



Low Emissions Development Program

YEAR 4-5 WORK PLAN

SOUTH AFRICA LOW EMISSIONS DEVELOPMENT (SA-LED)
PROGRAM

1 OCTOBER 2018 – 17 MAY 2020



Revised May 31, 2019

This publication was produced for review by the United States Agency for International Development. It was prepared by Chemonics International Inc.



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Contract No. AID-674-C-15-00005

Cover photo: Monitoring and Evaluation Specialist, [REDACTED] with students from Capricorn for Technical and Vocational Education Training College, conducting an energy audit at the Polokwane Municipality Offices (Credit: SA-LED)

DISCLAIMER

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States government.

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ACRONYMS

CHDM	Chris Hani District Municipality
CHP	Combined Heat and Power
CISL	Cambridge Institute for Sustainability Leadership
CLEER	USAID/Clean Energy Emission Reduction Tool
CSIR	Council for Scientific and Industrial Research
DEA	Department of Environmental Affairs
DCA	Development Credit Authority
DFI	Development Finance Institution
DoE	Department of Energy
DST	Department of Science and Technology
EEDSM	Energy Efficiency and Demand Side Management Program
EMS	Energy Management System
GBCSA	Green Building Council of South Africa
GHG	Greenhouse Gas
GIZ	Gesellschaft für Internationale Zusammenarbeit
GoSA	Government of South Africa
GPC	Community-Scale Greenhouse Gas Emission Inventories
IDC	Industrial Development Corporation
IDP	Integrated Development Plan
ITP	Integrated Transport Plan
KRA	Key Result Area
kWh	Kilowatt Hour
LED	Low Emissions Development
LoE	Letter of Engagement
LOP	Life of Program
M&E	Monitoring and Evaluation
MRV	Measurement, Reporting and Verification
MOU	Memorandum of Understanding
NREL	National Renewable Energy Laboratory
OCA	Organizational Capacity Assessment
PMP	Performance Monitoring Plan
PMO	Project Management Office
PPP	Public Private Partnership
PV	Photovoltaic
RFP	Request for Proposals
SA-LED	South Africa Low Emissions Development
SACN	South African Cities Network
SAGEN:	South-African German Energy Program
SALGA	South African Local Government Association
SANS	South African National Standards
SDBIP	Service Delivery and Budget Implementation Plan
SEA	Sustainable Energy Africa
SSEG	Small Scale Embedded Generation
TGH	The Green House
TOC	Theory of Change
USAID	United States Agency for International Development

INTRODUCTION AND BACKGROUND

The South Africa Low Emissions Development (SA-LED) Program is a USAID/South Africa funded Program that was awarded to Chemonics International on May 18, 2015 under Contract No. AID-674-C-15-00005. SA-LED is designed to support the accomplishment of the U.S. Government’s Development Cooperation Strategy in South Africa, specifically Key Results Area (KRA) – Transition to a low-emissions economy promoted. Accordingly, the overarching objective of SA-LED is to support the Government of South Africa (GoSA) in its efforts to expand low emissions development (LED), or “green growth” in South Africa, through improving the capacity of South African LED actors to select, plan, implement, and expand LED projects.

“Without the inclusion of the components covered by SA-LED..., there is a considerable risk of project failure. SA-LED funding therefore forms a vital pillar to the success of the [DEDEAT] projects.”

— [REDACTED]
HEAD OF THE DEPARTMENT,
EASTERN CAPE ECONOMIC
DEPARTMENT OF ECONOMIC
DEVELOPMENT,
ENVIRONMENTAL AFFAIRS
AND TOURISM

The Program has two integrated strategic objectives:

Objective 1: *Strengthen public sector-related development planning and project development capacity for low emissions projects, including the mobilization of development finance and private sector participation; and*

Objective 2: *Increase public sector core competencies through technical assistance and learning activities in support of GoSA’s Green Growth initiatives.*

The GoSA was instrumental in co-creating the terms of reference for this Program as well as having been involved in the procurement process and will continue to be part of the Program’s Strategic Advisory Committee. SA-LED therefore enjoys strong local ownership and strategic support by its partners at the national level, the Departments of Environmental Affairs (DEA) and Science and Technology (DST).

DEFINING THE PROBLEM

South Africa has committed to implement an effective nationally determined climate change response, including mitigation and adaptation actions that represents the nation’s fair contribution to the global climate change response. Central to the approach adopted by the government is an emphasis on LED to reduce its substantial greenhouse gas (GHG) emissions levels in a sustainable, equitable, and just manner. To do so will require transformational change at multiple levels and sectors, including mitigating key capacity bottlenecks and coordinating with a diverse set of actors who contribute to LED project development.

South Africa’s Climate Change Bill (2018) acknowledges the important role of the sub-national government sphere (province and local) in achieving the country’s national

climate change response. While the Climate Change Bill, in its current form, recognizes the role of municipalities in climate change mitigation, it does not explicitly establish sectoral emissions targets for municipalities, although municipalities will be subject to Carbon Taxation under the Carbon taxation contemplated by this Bill. However, the Bill does require mayors of municipalities to undertake climate change needs and response assessments within a year of the promulgation of the Climate Change Bill. This will be followed up by the development of municipal climate change response implementation plans which are expected to include measures or programs (LED projects) relating to both adaptation and mitigation.

Significant obstacles remain in translating this vision into actual LED projects. Many South African municipalities not only lack the capacity to move projects through the pipeline, but a clear structure for coordination between the sub-national government spheres and the national government climate change mitigation mandate has yet to be articulated. These institutions do not yet have an understanding of the operational and planning implications of provisions of the Climate Change Bill and have had issues translating national DEA recommendations into actionable projects. South African investors also do not have a sophisticated understanding of LED technology or the legal and regulatory framework surrounding green investment and therefore perceive such investments as risky. Addressing these challenges requires translating LED concepts into replicable projects, proving their success, and scaling-up.

Problem Statement: Sub-national LED projects do not frequently reach implementation stage due to limited capacity (human resources and funding) and a lack of technical expertise. An unsupportive enabling environment further results in lost opportunities to accelerate action for green growth that meets national low carbon growth goals, including municipal climate change imperatives captured in the Climate Change Bill (2018).

IMPLEMENTATION APPROACH

SA-LED's Year 4 and 5 work plan builds on the successes and milestones of the first three years of the Program. Examples of the Program's progress to date are included within this work plan while detailed information can be found in Year 3 quarterly reports. The focus of the Program for Year 3 was on project development and capacity enhancement. While SA-LED's original objectives remain, two key and interrelated approaches that emerged from the Program's work planning session in July 2018 will guide all activities and technical assistance during the final phase of implementation. The two approaches (described in more detail below) are that of "*supporting municipalities to prepare for and implement climate change response implementation plans*" and "*ensuring sustainability of technical assistance.*" These approaches will be supplemented with robust knowledge sharing activities, LED tool development and dissemination, and thorough project handover processes (see page 43 for more details). During the year 4 and 5 work planning session, SA-LED's consortium partners emphasized that handovers should be carried out strategically to ensure that activities scheduled to continue beyond SA-LED's end-date can be supported by other stakeholders.

Supporting municipalities to prepare for and implement climate change response implementation plans

While the GoSA demonstrated its dedication to instituting an effective climate change response and transition to a climate-resilient and lower-carbon economy and society in its National Climate Change Response White Paper (2011), the introduction of the National Climate Change Bill (2018) reiterates and bolsters that commitment. The Climate Change Bill provides for the “coordinated and integrated response to climate change and its impacts by all spheres of government,” and mandates municipalities to complete climate change needs and response assessments and develop and implement climate change response implementation plans.

In response to the 2011 White Paper, SA-LED has already been working towards the goals of the Climate Change Bill. However, the introduction of the Bill and the mandates within it present an incredible opportunity to build upon the impactful work SA-LED has completed to date. The Program is now positioned to harness the national momentum surrounding the Bill to strengthen political will and to continue to build the capacity of municipalities to respond to the Bill and mainstream climate change considerations at the sub-national level. SA-LED through its activities will play a key role in raising awareness of the Bill, its mandates, and of climate change in general. Although SA-LED has worked with several municipalities on climate change mitigation measures since its inception, there is still a need for general knowledge sharing on climate change, its effects, potential mitigation measures and, mainly, how to incorporate these considerations into actionable and effective integrated development plans (IDPs).

Through its current and planned activities SA-LED will continue to play a role in ensuring municipalities have the tools and capacity to prepare and implement climate change response implementation plans.

Ensuring sustainability of technical assistance

Although significant progress has been made and many targets have been met since the introduction of SA-LED in 2015, one of the most important considerations looking forward to the final two years of implementation will be consolidating, improving upon and ensuring the sustainability of the Program’s technical assistance and associated impacts.

It will be important to choose sustainable, replicable and scalable projects to highlight and utilize as storytelling vehicles, and to highlight and standardize methodologies that can be adapted for various circumstances. SA LED’s financial work will integrate targeted examples of technical assistance and standardized methodologies to package financial pilots, including documenting the legal and procurement processes, reviewing projects that are technically adequate for financial feasibility, maintaining and handing over a database of funders, and documenting projects successfully financed in the past. These activities will ensure that the financial work that has been completed will be continued and implemented moving forward.

An additional driving factor of the work for Years 4 and 5 is ensuring long-term value from the embedded technical advisors within the municipalities. While SA-LED's advisors embedded within the Chris Hani District Municipality (CHDM) and the Polokwane Municipality have added significant value to their respective municipalities to date, the Program will focus on ensuring tools and LED project plans are carefully handed-over to municipal counterparts as their contracts come to an end. More specifically, the advisors will begin supporting the municipalities to prepare climate change response implementation plans in response to the Climate Change Bill and work to integrate GHG measurement, reporting and verification (MRV) and climate change responsibilities into municipal official job descriptions, Key Performance Areas, and IDPs. This work will fall under Immediate Outcome 2.1 Mainstream LED into Programming, Planning and Budgeting of Municipal Services.

YEAR 4-5 PLANNING PROCESS

The planning process for the SA-LED Program's Years 4 and 5 followed a slightly different approach to the previous years, as outlined in the following steps:

Step 1: Information & Knowledge Sharing. SA-LED convened LED stakeholders, supported municipalities and its consortium partners in Pretoria for knowledge sharing followed by a two-day work planning session.

Step 2: Reflecting on progress to date through reviewing SA-LED's diverse pipeline of projects and forms of technical assistance as well as progress against indicators.

Step 3: Facilitated break away sessions were held to discuss the proposed Year 4 and 5 activities and streamlined outcomes to gain consensus.

Step 4: After the work planning session, SA-LED's project management office (PMO) further refined the activities and allocated timelines in which to implement those activities. The initial draft work plan was then submitted to USAID and shared with consortium partners for feedback.

Step 5: Comments and feedback from USAID and partners were integrated into the work plan and the final draft Years 4 and 5 work plan was submitted to USAID.

KEY ASSUMPTIONS

SA-LED will continue to be guided by the key assumptions developed in Year 2 with the exception of minor revisions to Assumption No. 4. During SA-LED's July 2018 work planning session, it was agreed that Assumption No. 4 should be updated to reflect the understanding that while municipalities are key actors in implementing policies, they are not necessarily always well positioned (for example, due to lack of funding and technical capacity) to implement policies and provide adequate services, regardless of the sector. Thus, the assumption was updated accordingly. Our assumptions explain the underlying logic behind our expectations of the connections between different components of the pathway-of-change. The underlying assumptions of the SA-LED Program are as follows:

1. Implementation of LED initiatives will ultimately contribute towards reducing relative levels of greenhouse gas emissions.
2. Provision of capacity building and technical assistance to targeted municipalities will result in increased investment in LED initiatives.
3. Assistance to mainstreaming LED initiatives into municipal planning, programming and budgeting processes will result in increased uptake of low emissions development projects at the municipal level, for example generation of renewable energy, improved waste management and efficient public transport systems.
4. Municipalities are key actors in developing and implementing climate change mitigation policies and programs as they are located at the interface of local action, through their service delivery mandates, and national commitments.
5. Implementation of low emissions development initiatives has the potential to support economic development and job creation for women and youth.

PATHWAY TO CHANGE

The Theory of Change (TOC) diagram detailed in Figure I below illustrates how the ultimate, intermediate, and immediate outcomes relate to each other over the life of SA-LED. The TOC articulates the ultimate outcome “**Reduced Greenhouse Gas Emissions through implementation of SA-LED initiatives,**” i.e. the ‘big picture’ outcome, and then ‘backward maps’ the steps needed to achieve it. The graphic representation has been deliberately kept simple, while showing the three intermediate outcomes and seven immediate outcomes in the implementation plan as part of the overarching strategic framework which includes the originally defined strategic objectives and KRAs.

