evidence of compliance with the South African legislative and Waste Act 59 of 2008	2
5.2	Other compliance standards and regulation was provided	2
5.3	Certifications, approval, awards, etc that have been received in relation to PV disposal	2
6	**Other**	
6.1	Disposal time from collection to certification	2
6.2	Example of a recycling / disposal certificate that will be issued.	2