THEORY OF CHANGE

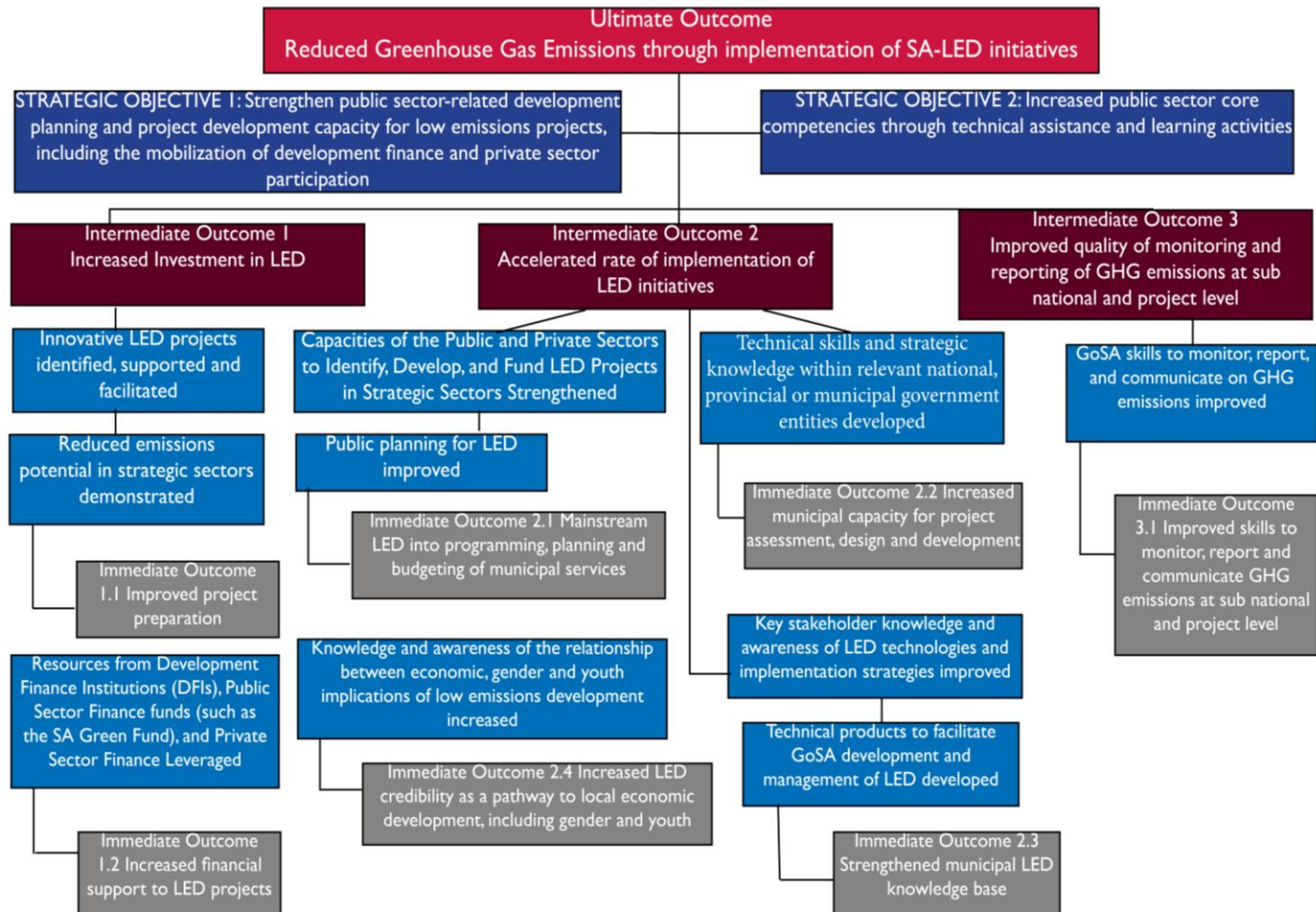


Figure 1: Theory of Change Graph

SA-LED'S APPROACH TO TECHNICAL ASSISTANCE

During Year 1, SA-LED developed an approach to provide tailored technical assistance to a variety of stakeholders based upon their specific capacity development needs and LED opportunities or interests. The approach (as presented in Figure 2 below) provided a strategic framework for SA-LED's work over the first three years of the Program, with communications and outreach activities cutting across all technical assistance areas. While SA-LED will continue to use this approach to guide technical assistance in Years 4 and 5, it will adapt to respond to the needs of its stakeholders with the introduction of the Climate Change Bill. Concurrently, SA-LED will begin implementing transition and sustainability activities as the Program approaches its end-date in May 2020. The following provides a summary of how SA-LED will modify each form of technical assistance.

RESEARCH & ANALYSIS

While research and analysis including conducting market research and identifying project blockages and best practices played a vital role in the early years of the Program, these activities will have less of an emphasis in Years 4 and 5. Having completed the majority of this work, SA-LED will focus on utilizing case studies, communications products, best practices, and lessons learned to inform its approach toward capacity development, financial work, knowledge sharing activities, and the development of tools to ensure municipalities are positioned to apply the knowledge and skills once the SA-LED Program ends.

MEASURING, REPORTING, AND VERIFICATION

Measuring, reporting, and verifying on GHG emissions will remain a central focus for SA-LED. However, while the Program will continue to complete these analyses, a much greater emphasis will be placed on building the capacity of GoSA officials to perform GHG MRV, utilizing the correct tools and data, and how to best interpret and use the information for potential policy and implementation actions.

LED PROJECT DEVELOPMENT

LED project development including conducting feasibility studies, evaluating LED technology, and unblocking projects was a high priority during the first three years of implementation. While LED project development will continue to be a prominent focus of SA-LED's technical assistance, the Program will concentrate on activities and support that ensures that municipalities are positioned to package LED projects for financing and implement LED projects once SA-LED closes. This will be achieved through a combination of capacity building and knowledge sharing activities; the development and/or dissemination of a variety of tools, methodologies, best practices, and case studies; and formal project handover processes.

CAPACITY DEVELOPMENT

As referenced in each of the other forms of technical assistance, capacity building will drive the majority of SA-LED's activities in Years 4 and 5. Overall, SA-LED will aim to ensure municipal officials are equipped with the knowledge, skills, and tools required

to implement the Climate Change Bill, bring LED projects to technical and financial feasibility, and implement LED projects effectively.

ENABLING ENVIRONMENT

Fostering an enabling environment for the robust pipeline of LED projects will continue to be a major emphasis in Years 4 and 5. SA-LED will achieve this by providing municipalities with regulatory technical assistance, utilizing research and analysis to inform project design and implementation, and providing support in mobilizing finance to achieve market integration of LED projects.

Figure 2: SA-LED's Approach to Technical Assistance



THE SA-LED TEAM

To meet the current and future targets of the Program, SA-LED’s team brings a wealth of experience working with GoSA institutions, a variety of international donors and finance organizations, and planning frameworks. The Team also possesses a wealth of technical knowledge across the energy, transport, waste, water, built environment and planning, and biodiversity sectors. This experience and knowledge is augmented by the Program’s consortium partners DNA Economics, Linkd Environmental Services, The Green House (TGH), AGAMA Biogas, and ICF International and a variety of short-term technical experts.

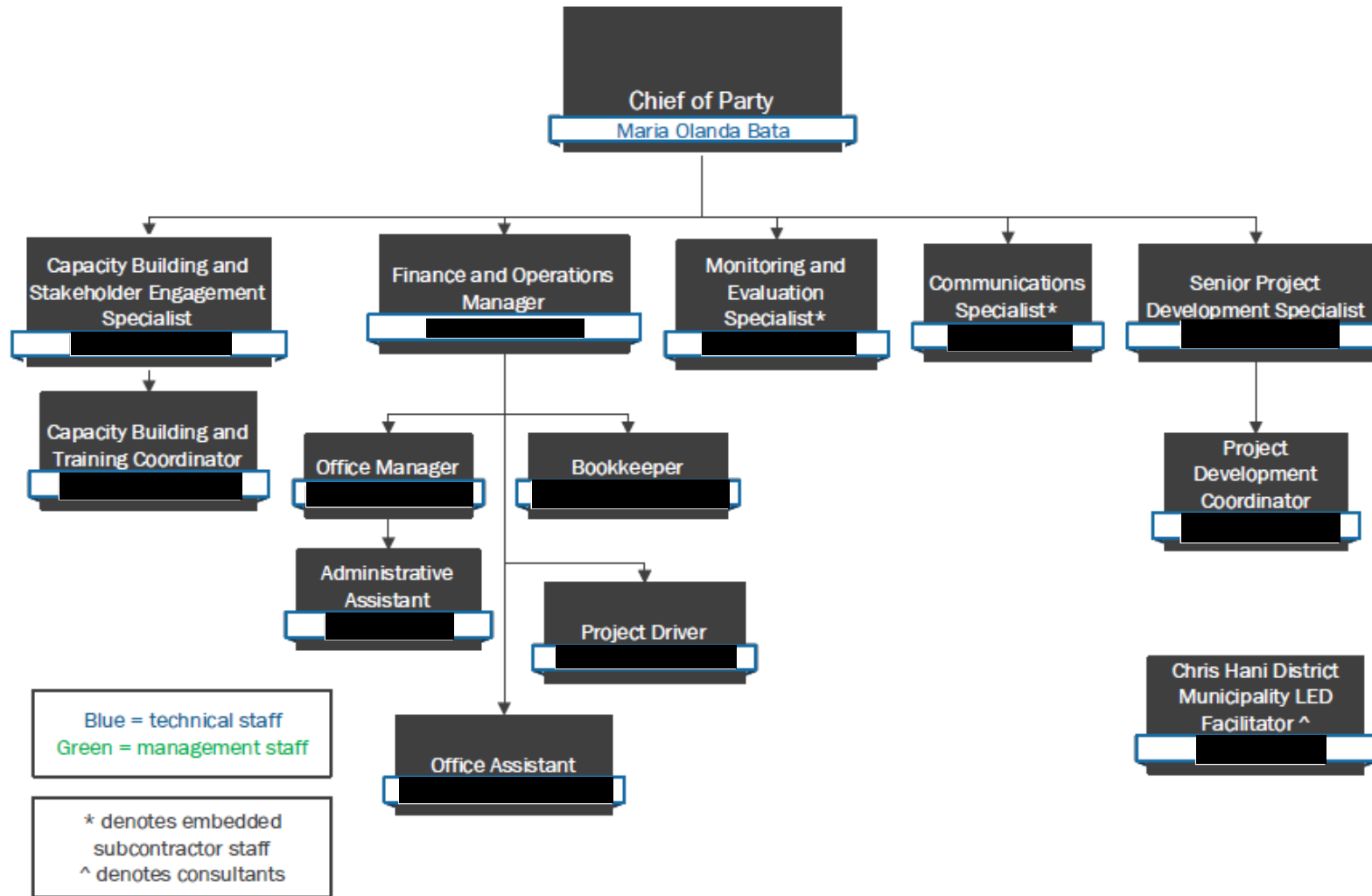
The SA-LED PMO will continue to identify, design, and supervise the delivery of technical assistance while key consortium partners and the pool of local and international experts will provide additional technical assistance through subcontract and consultant mechanisms. A new Communications Specialist, [REDACTED] was hired in August 2018 and will play a key role in ensuring the sustainability of Program interventions through knowledge sharing and dissemination of LED tools and products.

The roles and responsibilities of the core technical team members are stipulated in Table I below and the SA-LED revised organogram is presented in Figure 3.

Table I: Roles and Responsibilities of the Core Technical Team Members

Chief of Party	Leadership of SA-LED Team
<i>Capacity Building and Stakeholder Engagement Specialist</i>	<ul style="list-style-type: none"> – Manages stakeholder relations – Manages capacity development initiatives – Involved with project identification
<i>Senior Project Development Specialist</i>	<ul style="list-style-type: none"> – Manages project development planning and design and consultants deploying technical assistance – Manages multiple-benefits associated with SA-LED’s technical work – Manages finance work stream
<i>Monitoring and Evaluation Specialist</i>	<ul style="list-style-type: none"> – Ensures compliance with the Performance Monitoring Plan (PMP) and Environmental Monitoring and Management Plan – Assessment of impact of Program – Routine Data Quality Assessments
<i>Communications Specialist</i>	<ul style="list-style-type: none"> – Awareness raising – Knowledge Management – Reporting – Branding
<i>Capacity Building and Training Coordinator</i>	<ul style="list-style-type: none"> – Coordination of capacity building initiatives – Identify new capacity building opportunities that aligns with technical project development work

Figure 3: SA-LED Organogram



2019

SUMMARY OF KEY RESULTS FOR YEAR 3

LED PROJECT DEVELOPMENT ASSISTANCE

The focus of the Program for Year 3 was ramping up the provision of technical assistance to LED projects, significantly increasing training of individuals on GHG measurement and reporting and other LED tools, increasing understanding of the socio-economic development benefits associated with LED work in South Africa, and mapping out a financial approach for the remainder of the Program. Year 3 revealed two main trends in SA-LED's value-adding work: (i) programmatic consolidation of technologies, sectors, and training; and (ii) replication of successful project development and capacity building methodologies.

In Year 3, SA-LED began increasing its financial advisory and transaction support to municipalities. In this regard, SA-LED supported municipalities to understand the implications of engaging in electricity trading processes (transmission of electricity through the municipal grid infrastructure by a third-party entity), and provided financial advice to take LED projects to financial feasibility and increase their capacity concerning procurement contracts. Technical assistance on small-scale embedded generation (SSEG) integration in municipal electricity grid systems provided essential context and learning for SA-LED work in Years 4 and 5. SA-LED also applied its project selection criteria to identify eight new LED projects and initiatives eligible for technical assistance. Table 2 below provides key highlights of select projects. The table also captures active and ongoing supported projects and demonstrates that technical assistance has begun and/or continued in Year 3 due to SA-LED's project development process.

Major successes in Year 3 included:

1. Technical assistance to the Eden District and eThekweni Municipalities to promote innovative waste and hydro projects respectively.
2. Leveraged approximately R45.6 million of European Union funding by scaling the Program's biogas in schools work based on the successful implementation of three projects in Mpumalanga.
3. To date: trained 91 individuals on the [USAID Clean Energy Emission Reduction \(CLEER\) Tool](#) and 367 individuals on various low emissions development topics, 237 more than the life of project (LOP) target. The training of participants will continue in Years 4 and 5 and will be driven by specific municipal requests and project needs.
4. Embedded capacity in CHDM resulted in the development and municipal adoption of an updated Climate Change Strategy.
5. Supported the successful roll out of South African National Standards (SANS) 10400-XA – *Energy Efficiency in New Buildings*, pilot study with 51 municipal Building Control officials and industry partners.
6. Conducted two successful green urban precinct training sessions with the City of Cape Town in Quarter 1 and City of Johannesburg in Quarter 4.
7. To follow-up on the Durban Solid Waste Department biogas for vehicular use study tour held in 2017, SA-LED completed a feasibility assessment study detailing the life-cycle costs and GHG emission benefits of using landfill biogas for powering the municipality's waste removal vehicle fleet in place of diesel fuel.

Table 2: SA-LED Supported Projects

Project Name	Project Partner(s)	Type of Technical Assistance Provided	Progress
Blue Karoo Trust Wastewater Repair System Design	Eastern Cape Department of Economic Development, Environmental Affairs and Tourism, Aquaculture Innovations	The pilot Waste Water Repair System and Anaerobic Digester Systems were installed and commissioned. Data is being collected to inform the design of a repair system for a full-scale commercial fish farm. SA-LED created a marketing video to showcase the success of Blue Karoo fish farm business model which other companies around the country should replicate. The video promotes SA-LED's goals in job creation and incorporation of women and youth into business models by promoting the farm's successful model.	Continued support from FY16
Cacadu Development Agency Mohair Supply Chain Greening	Cacadu Development Agency	SA-LED conducted research on the green mohair value chain as a comparison to other standards in south Africa (wool and cotton) and developed a green mohair standard. SA-LED further contributed to the development of an online information platform to help the farmers with essential farming information and to further support farmers to adopt the green standard.	Continued support from FY17
Municipality Facilities EEDSM Audits	Dihlabeng, Nketoana and Polokwane Local Municipalities	SA-LED has conducted energy audits for municipalities to enable them to submit applications for funding under the Department of Energy's (DoE) Energy Efficiency and Demand Side Management Program (EEDSM) for the 2018/19 financial year. The energy audits identified the following energy efficiency opportunities: <ul style="list-style-type: none"> • Annual projected energy savings - 250,822 Kilowatt hours resulting in ZAR 313,308 • Projected GHG reductions – 3,963tCO₂e (2019 – 2030) 	Supported
eThekweni Hydropower Project	eThekweni Metropolitan Municipality	SA-LED commenced the provision of transaction advisory support to eThekweni Water & Sanitation's proposed public private partnership (PPP) hydropower projects on the yet to be commissioned Western Aqueduct (small-scale <10MW) and the Northern Aqueduct (mini-hydro <1MW). SA-LED developed a pre-feasibility study based on the design drawings for the proposed hydropower sites (the break pressure tanks of the reservoirs) to inform the terms of reference for the Technical Options Analysis as per the National Treasury's PPP for the Western Aqueduct.	Supported

Ethekwini Solar PV on Reservoirs	Ethekwini Metropolitan Municipality	SA-LED conducted solar yield assessments on 440 sites identified by eThekweni Water & Sanitation Department for solar photovoltaic (PV) installations. Applying a minimum potential installation limit of 100kWp DC power brought the number of feasible sites to 52. eThekweni is yet to select their preferred sites for further economic and financial assessments.	Supported
Govan Mbeki Municipality High Mast Lighting EEDSM Energy Audits	Govan Mbeki Local Municipality	SA-LED conducted energy audits on high mast lighting to enable the municipality to complete the DoE application templates with the following results: <ul style="list-style-type: none"> • Annual projected energy savings – 1,273,704 kWh • Greenhouse gas emissions reductions – 16,050tCO₂e (2019 – 2030) 	Supported
Mpumalanga Schools Biogas	Mpumalanga Province	SA-LED's support resulted in the construction and installation of the biogas digesters at three schools in Mpumalanga Province namely; Lamlile Primary School, Takheleni Primary School and Mkhulu Combined School. The three schools are generating gas, growing vegetables, and managing their waste.	Supported
Eden Waste Mapping	Western Cape	SA-LED conducted a waste characterization study for six organic waste streams in the Eden municipal district. This work was done in response to a request from the municipality that they need assistance understanding their waste flows to make informed decisions. The municipality (with rich organic waste streams) is inundated with proposals to help them manage their waste, but they did not have up to date information to direct their responses to the offers. This work includes a technology framework that will be included in modelling a decision-making support network planned for Year 4.	Supported

HIGHLIGHTS OF SA-LED CAPACITY BUILDING INITIATIVES

Project Name	Project Partner(s)	Capacity Building Highlights	Progress
GHG CLEER Tool Training	Mpumalanga Department of Economic Development, Environmental Affairs and Tourism	SA-LED funded the GHG accounting training of three district municipalities within the Mpumalanga Province during March 2018. The municipal officials were trained on the use of the simplified CLEER Tool. A total of 51 municipal officials attended the three 2-day training sessions (one two-day workshop per district).	Supported
The Organizational Capacity Assessments (OCA)	CHDM, Govan Mbeki Municipality, Polokwane Municipality	SA-LED successfully conducted Organizational Capacity Assessment workshops with three municipalities (CHDM, Govan Mbeki and Polokwane). All three municipalities have subsequently developed Climate Change Strategies or Action Plans aligned to their IDPs.	Supported
Embedded Strategy Development through Embedded SA-LED Staff	Chris Hani District Municipality	SA-LED successfully finalized the CHDM Climate Change Strategy. The strategy work integrated internal departments, as well as all the local municipalities, therefore not only creating a strategic outcome but increasing capacity in the process. The CHDM Climate Change Strategy was accepted on 27 June 2018.	Supported
EcoDistricts	City of Cape Town, City of Johannesburg, Western Cape Economic Development Partnership, Green Building Council of South Africa	EcoDistricts provides unique technical expertise and methodologies for urban regeneration and sustainable green communities, an important field for South Africa's green economy's strategy and planning. SA-LED followed-up the Incubator Training in Portland, Oregon, United States, in April 2017 with two in-country trainings in South Africa in Year 3. Based on the feedback from Cape Town and Johannesburg, both cities requested follow-up training by expert EcoDistricts facilitators in Cape Town, South Africa, in November 2017, and Johannesburg in September 2018. The Johannesburg training will include follow-up technical work on progress made on the Cape Town projects. The Cape Town project, together with the 3 projects targeted by the	Supported

		Johannesburg training, will provide excellent opportunities for further deployment of SA-LED technical assistance going forward.	
South African National Standards (SANS) 10400 XA – Energy Efficiency in New Buildings	City of Tshwane and The South African Local Government Association (SALGA)	The revised SANS 10400-XA – Energy Efficiency in New Buildings regulations was workshopped with a total of 51 municipal officials and industry partners in a pilot training study. Building control officials from 5 different municipalities (Ekurhuleni Metro, Emfuleni Municipality, City of Johannesburg, City of Tshwane and Mogale City) and five industry observer representatives attended the training. This pilot training workshop aimed to expose the officials to the regulations and processes as well as create an opportunity to receive inputs and recommendations from workshop participants to refine and finalize the training materials.	Supported
Cambridge University Prince of Wales’s Business & Sustainability Executive & Practitioner course (CSIL)	Cambridge University	SA-LED funded the participation of 5 senior officials from three municipalities (Kheis, Kwadukuza and Makana) in the Executive Program, held in May 2018. Subsequently, all three municipalities have requested SA-LED to conduct Organizational Capacity Assessments (OCAs). In addition to the municipal executives attending the CSIL course, 5 of the middle management officials from the mentioned municipalities also completed the Practitioner course. Exposing both senior and middle management officials strengthens the ability of the municipality to respond to their climate change objectives.	Supported
Municipal Embedded Experts	CHDM and Polokwane Local Municipality	During FY 17 SA-LED recruited experts to work in Polokwane Local Municipality and CHDM. ██████████ is continuing his work within the Environmental Management Department in the CHDM to support climate change mitigation activities. ██████████ was instrumental in implementing and coordinating a R6 million/\$500,000 energy efficiency program for street lighting and will continue working directly for Polokwane Municipality performing a variety of duties related to the coordination and promotion of energy efficiency programs.	Supported

YEAR 4-5 ACTIVITIES

The TOC, described previously, contains intermediate outcomes which the Program aimed to achieve in a three to five-year timeframe. These intermediate outcomes are further disaggregated into immediate outcomes which describe what the Program aims to achieve in Years 4 and 5. These immediate outcomes are directly linked to the KRAs for the Program. Activities have been developed for each of the immediate outcomes. Depending on the progress of each activity, some may require a longer timeframe to bring to completion and these will be carried forward into early 2020 the latest .

The following sections of this work plan contain details about the planned activities for Years 4 and 5. These activities are associated with the intermediate outcomes and immediate outcomes for Years 4 and 5 of the Program and the overall KRAs for the LOP, while also taking into consideration the newly-introduced Climate Change Bill and ensuring the sustainability of SA-LED's technical assistance and impacts.

INTERMEDIATE OUTCOME 1: INCREASED INVESTMENT IN LED

In Years 4 and 5, SA-LED will (i) maintain technical assistance to develop quality and bankable project proposals; and (ii) continue to engage with the market to link LED finance with viable projects at the sub-national level. To improve project preparation for both the public and private sector, SA-LED will deploy technical assistance in engineering consulting services, financial and legal advisory services, economic modelling, revenue and utility impact analysis, LED multiple-benefit analysis, and GHG emissions analysis. In this regard, SA-LED will work closely with its consortium partners, namely ICF on multiple-benefits work, TGH on GHG work, Linkd Environmental Services and DNA Economics on the finance approach and AGAMA on biogas projects. Moreover, SA-LED will identify opportunities of climate and LED finance by working with key partners such as international and National Development Finance Institutions (DFIs); private financial institutions (commercial banks, private equity firms, institutional debt providers); the South African National Treasury; provincial infrastructure and finance agencies; and municipalities. While both demand and supply side initiatives will continue, the Program will focus specifically on:

1. Linking SA-LED projects to potential pools of funding, for example for example, government funds, grants, DFIs, Industrial Development Corporation (where USAID Development Credit Authority (DCA) loan guarantee is housed) and others, and/or make projects financially viable.
2. Ongoing engagement with commercial banks and potential development of portfolio approaches to convince commercial entities to invest in LED projects. In this regard, SA-LED will develop business case studies that clearly outline the technical, financial and development feasibility of projects in need of various types of finance. An example of this will be the development of the Drakenstein financing modeling

KRA: Innovative LED Projects Identified, Supported, and Facilitated



Within this KRA, the aim of the Program is to support LED projects to reach Request for Proposal (RFP) and/or the financial feasibility stage. In addition to providing innovative, solution-driven technical assistance to projects, SA-LED maintains a project pipeline that adheres to the selection criteria that were developed specifically for the Program. During Year 3, the SA-LED team focused on intensifying the provision of technical assistance to project development activities, specifically focusing on replicating LED methodologies that proved successful can be scaled up. During Year 3, the project development focus shifted to consolidating efforts and improving upon already established methodologies. SA-LED reached its target to ramp up and deploy technical assistance to 20 LED projects during Year 3. Going forward the focus will be on maintaining existing projects and consolidating the outcomes of the EcoDistricts work. However, the overall focus now includes a firm goal to assess financial feasibility for at least two SA-LED supported projects: Drakenstein financial modeling and one resulting from the finance research work.

KRA: Reduced Emissions Potential in Strategic Sectors Demonstrated



Within this KRA, SA-LED will track the potential GHG emissions reductions from the projects that it supports. Furthermore, due to updated USAID indicators during FY17, any LED work completed related to clean energy generation will also be monitored¹.

The above two KRAs are very closely aligned and thus the activities described in immediate outcome 1.1 below relate to both.

IMMEDIATE OUTCOME 1.1: IMPROVED PROJECT PREPARATION²

- **Activity 1.1.1:** Provide technical assistance to projects to strengthen LED development
- **Activity 1.1.2:** Evaluate existing projects according to finance and multiple-benefits criteria
- **Activity 1.1.3:** Maintain a robust pipeline of LED projects

Activity 1.1.1: Provide technical assistance to projects to strengthen LED development

SA-LED gained significant traction in ramping up project development and deploying technical assistance to municipalities through Year 3. By the end of Quarter 2, SA-LED reached its LOP target of providing project assistance to 20 projects. By assessing these projects, SA-LED observed several trends including: (i) the Program reached critical mass in specific sectors, for example waste and energy efficiency; (ii)

¹ SA-LED contributes to Power Africa goals and thus any energy projects we work on will be monitored and reported on. The annual targets for this indicator are not true “targets” we hope to meet necessarily but this is rather a “monitoring indicator” to make sure we can report on any clean energy generation projects SA-LED ends up supporting.

² This outcome includes projects that will reduce GHG emissions. Enabling environment activities are covered elsewhere in the workplan.

methodologies that proved successful are being replicated in other municipalities; (iii) SA-LED is now able to consolidate different programmatic efforts into case studies for replication and scaling; and (iv) technical assistance can now integrate across all programmatic activities including finance, capacity building, and technical expertise to offer integrated solutions to municipalities. A key component of this work is SA-LED's ongoing integrated green urban precincts work with municipalities. EcoDistricts provides unique technical expertise and methodologies for urban regeneration and sustainable green communities. In Year 2, SA-LED sponsored two municipalities (Cape Town and Johannesburg) to attend an EcoDistricts Incubator in Portland, Oregon, USA. In Year 3, on request by the City of Cape Town and City of Johannesburg, SA-LED sponsored the training of municipal officials in South Africa. The Green Building Council of South Africa (GBCSA) has been a critical partner in this entire process by attending all trainings, contributing to the contextualization of the methodologies, and providing best practices in the field of green buildings and green urban precinct design. SA-LED will continue to the extent possible work with the GBCSA in Year 5 with a particular focus to ensure sustainability of the EcoDistricts work beyond SA-LED's end date. SA-LED consortium partners highlighted the success of the EcoDistricts work, and the traction that has been created from Years 1 through 3. They recommended that the learning from this work and the protocol itself should be rolled-out to other municipalities by building the capacity of local professionals that can advise municipalities.

The target for Year 4 and 5 is to deploy technical assistance to up to four new projects, as well as continue with two EcoDistricts projects. SA-LED has already selected the four new projects in Year 3 and will continue with them in Years 4 and 5. The project development focus is therefore shifting to concentrate on sustaining SA-LED's technical contribution to the South African LED market. The project development methodology proved to be successful as it is adaptable and makes provisions to integrate complex service delivery and development problems with potential LED solutions.

Looking forward to the Program's closure in May 2020, the technical assistance perspective changes from ramping up LED project work to ensuring the sustainability of SA-LED's interventions and progress. All relevant project development work will thus be packaged to handover to municipalities and other partners to ensure the sustainability of USAID's LED investment in South Africa. During the Year 4-5 work planning session, SA-LED worked with its consortium partners to identify specific technical assistance activities that will continue to add-value to the South African LED market. The Program invested heavily in deploying technical assistance for LED project development, and resulting in several innovative and value-adding outcomes that actively unblocked projects and continue to allow for the increased development of LED projects. In the solid waste management sector, for example, SA-LED will replicate its waste characterization work in three additional district municipalities (Kouga-Koukamma, OR Tambo, and Witzenberg). SA-LED will thus work to match specific aspects of this work to consortium partners and other stakeholders' work to ensure sustainability once SA-LED closes.

Going forward, SA-LED will consolidate project technical assistance in areas where the Program has proven traction and where there is demand from municipalities, as

well as integrating technical work with multiple-benefits and financial strategy activities. Ongoing projects include the following technical aspects: green urban precinct design and sustainable villages in line with the country's green design priorities; solar yield assessment; energy audits of waste-water treatment plants; biogas in schools; waste mapping; integrated LED infrastructure design; and the development of tender specifications for combined heat and power (CHP) systems.

Based on the successful training of municipal officials on participative green precinct design (following the EcoDistricts methodology), SA-LED will build on this work that started in Year 2, and conduct follow-up technical sessions with the cities of Cape Town and Johannesburg on their identified EcoDistricts projects.

The SA-LED LOP target is 100,000 tons of GHG emissions potentially avoided, abated, or reduced from a business as usual baseline through 2030. To date, the Program has reached 90% of the LOP target from the Ekurhuleni 2 MW and the Cape Town 960 kW Solar PV Projects. By the end of Year 3, an additional 385,000 tons from the Durban Solid Waste Department Renewable Natural Gas Project and the Mbombela 480 kW Solar PV Project will be reported.

Over Years 4 and 5, SA-LED aims to achieve an additional 305,000 tons from mainly eThekweni Solar PV Conduit Hydropower Projects and the City of Tshwane Combined Heat and Power (CHP) SA-LED will continue to use the USAID CLEER Tools developed by our consortium partner, ICF to perform project-level GHG emissions reduction estimates for these projects. The GHG component is also fully addressed in the ongoing multiple-benefits work.

Activity 1.1.2: Evaluate existing projects according to finance and multiple-benefits criteria

In Year 3, SA-LED strengthened the project selection criteria by adding a rigorous framework for multiple-benefits associated with project development. The selection criteria were refined and expanded by integrating qualitative and quantitative criteria on the multiple-benefits associated with SA-LED's technical assistance. By including the multiple-benefits into the existing criteria, SA-LED and municipalities can balance decisions made for both overarching USAID mandates, namely (i) GHG mitigation; and (ii) development impact. Projects screened in Years 4 and 5 will focus on sustainability, for example, potential to finance, and readiness to hand-over to the market, post-SA-LED. In addition, some of SA-LED's multiple-benefits projects may be featured in the final version of the International Climate Action Transparency guidance for sustainable development. Specifically, those that have programmatic or scalable GHG mitigation and development impacts. Although SA-LED will continue to structure and prioritize projects together with the municipality or entity, the focus going forward will not be ramping up project development, but rather on the integration of various Program activities across its technical projects. Most projects will be guided by strategic sustainability processes that will cut across technical assistance, capacity building, training, and finance work. For an example, integrating the final EcoDistricts projects with finance work to provide a comprehensive and sustainable design finance product. The Program partners provided inputs in taking projects and various aspects of the Program forward during the intensive work

planning session and will remain active participants in the LED space once SA-LED closes.

The refined selection criteria will also be disseminated to train municipalities and/or stakeholders on their decision-making capabilities around developing and proposing LED projects which have multiple-benefits. This includes supporting public sector partners, primarily municipalities, in various aspects such as RFP development and the adjudication process of new LED technologies, transaction advice on which financial vehicles to use to engage with private developers, as well as supporting all the reviews required to secure approval to enter into a contract with an LED developer. These reviews include legal and regulatory compliance reviews, risk management analyses, comparative technology options analyses, and assessing the value to local government of LED technology investments comparing revenue, environmental, macro-economic, and socio-economic development, LED multiple benefits, and GHG emissions implications. The SA-LED consortium partners and will complete the various work streams and related tasks by the end of the first quarter of FY20.

Activity 1.1.3: Maintain a robust pipeline of LED projects

As SA-LED begins to wind down, only projects that align with this work plan and overall Program focus for Year 4 and 5 continue. However, to continue to demonstrate demand for SA-LED's type of market development and to refine its approach, SA-LED will maintain a robust pipeline of projects. Pipeline projects will be selected for their business case and financial feasibility strengths. This will be achieved by applying SA-LED's existing evaluation criteria to this pipeline of projects, as well as additional finance criteria. Pipeline projects will be packaged in a format that reflects multi-benefits (youth, gender, job creation and environmental impact, social redress, and inequality), development impact, and GHG implications. Maintaining the pipeline in this fashion will ensure that projects are packaged in such a way as to support hand-over of LED projects to the market before the Program concludes.

KRA: Resources from Development Finance Institutions (DFIs), Public Sector Finance funds, and Private Sector Finance Leveraged



With a finance baseline established between Years 1 and 3, SA-LED developed a draft finance approach in Year 3. This approach was designed to address an outstanding component of the Program's work – that of taking projects to financial feasibility. The overall focus of the strategy is to prepare financially feasible projects and to match these projects with potential LED finance. The draft strategy responded to key market challenges, including:

- Poor financial states (balance sheets) of municipalities.
- Uncertainty of off-takers' creditworthiness.
- Lack of technical assistance to assess procurement, transaction, and other legal expertise related to LED deals (e.g. securing off-take agreements).
- Fast-paced, yet uncertain regulatory environment.
- Long lead times to reach financial close both on the project preparation side, as well as in closing deals.

- Overall lack of awareness of the National Treasury’s willingness to assist or consider LED projects at a national level.
- Negative opinion of PPP processes.

Furthermore, in depth finance research of Year 3 proposed several avenues with which to approach the market including the investigation of several collaborations with other DFIs, commercial banks and finance entities; and the analysis of specific finance models and procurement or transaction options suitable for LED projects.

By integrating financial feasibility into SA-LED’s strong project development base, the Program will be able to ensure that municipalities have the capacity to take their LED projects to implementation status whether within or after SA-LED’s period of performance.

IMMEDIATE OUTCOME 1.2: INCREASED FINANCIAL SUPPORT TO LED PROJECTS

- **Activity 1.2.1:** Implement SA-LED’s finance approach
- **Activity 1.2.2:** Collaborate with DFIs, grant agencies, and government finance streams and other relevant finance stakeholders to provide a financial offering

Activity 1.2.1: Implement finance approach

In Quarters 2 and 3 of Year 3, SA-LED conducted a detailed financial research and developed a resulting finance approach that focused on: (i) understanding the status quo of LED funding in South Africa, including a perspective on global best practice; (ii) unpacking specific municipal project related funding opportunities; and (iii) documenting institutions with an interest in funding LED projects. The approach provides insight on current finance dynamics in view of developing bankable, feasible projects in the sub-national space, and proposes a strategic framework for SA-LED’s engagement with the market.

Based on the finance research and ongoing finance work to identify an LED finance niche for SA-LED, the draft approach included the following recommendations:

- SA-LED’s broad sectoral reach does not allow for a one-size-fits-all financial solution that can be proposed for all SA-LED projects.
- Project and sub-national preparation is critical to move an already donor saturated and complex market (funds, technical assistance and viable projects do not emerge from the sector at a steady pace) forward.
- The Program must collaborate closely with private sector partners.
- Investigate a potential portfolio approach in collaboration with existing stakeholders.
- Support processes that compel the government and authorities to provide regulatory clarity on financing LED projects at the sub-national level (project size and rules).
- Commercial viability is essential for securing private sector/commercial finance.

- Technical assistance provided by grant donors to small projects (below Renewable Energy Independent Power Producer Procurement (REIPPP) Programme) is essential for project success.

In Quarter 4 of Year 3, SA-LED pursued outcomes of the research and finance approach by consulting entities that were highlighted for urgent follow-up. After consultation with the African Development Bank, the Western Cape Provincial Government, USAID's WASH-FIN Program, and the French funded Sustainable Use of Natural Resources and Energy Finance (SUNREF) facility, the main recommendations going forward into a final approach are:

- SA-LED should under the finance approach work from its strong project base. Several financiers across the DFI – commercial spectrum expressed interest in gaining access to financially feasible projects. A priority is linking financiers to pipelines of feasible projects.
- Focus on project preparation and conducting financial feasibility studies to feed into other DFIs/donors' facilities.
- Ensure that SA-LED only focuses on activities where USAID's value-addition is clear and will not replicate existing work.
- Support mainstream processes that provide finance or grants (for example EEDSM with DoE) for LED projects.
- Apply SA-LED's technical assistance in the following ways:
 - i. Conduct financial feasibility studies for SA-LED's current projects. This work includes existing projects that are already receiving financial advisory (eThekweni, Eden District Municipality, Makana, and CHDM, among others)
 - ii. Innovate in collaboration with other suitable entities to use technical assistance to bundle several small projects into a wholesale approach, incentivize LED work, and de-risk specific technologies.
 - iii. Using SA-LED's multiple-benefits work in these processes is essential, as development banks are specifically interested in the development impact of their investments.
 - iv. Develop technical finance products that inform transaction processes (e.g. PPPs and wheeling).

SA-LED will finalize a concise final Finance approach for submission to USAID in Quarter 4 of Year 4.

Activity 1.2.1: Collaborate with DFIs, grant agencies, and government finance streams to provide financial offering

SA-LED will collaborate with other DFIs, donors and commercial entities, and potentially consider combining efforts (financial technical assistance) with partners to inform an LED finance technical assistance process for the sub-national space and increase the pool of funding for this work beyond SA-LED's period of performance.

A major focus of SA-LED's financial work in Years 4 and 5 will be to seek out strategic and value-adding collaborations or partnerships that will result in specific changes in the market related to financing LED projects. SA-LED will collaborate with several entities including GIZ funding for municipal energy efficiency, the German funded

FIRST fund, IFC funded Edge, the Climate Finance Facility, the Development Bank of South Africa, the Green Fund, mainstream Government funding, Western Cape Government Green Bonds Initiative, and commercial banks. Consultations and collaboration will initially focus on fleshing out only those strategic activities that will add value to the market and not duplicate work. Financial technical assistance that will require strong collaboration includes supporting the uptake of the USAID DCA Guarantee, project preparedness, financially viable LED projects, financial advisory to municipalities to understand procurement options, and the application of SA-LED's technical assistance to structure finance in a way that incentivizes or reduces risk for lending and funding of LED projects. Specific activities include:

- Developing financial advisory products and information to disseminate to municipalities, such as on the revenue implications of small-scale embedded generation models in four municipalities where SA-LED is currently providing this type of technical assistance. SA-LED will also collaborate with other organizations that have developed financial advisory products/processes.
- Providing technical assistance to municipalities to mainstream LED financial feasibility processes into programming, planning, and budgeting, including PPP and request for proposal procurement documents.
- Developing an innovative finance pilot (Drakenstein Local Municipality that integrates successful SA-LED technical assistance with finance solutions.

Given the opportunity and the fact that the Program only has two years remaining, the following three financial technical assistance activities will be prioritized:

1. Assess existing projects for financial close and develop two technical finance products stemming from this work as it progresses.
2. Apply technical assistance to prepare financial feasibility for two projects in the pipeline.
3. Share relevant information with other finance entities for structuring a portfolio approach to financing small-scale LED projects.

INTERMEDIATE OUTCOME 2: ACCELERATED RATE OF IMPLEMENTATION OF LED INITIATIVES

In Years 4 and 5, SA-LED will continue to work with local government entities in accelerating the pace of implementation of LED initiatives. The Program's focus will be on consolidating lessons and experiences learned over the past three years of providing LED support to municipalities. The Program will continue to work with municipalities and project developers in identifying measures to streamline the implementation of LED initiatives while also focusing on continuing to document learnings from this support to be shared for replication in other municipalities.

From experience gained to date, it is acknowledged that municipal LED project development tends to move slowly due to several factors including: a lack of institutional support for projects that have not been mainstreamed in municipal planning; budgeting and operational processes and systems (Sectoral Plans/IDPs/Service Delivery and Budget Implementation Plan (SDBIPs)); and the fact that municipal project champions or team members are periodically withdrawn from project work to take on other tasks within the municipality. In situations where projects are not

integrated in the municipal systems, it may mean there is a lack of will to drive the projects to implementation. As projects take longer to complete, the credibility of the LED initiative tends to erode, with project champions at times losing the desire to finish the project work. Given these challenges, SA-LED has worked with municipalities to ensure that projects are streamlined into municipal processes and provide ongoing support to the municipal project champions to keep them engaged on project development. To begin to address these challenges, SA-LED has been requesting confirmation or evidence on how projects are linked to the respective municipality's plans or strategies.

A valuable lesson learned from the municipalities that have made significant progress on the implementation of LED projects is that it is vital that LED be incorporated and intertwined with the municipal planning and budgeting processes. When LED is mainstreamed in municipal planning, it garners traction and support from senior administrative and political leadership. For example, SA-LED supported the CHDM to upgrade its Climate Change Strategy and through this process the embedded expert reached out to all departments and local municipalities, increasing the understanding of climate change and in turn garnering political support. Once the strategy was finalized, enough political information sharing, integration and lobbying had taken place to successfully submit it to a council meeting where it received approval.

The activities under this outcome will therefore support the mainstreaming of LED into the municipal planning and budgeting processes to ensure SA-LED work in South Africa. The Program will showcase how this mainstreaming has occurred in Chris Hani District Municipality, as well as how it has been successful in the Polokwane Municipality and Mpumalanga Provincial Government.

KRA: Capacities of the Public and Private Sectors to Identify, Develop, and Fund LED Projects in Strategic Sectors Strengthened



Through the Program's capacity building support to the public and private sectors, SA-LED will work directly with approximately 30 municipalities currently receiving support from the Program in LED project identification and selection. This will be achieved through leveraging existing project selection and prioritization approaches. While SA-LED will reduce its activities surrounding actively identifying new projects, the Program will still work with municipalities on strengthening their LED project development capabilities. SA-LED will identify targeted technical assistance to projects in each step of the project development process and leverage its networks to identify additional support that other entities could provide to the respective municipalities.

SA-LED will continue to ensure that the Letter of Engagements (LoEs) or Memorandums of Understanding (MoUs) guiding its support for municipalities will each outline a different scope of work based on the needs of the project, the goals of the municipality, and the current stage of the project within the municipality.

In Year 1, SA-LED concentrated on providing technical and/or financial assistance to "low-hanging fruit" projects. These projects had either political support, an existing budget, a dedicated project advocate, and/or the support of national, provincial, or donor programs. This made it easy to identify gaps in the project development process

that could be quickly filled by SA-LED assistance to get the project to financial closure or RFP award. A major realization in Year 1 was the long duration and complexities associated with project development as most of the supported projects did not reach financial closure or the RFP stage. Instead, this process flowed into Years 2 and 3 and those that did not reach financial closure in Year 3 will flow into Years 4 and 5.

KRA: Public Planning for LED Improved



The aim of this KRA is to support municipalities to incorporate the principles of LED into their budgeting and planning tools including Growth and Development Strategies, IDPs and SDBIPs. SA-LED has approached its support to municipalities through institutional LED capacity enhancement. Through working with municipalities in conducting Organizational Capacity Assessments (OCAs), SA-LED has helped municipalities identify approaches for integrating climate change mitigation and adaptation into their municipal plans. The OCA approach has been instrumental in the assessment of climate change integration into the structure of individual municipalities, particularly by developing new and/or updating existing climate change strategies. In Years 4 and 5, SA-LED will review progress made on the outcomes suggested in the baseline OCA for three municipalities namely, Polokwane, Chris Hani District Municipality and Govan Mbeki Municipality. This progress review will include tracking the effectiveness of climate change strategies to integrate various municipal departments around LED, integrating OCAs into municipal plans and process, and LED projects identified for technical assistance.

IMMEDIATE OUTCOME 2.1: MAINSTREAM LED INTO PROGRAMMING, PLANNING AND BUDGETING OF MUNICIPAL SERVICES

- **Activity 2.1.1:** Provide technical assistance to municipalities to mainstream LED into programming, planning and budgeting
- **Activity 2.1.2:** Implement SA-LED overarching capacity building plan
- **Activity 2.1.3:** Conduct institutional capacity building assessments of institutions working with SA-LED and develop institutional strengthening plans
- **Activity 2.1.4:** Implement institutional strengthening plans for above mentioned assessed institutions

Activity 2.1.1: Provide technical assistance to municipalities to mainstream LED into programming, planning and budgeting

The introduction of the draft Climate Change Bill (2018) will see an increased focus on municipalities and subnational entities to implement climate mitigation activities. The Climate Change Bill articulates the national government's expectations for municipalities or sub-national entities to implement climate action. Following work completed in Year 3 where SA-LED supported CHDM and Govan Mbeki Municipality with the development of their respective climate change implementation plans, SA-LED will continue to provide technical assistance to municipalities where opportunities for collaboration with the Department of Environmental Affairs' Local Government Mitigation Support Program as well as with the GIZ's Climate Support Program exist.

It has always been SA-LED's intention to collaborate with the DEA's Local Government Support Mitigation Program in supporting municipalities to integrate climate change into their systems and processes, however, this has not happened due to the current approach applied by DEA and GIZ to municipal support. These institutions currently conduct workshops aimed at raising the awareness of the municipalities on the integration of climate change into municipal programming, planning and budgeting. Municipalities are then expected to apply the process recommended by the GIZ developed "*Lets Respond: Guide to Integrating Climate Change Risks and Opportunities into Municipal Planning*" in developing their climate change strategies. This approach has proven difficult to implement and thus, GIZ is interested in collaborating with SA-LED on supporting municipalities with integrating LED into their municipal plans and systems.

The Program's past approach to OCA assessments was that the assessed municipalities were requested to identify at least three projects during the assessment process that would receive SA-LED's technical assistance. This was an ideal approach as this guaranteed that SA-LED would continue working with the municipality on LED integration and implementation. The Program previously completed LED-focused OCAs in Govan Mbeki, Polokwane, and Chris Hani District Municipalities. SA-LED aims to facilitate the standardization of OCAs in three municipalities in Years 4 and 5. Further, since SA-LED will scale back support to new projects moving forward, the Program aims to collaborate with partners that are positioned to continue work within those municipalities to sustain implementation of LED projects.

SA-LED has previously identified the potential to support municipalities with integrating LED considerations in their procurement specifications. The most strategic way to support municipalities would be to provide support in integrating LED considerations in their procurement documentation. SA-LED can, when requested, provide review support to tender specifications to assess the extent to which those specifications address LED considerations.

National government climate response policies including the Climate Change Bill (2018) recognize the role and need for vertical integration to drive climate action. Vertical integration seeks to harness the sub-national potential to meet national government commitments. To that effect, SA-LED will continue with its support to Mpumalanga Province as per the MoU and with the Provincial Government, having already completed a provincial GHG inventory as per the Global Protocol for Community-Scale GHG Emission Inventories (GPC) in Year 3.

Informed by the above GHG inventory (baseline) and stakeholder consultations, SA-LED will provide technical support to the Mpumalanga Provincial Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) in the development of a Climate Change Mitigation Strategy that is aligned with the already existing Adaptation Strategy and will lead to the implementation of LED projects and initiatives within the province and its municipalities. Municipal LED activities will be a focus of the strategy. The strategy development will identify projects and programs that the province can undertake to ensure low emissions development and promote the green economy. This entails reducing GHG emissions while contributing to positive socio-economic outcomes.

Since SA-LED is scaling back support to new projects development, moving forward, the Program aims to collaborate with partners that are positioned to continue the work within municipalities to sustain implementation of LED projects. In Years 4 and 5, SA-LED will actively share its LED focused OCA Tool (OCAT) as technical product with other organizations providing municipal support on climate change planning to help support the standardization of climate integration assessments.

Activity 2.1.2: Implement SA-LED overarching capacity building plan

A baseline capacity building needs assessment exercise was conducted during the inception phase of the SA-LED program in Year 1. This information provided the base for the type of capacity building and training initiatives required by municipalities. Subsequently, all preceding capacity building and training activities to date have been informed by this baseline information.

In Year 3, SA-LED supported the Third National Biogas Conference where the Program collaborated with the DoE, GIZ-South African-German Energy Programme (SAGEN), and the Southern African Biogas Industry Association (SABIA) in hosting and facilitating the participation of municipal officials at the conference resulting in knowledge sharing among biogas stakeholders on experiences, challenges, and opportunities for the development of a local biogas industry

In Years 4 and 5, SA-LED will collate and document all the capacity building and training activities and learnings into a comprehensive capacity building guideline or resource document that will be relevant in responding to the evolving capacitation needs of municipalities. The resource will cover various LED sectors, technologies, and be responsive to the needs of municipalities.

Capacity building activities to take place in Years 4 and 5 may include a study tour to the George Municipality on integrated transport planning, a Johannesburg Water's Northern Works CHP plant tour, workshops, formal training and peer-to-peer exchanges in a range of LED sectors. Focus will also be placed on collaborating with stakeholders and partner organizations working with municipalities and LED initiatives. Increased collaboration will form part of SA-LED's approach to ensuring continuation and sustainability of interventions.

Activity 2.1.3: Conduct institutional capacity assessments of institutions working with SA-LED and develop institutional strengthening plans

In Year 2, SA-LED recognized the need to standardize its approach to assess organizational capacity to meet the climate change agenda of municipalities. SA-LED therefore developed an OCAT which has since been used to assess the capacity of institutions (municipalities) to plan and implement climate action. The OCAT emphasizes a joint external-internal assessment of climate change integration into the structure of municipalities which is important for moving the climate change agenda forward. Furthermore, while OCAs focus on institutional systems for implementation, individual skills and lack of knowledge in certain areas also become apparent through these assessments as to where follow-up is needed.

During Year 3, OCAs were conducted in three municipalities (Polokwane, Govan Mbeki, CHDM) that completed the Cambridge University Sustainable Leadership and Practitioner course training. Ongoing desktop evaluations are in progress for the three municipalities to monitor any capacity building increases and improvements. Follow-up OCA workshops will be conducted for the three municipalities in Year 4.

With the expansion of SA-LED's focus into schools that implement biogas projects, the opportunity presents itself to extend the OCA to this institutional platform in Year 4. The Program will implement biogas projects in schools located in the Eastern Cape with the objective of adapting and tailoring the OCAT to fit the situational realities of a school. The tailored OCAT will be used to collect baseline information as well as post-implementation information to guide future biogas initiatives in schools.

It is expected that the Climate Change Bill (2018) will have noticeable impacts on how municipalities respond to their climate change objectives and strategies. SA-LED will raise awareness through interactions with municipalities about the climate change legislation to provide assistance to translate the regulations into the IDPs, SDBIPs and LED project actions. One priority will be to ensure that supported municipalities are invited to the DEA Climate Change Bill provincial roadshows. SA-LED will request that the DEA/Municipal intergovernmental communications office include municipalities that are supported by the Program in the provincial invitation lists.

Activity 2.1.4: Implement institutional strengthening plans for the above-mentioned assessed institutions

Municipalities that completed OCAs during Years 2 and 3 were supported by SA-LED to develop Climate Change Strategies and Action Plans in-line with their IDPs. SA-LED will continue to support these institutions in Year 4 with technical assistance and advice to strengthen their institutional strategies and actions, especially with the focus on being more responsive to the Climate Change Bill and its implications. Where SA-LED cannot provide direct support to a municipality, it will leverage its networks and other municipal support programs. These introductions will be on a case-by-case basis driven by a municipal champion for LED planning and project implementation. LED planning in South Africa has mainly relied on the collaboration with stakeholders on potential initiatives that could not be supported by one organization or program being passed on (introduced) to a broad stakeholder group that can extend support.

The Climate Change Bill requires municipalities to develop and implement climate change response implementation plans. Following completion of OCAs, SA-LED will consider working with individual institutions (schools or municipalities) in developing institutional strengthening plans meant to support the institution with integrating climate action in Year 4.

KRA: Technical Skills and Strategic Knowledge Within Relevant National, Provincial, or Municipal Government Entities Developed



LED planning may consist of several stages that are usually characterized by substantial degrees of complexity and cost. The aim of this KRA is to increase the knowledge of government officials on LED planning in order for them to effectively implement LED projects. The most critical aspect in LED planning in government is integrating it into the day-to-day operations of government departments (i.e. not making LED planning an “add-on” but make it visible for sustainable service delivery).

As part of the research that was carried out in Year 1 of the Program and experienced throughout implementation, areas where capacity and knowledge regarding implementation of LED projects is lacking have been identified. The capacity gaps were identified through consultations with municipalities and, to continue to address them in Years 4 and 5, SA-LED will coordinate with other municipal support programs to avoid the duplication of efforts.

IMMEDIATE OUTCOME 2.2: INCREASED MUNICIPAL CAPACITY FOR PROJECT ASSESSMENT, DESIGN AND DEVELOPMENT

- **Activity 2.2.1:** Provide capacity building support to individuals to strengthen their LED capacity
- **Activity 2.2.2:** Conduct study tours

Activity 2.2.1: Provide capacity building support to individuals to strengthen their LED capacity

Government officials are encouraged and invited to participate in learning and capacity building initiatives such as the Cambridge Institute for Sustainability Leadership (CISL) practitioner course and the Sustainable Energy Africa (SEA)-SALGA- South African Cities Network (SACN) Urban Energy Network. The learning platforms provide municipal officials with exposure to LED knowledge and skills, as well as networking opportunities. To ensure that value is added to the partner municipalities, effort is made to identify and select the officials who are actively involved in the municipality’s climate change initiatives to attend the events. SA-LED will not, however, continue to send officials to the CISL courses in Year 4, as the focus will shift towards supporting the three municipalities currently completing the CISL program with the development and implementation of LED activities. SA-LED will conduct OCAs for these municipalities to assist in the development of their climate change strategies and further technical support will be decided based on the needs identified from the OCA findings. SA-LED will also work on disseminating information through free online courses for municipal officials nationally on different aspects of LED planning and implementation.

a) Urban Energy Networks

One outcome of the municipal LED capacity needs assessment conducted in Year 1 called for SA-LED to collaborate widely with existing networks, such as with the SEA-SALGA-SACN Urban Energy Network. The Program then made an effort to collaborate with this network, as it facilitates sharing among municipal officials on their experiences and how to approach LED issues in their areas of jurisdiction. The Urban

Energy Network typically holds two meetings per year. SA-LED contributed to the SALGA Energy Summit, held at the Sandton Convention Centre between March 7 and 9, 2018, which was considered the network's first meeting of the year. The Urban Energy Network co-convening team was involved in shaping the agenda for the conference, including contributions from SA-LED. The second Urban Energy Network meeting is scheduled to be held on September 26 – 27, 2018 in Pretoria. The meeting's theme is *Sustainable South African Cities of the Future: Resilience, Energy Efficiency and Renewable Energy in the City Environment*. SA-LED continues to be invited to contribute to the planning of these events. In Years 4 and 5, the Program will continue to collaborate with the Urban Energy Network by sharing relevant SA-LED information to be shared on the network's platforms and will explore future collaboration through hosting network events.

b) Solar and SSEG Municipal Support

SA-LED has in the past collaborated with GIZ, SALGA, Council for Scientific and Industrial Research (CSIR) and the National Renewable Energy Laboratory (NREL) to conduct trainings for municipal officials on solar PV financial and socio-economic impact analysis of SSEG. These trainings were aimed at equipping municipalities with skills on setting adequate SSEG customer tariffs for solar PV installations in their municipalities. Using the NREL developed *International Jobs and Economic Development Impact (IJEDI)* models, municipal participants were trained on estimating the economic impacts of constructing and operating power generation and biofuel plants at the local and state levels.

CSIR's Levelized Cost of Electricity (LCOE) model was shared with the officials to enable municipalities to cost-efficiently procure PV assets in their municipalities. The approach considers a lifetime view of the solar PV asset. SA-LED's role in these SSEG trainings has been to provide support to municipalities to attend the trainings and to distribute the models to municipalities. While it was initially planned to have two SSEG training workshops in Year 3, the collaborating partners, upon review of the impact of the previous trainings, decided to change the format of the municipal support on SSEG. Therefore, only one workshop was held in Year 3. The city of Cape Town co-hosted the training and provided inputs on how the city approached various aspects of SSEG system assessment, metering and billing, illegal systems, and other issues encountered around SSEG. This allowed for peer-to-peer learning, which has been found to be highly effective. The training primarily targeted municipal staff who already have had exposure to SSEG and who are from municipalities that have an SSEG assessment system in place or under development. The training was facilitated by SEA in partnership with Green Cape, and SA-LED partnered with the organizations to assist municipalities with attending the workshop.

In Years 4 and 5, SA-LED will continue to collaborate with GIZ and SALGA on rolling out SSEG support to municipalities. GIZ-SAGEN has entered into a long-term agreement with SEA to provide a new approach to municipal support where municipalities will be invited to sign-up for a "program or package" of support. This package will include a week-long SSEG and solar PV training followed by on-site municipal support visits. It is anticipated that municipalities may require two or three on-site visits to help them with setting up their SSEG systems in place. Municipalities accepted to receive this support are expected to commit to the whole package (with

a signature of the Head of Electricity Department or the Municipal Manager). This represents a shift from simply attending SSEG trainings and having separate site visits, which was found to be ineffective in the past. Review of the impact of past trainings has shown that municipalities were still not able to assess SSEG applications even after they had attended the training, and the hope is that with this new approach, municipalities will end up with a functioning SSEG process. GIZ-SAGEN has allocated a budget for SEA to support up to 20 municipalities in adopting the above package. In consultation with GIZ and SEA, SA-LED committed to support an additional five municipalities in adopting these packages where supported.

The next step is to provide remote or on-site support to the individual municipalities who participated at the training based on their requested follow-up support. Remote support could include editing the SSEG documents developed during the training or expanding on the technical information on acceptance of SSEG systems based on municipal experience. Targeted support may include visiting the municipality engage political and/or departmental heads on bylaws. The support will be completed by December 2019.

c) USAID's Clean Energy Emissions Reduction Tool

SA-LED funded the CLEER Tool training in three district municipalities (Ehlanzeni, Gert Sibande, Nkangala) within the Mpumalanga Province in March 2018. The training aimed to educate municipal officials on the basics of climate change, GHG emissions and mitigation projects, and the use of the CLEER Tool for emissions reduction accounting. Building on this, SA-LED will continue to support the provinces with the development of a climate change strategy. The Program will also be more selective in offering CLEER Tool training to municipalities and focus will be placed on providing CLEER Tool training to municipalities that are motivated for action and who show evidence of how they will use the tool to account for their GHG emissions accounting.

d) SANS 10400-XA Building Regulations Training

SA-LED, in partnership with SALGA, the city of Tshwane, and the Green Buildings Group (GBG) implemented a two-day training workshop to pilot the revised South African National Standards 10400-XA (SANS 10400-XA) with 51 participants in Pretoria during March 2018. The building control officials and industry representatives were trained in the application of the methodology of National Building Regulation XA and SANS 10400-XA compliance. The initial training materials developed in Year 3 were revised in a follow-up training workshop in April 2019 of Year 4. The training materials are now ready to be shared with industry stakeholders that can continue rolling-out the training of the SANS 10400 XA building regulations to all municipalities. SA-LED will finalize engagements with relevant stakeholders, including SALGA and SEA to present the findings and recommendations of the follow-up workshop and to facilitate the hand-over process of the training materials. Discussions are now taking place with the various stakeholders to confirm collaboration agreements that will ensure that the SANS 10400 XA training materials are adopted and integrated into industry stakeholder's initiatives. SA-LED will continue following the various stakeholder initiatives through our own M&E processes through Q4 of Year 4.

Activity 2.2.2: Conduct study tours

In deciding on study tours to support, preference is given to tours that are linked to project or policy development. Four study tours were planned for Year 3. These were anticipated to include a visit to the 'green' waste in-vessel composting facility in Grabouw (Western Cape), New Horizons Energy's biogas plant in Athlone, Cape Town and the Waste-to-Energy (WtE) project at Johannesburg Water's Northern Works wastewater treatment plant. Another tour, given the level of interest on solar PV installations implemented by municipalities for own consumption, included a visit to either Ekurhuleni Metro Municipality's or City of Cape Town's solar PV panels plant. These study tours did not materialize primarily due to a lack of interest or momentum from municipal partners to go on the tours. For the below-outlined two study tours that are planned for Year 4, SA-LED will secure early buy-in from municipalities.

a) Integrated Transport Planning Study Tour

With technical assistance from SA-LED, the Govan Mbeki and Gert Sibande Municipalities are in the process of developing an Integrated Transport Plan (ITP) to expand their bus rapid transit system. SA-LED may facilitate an ITP Peer to Peer Learning Exchange in Q4 of Year 4 for Gert Sibande and Govan Mbeki Municipal officials to learn from the George Municipality's (and the Western Cape Government's) experience developing the "Go George" public transport project and apply lessons learned to the development of their own Transport vision and plan. The tour will provide Gert Sibande and Govan Mbeki Municipal officials the opportunity to learn how ITP systems compare to standalone projects and review modes with low carbon intensity that can be used in corridors requiring mass transport. The municipal officials will explore the challenges and opportunities in the transport planning and infrastructure investment space with a focus on easily implementable and comparatively low-cost formal public transport services for communities of all social backgrounds. This peer to peer learning exchange will assist the Municipalities with developing a District and Local Transport Vision and Plan. The George Municipality was selected because the "Go George" model is similar to what the Gert Sibande and Govan Mbeki Municipality aims to development and implement.

b) Johannesburg Combined Heat and Power (CHP) Plant Tour

As part of its technical assistance to the DoE's CHP project at City of Tshwane's (Zeekoegat WWTWs) .SA-LED had proposed to facilitate a study tour to the Joburg Water's flagship Northern Works biogas-to-heat and energy plant, in Johannesburg (a WWTW that processed 1.5-million liters of wastewater a day and has the capacity to produce 16,750 m³ of biogas a day, generating power output of some 1,530 kWe – roughly 56% of the facility's overall energy consumption). This tour will take place in Quarter I of FY20

KRA: Key Stakeholder Knowledge and Awareness of LED Technologies and Implementation Strategies Improved



Knowledge of low emissions technologies and implementation strategies varies across SA-LED's stakeholder groupings. While stakeholders may have basic knowledge or awareness of some existing LED technologies, they lack a sound understanding of how the different technologies compare to each other. For this reason, there is a clear need for high-quality knowledge, extensive information sharing and bold decision making around which technologies should be adopted. At the same time, municipal officials usually get unsolicited requests from a range of vendors offering different LED technologies, however these officials are not able to conduct a thorough evaluation of the different technologies. SA-LED will aim to bridge this gap by developing knowledge and awareness raising materials that provide useful and credible information comparing the different technologies that could be applied in the different sectors. Integral to the Program's project development process, SA-LED undertakes in-depth development facilitation with municipalities. This face-to-face interaction with municipalities to unpack development and service delivery challenges and prioritize suitable LED responses builds trust and enduring relationships.

In Years 4 and 5, SA-LED will devote much attention to- finalize and formalize collaborative agreements with relevant partners working in the LED space to ensure that resources developed will be accessible beyond the life of the Program.

KRA: Technical Products to Facilitate GoSA Development and Management of LED Developed



SA-LED will develop technical products (toolkits, manuals, training modules, screening matrices, business cases, etc.) that can be used to facilitate the development and implementation of LED projects. SA-LED will collaborate with GIZ-SAGEN in developing standard procurement or energy audit templates for use by municipalities in wastewater treatment works' energy audits. In Year 3, in consultation with DoE and GIZ-SAGEN, it was agreed that GIZ and SA-LED would consolidate and standardize their different templates to streamline energy auditing. For example, in Quarter 4, the Climate Change Monitoring and Evaluation Guidelines were completed and submitted to the DEA's Climate Change Office of Monitoring and Evaluation Directorate. Volume one of the guidelines are currently in print.

There is potential to support tender specification development for a range of energy efficiency technologies directed at municipalities working with both DoE and GIZ. In Year 5, SA-LED will support the design of CHP for City of Tshwane ZeeKoegat tender specifications. These specifications would be designed to support the DoE's EEDSM. SA-LED will continue to identify collaboration opportunities for technical product development with other initiatives to ensure a unified communication to GoSA officials. Lessons on standardizing technical products will be learned from the World Bank Group's Scaling Solar Programme's and CSIR templates that have been able to accelerate project development.

IMMEDIATE OUTCOME 2.3: STRENGTHENED MUNICIPAL LED KNOWLEDGE BASE

- **Activity 2.3.1:** Develop and disseminate information on LED technologies and implementation strategies
- **Activity 2.3.2:** Document best practices on different LED implementation approaches

Activity 2.3.1: Develop and disseminate information on LED technologies and implementation strategies

Municipal Fleet Costs and Environmental Impacts Calculator

In Year 3, SA-LED, through its consortium partners ICF and TGH, developed an Excel-based calculator for estimating the costs and GHG and air pollution emissions of fossil fuel, electric, and renewable energy municipal bus fleets. The development of this tool was necessitated by requests from municipal vehicle fleet managers, particularly from the large metros, for a simple model that they could use as a decision-making tool for the selection of vehicle technologies their municipalities should consider investing in. A few metro municipalities are considering investing in low carbon powered vehicle fleets either as part of their public metro bus systems or for municipal service trucks. The tool allows municipal fleet managers to customize fuel sources and prices, electricity mixes, discount rates, and other aspects to better understand how these variables can influence overall fleet costs and environmental impacts of the project.

In Year 3, SA-LED began distributing the tool and its accompanying guides mainly to municipalities that expressed an interest in the tool. Among other entities that have been made aware of the existence of this tool are the C40-Cities, the Southern African National Energy Development Institute (SANEDI), SACN, SEA, and the IDC. SA-LED in Year 5 will collaborate with SEA in sharing the tool through the Urban Energy Support website. Other channels of distribution of the tool include direct email, project interactions, and awareness raising via newsletters.

Activity 2.3.2: Document best practices on different LED implementation approaches

In the next phase of implementation, SA-LED is working to consolidate, integrate and leave a legacy of its LED work in South Africa. The focus of SA-LED's work has always been to find innovative, catalytic ways in which to overcome LED stumbling blocks facing municipalities. LED in the South African context integrates several other sustainable development, green economy, and low carbon development strategies across all three tiers of government. Responding to this context, and as a small program, SA-LED has focused on where to add value to existing activities, fill gaps in the market and innovate in order to lead the market where no other "best practice" exists. Working in this complex, multi-level context thus necessitated different ways of working with municipalities and supporting sub-national project development and capacity building for LED in South Africa. "Best practice" in this context can thus take the form of "what works," "what has worked in the past," "what should be considered," and "what potential obstacles and barriers to watch out for."

Furthermore, particularly in relation to integrating LED into service delivery and resolving related development problems, SA-LED has already developed an innovative

LED project development process and framework, as well as several other methodologies, initiatives, support functions, and outputs that could be integrated as case studies. Most importantly, navigating between existing initiatives, policies, role players, etc., necessitated SA-LED to innovate and add value to existing market activities. The best practice case studies will thus focus on how to unpack and describe SA-LED's value addition in the various aspects and sectors of LED in South Africa. Aspects of this value addition include:

- Formally package SA-LED outputs into decision-support platforms that are relevant in the sub-national context.
- Describe methodologies that resulted in innovative outcomes, for example waste mapping and how doing this work at municipal level reinforces cross governmental/national level policies.
- Describe how SA-LED navigated a saturated sector, for example, in energy efficiency where the Program added value and supported municipalities to become part of mainstream processes.
- Document how SA-LED shared its work through existing networks such as SEA.
- Describe innovative project preparation and ways of engaging financial institutions in South Africa.
- Describe how SA-LED's capacity building and training furthered GHG monitoring and evaluation (M&E) amidst unclear market signals and a complicated regulatory environment.

In Years 4 and 5, this component of the work plan is a high priority, whereby the Program's best practice work will be packaged to allow municipalities to respond to national low carbon growth strategies. SA-LED will focus on developing up to 23 communications products and up to four technical products. This pool of outputs will be in the form of best practice case studies, technical products, tools, and communications products, among others.

KRA: Knowledge and Awareness of the Relationship between Economic, Gender, and Youth Implications of Low Emissions Development Increased



The aim of this KRA is to contribute to the multiple benefits of LED, i.e. the socio-economic benefits achieved from LED beyond the GHG emissions benefits. During Year 1, consortium partner TGH conducted a review to gather M&E information on best practices as they relate to the multiple benefits of LED programs and projects. The goal of this review was to help develop a methodology for tracking the multiple benefits derived from the SA-LED Program. The research identified specific areas that could be considered to increase these benefits, including how to structure activities to maximize outcomes for the poor. In Year 3, SA-LED engaged college students to help conduct energy audits for Polokwane Municipality buildings. A total of 20 students were trained in the basic energy audit course with a longer-term view to develop internal capacity within the Province.

IMMEDIATE OUTCOME 2.4: INCREASED LED CREDIBILITY AS A PATHWAY TO LOCAL ECONOMIC DEVELOPMENT, GENDER, YOUTH

- **Activity 2.4.1:** Integrate youth and women into SA-LED projects and activities
- **Activity 2.4.2:** Capture learnings on multiple-benefits from projects supported
- **Activity 2.4.3:** Roll out further multiple-benefit analyses for other SA-LED initiatives

Activity 2.4.1: Integrate youth and women into SA-LED projects and activities

The Program recognizes the importance of applying a gender and youth lens when analyzing, planning, and making decisions on projects or activities supported by SA-LED. To that effect, SA-LED has an embedded female EEDSM Coordinator at the Polokwane Municipality. The intern previously embedded at SA-LED from the World-Wide Fund South Africa (WWF-SA) was also a female engineer. When identifying GoSA officials who benefit from activities supported by SA-LED, careful and deliberate examination is completed in terms of gender and youth integration. The Program will continue this mainstreaming effort in Years 4 and 5 through the expanded focus on the biogas in schools' projects.

A total of 33 new schools from the Eastern Cape Province are participating in the biogas in school's project, providing the opportunity to mainstream gender and youth into the technical, operational, and educational development facets of the projects. A total of 10 ex-matriculants will be trained in the technical, operational, educational components of the project so that they can take the lead in training at 20 schools' sites. The youth trainers will also be exposed to a small-scale business development training which will provide them with the skills to set-up their own small-scale biogas initiatives.

Emphasis will be placed on motivating for women to participate in the project throughout the implementation. Initial discussion with Wildlife and Environment Society of South Africa (WESSA) confirm common agreement to ensure sustainability of the project beyond the project cycle of SA-LED. A formal engagement with WESSA to discuss and confirm the terms for the collaboration agreement is planned for quarter 3. The agreement will focus on WESSA integrating the 30 SA-LED funded biogas project schools into their five-year Eco-Schools program. The schools will be able to continue with the biogas initiatives as there will be sustained support made available.

Activity 2.4.2: Capture learnings on multiple-benefits from projects supported

The multiple-benefits work that initially started in Year 2 and was ramped up in Year 3 will continue in Years 4 and 5. In addition to the six multiple-benefits assessments completed in Year 3, SA-LED will develop another two multiple-benefits analyses in Year 4. The focus through Years 4 and 5 will be on the consolidation and integration of the multiple benefits work into finance and other SA-LED Program activities. The

work is already being integrated into global United Nations (UN) International Climate Action Transparency (ICAT) processes (via the World Resources Institute), and thus is seen as a value-adding component of SA-LED's work in South Africa. In this regard, SA-LED is working with UN ICAT to contribute multiple-benefits case studies for upcoming revisions to the Sustainable Development Guidelines. The integration of the multiple developmental impacts of LED work specific to South Africa's LED context provides further legacy and best practice case study opportunities. Apart from finalizing the additional two multiple-benefits studies, the immediate priority is to complete a comparative analysis of the existing multiple-benefits case studies to identify trends and correlations that can be integrated into the finance work.

In addition, the case studies and multiple-benefits framework will be packaged as a decision-support toolkit for municipalities in identifying and planning for LED. This framework will allow municipalities to make decisions based on the GHG implications, as well as the greater development impact (youth, gender, job creation, environmental impact, apartheid redress, and inequality) when designing their IDPs and other spatial planning priorities. This work will thus ensure that municipalities are more equipped to develop comprehensive LED project proposals.

Lastly, the multiple-benefits work presents significant training opportunities and will be integrated into other planned trainings, for Year 5. A multiple-benefits training workshop will be conducted by SA-LED for officials from CapeNature and Drakenstein or Chris Hani District Municipality in first Quarter of FY20.

Activity 2.4.3: Roll out further multiple-benefit analyses for other SA-LED initiatives

In Year 3, SA-LED met its target of developing four multiple-benefits case studies. Two of these studies, organic garden waste and alien invasive plant species, are part of the Eden Waste Characterization project. The other two studies include the mohair value-chain and rooftop PV in eKurhuleni. In Years 4 and 5, SA-LED will focus on applying the multiple-benefits framework to for four projects: Cape Nature, Chris Hani, EcoDistrict -Drakenstein and eThekwini Hydro. Throughout this time, the Program will continue refining the framework, as well as conduct a comparative analysis of the different case studies for integration into training work and package the framework and learning into a capacity building tool for municipalities. The multiple-benefits work will also be fully integrated into SA-LED's finance and business case study development work. As the multiple-benefits case studies are finalized, they will be packaged for the above-mentioned outcomes.

INTERMEDIATE OUTCOME 3: IMPROVED QUALITY OF MONITORING AND REPORTING OF GHG EMISSIONS AT SUB-NATIONAL AND PROJECT LEVEL

GHG MRV has always been identified as a challenge for government officials. Among the reasons for limited skills in MRV is that it is still an emerging field and there is a lack of knowledge on standardized approaches to MRV at different levels. SA-LED has worked with municipalities, provincial entities, and national government in streamlining GHG measurement and reporting. While the MRV skills exist in the private sector, they are lacking in the public sector as this has not been a top priority for municipalities

and provincial government entities. At a national government level, the focus has been on producing national GHG inventories for submission to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat.

KRA: GoSA skills to Monitor, Report, and Communicate on GHG Emissions Improved



In Year 2, three DEA officials were supported with registration for online courses at the GHG Management Institute (GHGMI), pursuing a Diploma in GHG MRV. These officials have not yet completed the courses that they began in Year 2. The GHGMI training offers a broader skill set, including MRV in keeping with international standards and programs. The course provides a rigorous and professional background that leads to a skill set in the estimation of GHG emissions and removals, norms and standards for GHG reporting, as well as the skills to conduct and/or use the GHG validations and verifications (i.e. auditing, review, and inspection). To ensure applied learning, an effort was made to align the electives for this course to the line functions of each official. Given the challenges of getting the funded officials to report on their progress or to commit time to study, SA-LED stop providing this kind of support to any GoSA official in the future.

IMMEDIATE OUTCOME 3.1: IMPROVED SKILLS TO MONITOR, REPORT AND COMMUNICATE GHG EMISSIONS AT SUB NATIONAL AND PROJECT LEVEL

- **Activity 3.1.1:** Support municipalities with project level GHG MRV
- **Activity 3.1.2:** Support municipal level GHG Inventorying

Activity 3.1.1: Support municipalities with project level GHG MRV by applying the USAID CLEER tools

SA-LED has worked to support the GoSA in its efforts to build the technical, institutional, and personnel capacities to address climate change. During Years 2 and 3, the Program trained municipal officials on accounting for GHG reductions using a consistent approach at the project level. SA-LED effectively leveraged the CLEER Protocol and Calculators. The CLEER Protocol is a guide for project developers and officials to help them estimate, document, and report GHG emission reductions from projects in a manner that is both internally consistent and complies with international GHG mitigation project accounting standards. It also addresses clean energy activities related to generating renewable energy, increasing end-use energy efficiency, increasing energy system efficiency, and fuel switching.

To follow-up on pilot trainings held in Cape Town in November 2016, municipal officials from the West Rand District area and Mpumalanga Province were trained on the CLEER tools in Year 3. Following these trainings, an evaluation was conducted in order to assess the effectiveness of the current approach to training GoSA officials on these tools, and how these trainings have impacted their work on project-level GHG

MRV. This evaluation found that many officials struggle to use the CLEER tools effectively, even after taking part in the trainings. Although these tools are meant to simplify and standardize GHG measurement, some of the participants seemed to have had difficulty grasping the functionality and ease of use of the tools.

Beginning in Year 4, SA-LED has realized the need to have more focused and targeted trainings on the use of the CLEER tools. This will entail working with one or more municipal officials that have been identified or have expressed interest in quantifying GHG emission reductions. This approach will ensure that the GoSA gets hands-on experience with the CLEER tools as they work to input their specific project details.

Activity 3.1.2: Support municipal level GHG Inventorying

In situations where SA-LED works with a municipality on the development of a municipal-wide GHG inventory, the Program will ensure that these inventories are Global Protocol for GPC compliant. The Program has already developed GPC compliant inventories for Buffalo City Municipality, CHDM, Govan Mbeki Municipality, and Mpumalanga Province. This support ensures that these municipalities and provincial government are making progress towards meeting some of the requirements of the Climate Change Bill (2018).

COMMUNICATIONS AND KNOWLEDGE SHARING FOR SUSTAINABILITY

SA-LED's existing Communications Strategy provides structured guidance to identify and implement targeted communications activities to achieve maximum impact in support of the Program's goals. The strategy has also helped increase the understanding and management of SA-LED information sharing in diverse sectors in which the Program operates and with the wide variety of stakeholders the Program engages. In Year 3, SA-LED accelerated the development of communications products, producing a total of 20, including seven information products, two templates/cheat sheets for different LED technologies, 10 short videos, and one updated product.

The focus of SA-LED's communications and knowledge sharing activities in Years 4 and 5 will be on developing and standardizing technical products and tools, disseminating the products and tools, and on community of practice events. SA-LED will continue to use multiple approaches to ensure municipalities are aware of the Program and its available services. These include continuing to work with SALGA to publicize SA-LED's services, ensuring that the municipalities are aware of the Green Fund to inform applications and its resources, developing a database of funding provided by other multilateral organizations and private entities to support LED projects, and supporting municipalities to package LED projects for financial institutions.

Resource Material Development

LED PRODUCTS & TOOLS

LED technical products and tools, case studies, methodologies, and financial products developed over the LOP will contribute to the long-term sustainability of SA-LED initiatives. In Years 4 and 5, the Program will develop and standardize a variety of LED products and tools, stakeholders will be trained on how to apply them, and they will be handed-over to counterparts such as SEA, and as applicable, housed on USAID platforms such as [Climatelinks](#). Moreover, SA-LED's local consortium partners will help ensure the products and tools remain available for utilization once the Program closes.

CLEER Tool

USAID's CLEER Tool is a simplified GHG emissions calculation tool that could be used by non-GHG MRV experts to quantify GHG reductions/offsets from their energy activities. The tool provides simple, standardized methodologies for calculating emission reductions from clean energy activities and enables users to estimate, track, and report GHG reductions from clean energy, which may help users identify high impact activities with cost effective GHG reductions, assess the emissions reduction potential of planned clean energy activities or alternatives, and measure benefits from indirect clean energy activities. Furthermore, the CLEER Tool calculators cover the following clean energy activities: renewable energy (e.g., solar PV, wind turbines, geothermal, hydroelectric), energy efficiency (e.g., building and appliance efficiency), biomass energy, fuel switching, and additional technology types.

OCAT

SA-LED developed an OCAT to standardize its approach to assess organizational capacity to meet the climate change agenda of municipalities. The key purpose of the OCAT is to assess key capacities that already exist, and the additional capacities required to reach the climate change objectives. More specifically, the OCAT is meant to:

- Conduct and facilitate an initial climate change capacity assessment for municipalities.
- Establish the progress made with respect to climate change response.
- Determine the barriers preventing municipalities from implementing an integrated climate change agenda.
- Propose recommendations for advancing the climate change agenda in the municipality.
- Identify and document the key priorities for consideration by the municipality.
- Develop a baseline against which progress will be measured for areas of project support.

In Years 4 and 5, SA-LED will adapt the OCAT and disseminate it as technical tool to help municipalities assess their ability to implement climate change response implementation plans in addition to developing a simplified version of the OCAT to leave with municipalities to use as an adaptive management tool once SA-LED closes.

Municipal Fleet Calculator

The Municipal Fleet Calculator is an excel-based calculator for estimating the costs and GHG and air pollution emissions of fossil fuel, electric, and renewable energy municipal bus fleets. The tool is a simple model that fleet managers can use to make decisions for the selection of vehicle technologies in their municipalities. The tool allows municipal fleet managers to customize fuel sources and prices, electricity mixes, discount rates, and other aspects to better understand how these variables can influence the overall fleet costs and environmental impacts of the project.

Case Studies

Case studies are highlighted as a specific tool for knowledge sharing and will form an integral part of SA-LED's communications work moving forward. As part of the pool of 27 communications and technical products to be developed in Years 4 and 5, case studies are particularly important as they address the specific value-addition that USAID made to a problem or challenge in the South African LED market, and/or contributed in innovative ways to developing the market. Applying the "SMART" technique, case studies will reflect this value-addition as follows:

- **Specific:** What exactly did SA-LED contribute to addressing a specific issue?
- **Measurable:** How will it be measured and/or how will we know that the attribution was achieved? To be credible, the information must answer the who, what, where, when, and how.
- **Achievable:** Describe how SA-LED identified the problem, set out to achieve the solution, and what the result was.
- **Relevant:** Describe how SA-LED's work was niche or market specific. In other words, how is the use of USAID funds relevant to the Program, government goals, municipality processes, and general LED market?
- **Time-bound:** Describe the timeline, how SA-LED deployed its technical assistance (e.g. once-off, phased)

SA-LED developed a framework that assesses USAID's value-addition to the market and the position of the Program within the broader Green Economy context of South Africa. This framework has been approved by USAID and case studies will be packaged in this format before or by December 2019. The case studies will be tailored to a range of users, will integrate several SA-LED technical, capacity, and finance outputs and will be developed in close collaboration with consortium partners and stakeholders who will take SA-LED's work forward once the Program closes.

Finance Products & Tools

Based on SA-LED's draft finance approach and research, several projects and financial institutions that were interviewed noted that one of the areas in which SA-LED will significantly support the advancement of LED projects is the development of information products and tools that capture the technical financial "know-how" of the financial advisory services that are deployed. These include:

- Methodologies on engaging with municipalities to identify and prepare projects for financial feasibility.
- Annotated, understandable cheat sheets of financial models, and how they integrate with municipal revenue, costing of services, and ultimately financing of LED projects.
- .
- Detailed information sheets on sector specific procurement structures that municipalities may pursue to finance LED projects with or without the private sector.
- Information on transaction documentation on a case study (specific technology and municipality procurement process) basis.

SA-LED will develop these products through participatory processes with relevant consortium partners and stakeholders throughout Year 4 to ensure they are ready for dissemination and handover in Year 5.

COMMUNITY OF PRACTICE EVENTS

While a climate change “community of practice” has begun to emerge in South Africa, SA-LED will aim to foster an LED “community of practice” to ensure its continuation following the Program’s closure. Through the maintenance of relationships that have been fostered to date, including organizing periodic after-action review sessions, creating a LinkedIn group, and holding a culminating final event, SA-LED will aim to strengthen this community in Years 4 and 5.

After-Action Review Sessions

With SA-LED technical activities scheduled to begin winding down in early 2020 and to provide as comprehensive and forward-looking work plan as possible, USAID approved SA-LED to develop a combined Year 4 and 5 work plan. The work planning session held in July 2018, which brought together all SA-LED’s key USAID counterparts and consortium partners to reflect upon activities, successes, challenges, and the changing LED context (for example, the pending Climate Change Bill), as well as to develop of a common vision for Years 4 and 5, proved to be extremely valuable. While it will not be necessary to convene another large work planning session, SA-LED will conduct an after-action review session with USAID during the second half of FY19 to inform the key take away from project implementation and detail the close out plans.

Additionally, SA-LED will organize the last advisory committee meeting with consortium partners, and key stakeholders to share the results of SA-LED, officially inform the close out and handover the testimony to LED community of practice.

LED LinkedIn Group

SA-LED will collaborate with local consortium partners to create a LED LinkedIn Group to begin sharing information, policy and regulatory updates, resources, tools, events, and financing opportunities for public and private sector professionals to draw-upon in support of LED projects. For example, SA-LED will use the Group to raise awareness of the newly-introduced Climate Change Bill. The Program will explore

other relevant media platforms to share and disseminate LED information to the general public and informal networks. SA-LED expects to have the LinkedIn group established by the end of quarter 4 of FY19.

Final Event

In Quarter 1 of Year 5, SA-LED will prepare a concept note for a closeout event and seek approval from USAID. The event will provide a high-level platform to highlight key accomplishments, share lessons learned, showcase proven tools, and bring together the community of practice that the Program fostered to discuss the continuation of support to LED initiatives following the closure of SA-LED in May 2020.

CLOSEOUT

SA-LED will commence with technical and administrative closeout around March 2020 in accordance with the USAID-approved closeout and demobilization plan to be submitted in November 2019, six months prior to the Program's closure. Technical activities will wind down heavily beginning in early 2020, and SA-LED's staffing phase-out plan will be aligned according to the Program's remaining technical, reporting, and operational requirements.

SA-LED will ensure that its subcontracts, vendor agreements, service contracts, and leases are gradually canceled or closed by the end of May 2020. Also, in May, an emphasis will be placed on ensuring all project financials, procurement files, contracts, communications materials, and all other important documentation are organized and backed-up for future reference. SA-LED will also complete the disposition of all residual non-expendable property in accordance with the Program's USAID-approved disposition plan (to be submitted with the closeout and demobilization plan) that aligns with the needs of other USAID implementing partners and SA-LED's partners and beneficiaries.

Chemonics has a wealth of experience conducting project closeouts and SA-LED will draw upon that experience to efficiently close the Program. SA-LED will make use of Chemonics' existing corporate closeout manual, tools, and best practices as well as our PMO's technical, operational, and financial expertise to ensure that the Program's closeout is as seamless as possible.

ANNEX A. PMP TABLE

Level of Results	Result Statements	Indicators	Baseline	LOP Targets	Results to Date ³	Annual Targets	
						2019	2020
Ultimate Outcome	Reduced greenhouse gas emissions through implementation of SA-LED initiatives						
Intermediate Outcome I: Increased investment in LED							
	KRA: Innovative LED projects identified, supported, and facilitated	Number of LED projects provided with technical assistance	0	20	27	4	0
	KRA: Reduced emissions potential in strategic sectors demonstrated	Projected quantity of GHG emissions in metric tons of CO ₂ e, reduced or avoided by 2030	0	100,000 tons	595,685 tons	10,000 tons	0
		MW of clean energy generation capacity supported by SA-LED assistance ⁴	0	10MW	8.55 MW	6MW	2MW
Immediate Outcome I.1	Improved project preparation	Number of projects in readiness for implementation					
Activity I.1.1	Provide technical assistance to projects to strengthen LED development	Number of LED projects provided with technical assistance					
Activity I.1.2	Evaluate existing projects according to finance and multiple benefits criteria	Number of projects evaluated					
Activity I.1.3	Maintain a robust pipeline of LED projects	Number of projects included in the project pipeline					

³ Results to Date incorporate achievement up to 2019 Q2

⁴ This is a LED project, with energy being one of the aspects we will work in. But SA-LED contributes to Power Africa goals and thus any energy projects we work on will be monitored and reported on. The annual targets for this indicator are not true "targets" we hope to meet necessarily but this is rather a "monitoring indicator" to make sure we can report on any clean energy generation projects SA-LED ends up supporting.

Level of Results	Result Statements	Indicators	Baseline	LOP Targets	Results to Date ³	Annual Targets	
						2019	2020
Ultimate Outcome	Reduced greenhouse gas emissions through implementation of SA-LED initiatives						
	KRA: Resources from Development Finance Institutions (DFIs), Public Sector Finance funds (such as the SA Green Fund), and Private Sector Finance mobilized or Leveraged	Value of funds in USD mobilized or leveraged to support LED projects	0	US\$206M	US\$ 205,028,293	US\$ 1.5M	US \$0M
Immediate Outcome 1.2	Increased financial support to LED projects	Number of LED projects that have reached readiness for financial closure					
Activity 1.2.1	Implement SA-LED finance approach	Number of projects provided with financial advisory support					
Activity 1.2.2	Collaborate with DFIs, grant agencies, and government finance streams and other relevant finance stakeholders to provide a financial offering	Number of potential finance opportunities identified					
	KRA: Capacities of the Public and Private Sectors to Identify, Develop, and Fund LED Projects in Strategic Sectors Strengthened	Number of institutions with improved capacity to address LED issues	0	20	7	12	5
	KRA: Public planning for LED improved	Number laws, policies, regulations, or standards addressing LED formally proposed, adopted or implemented as supported by SALED assistance	0	10	7	4	0
Immediate Outcome 2.1	Mainstream LED into programming, planning and budgeting of municipal services	Number of municipalities integrating LED into their strategic plans					
Activity 2.1.1	Provide technical assistance to municipalities to mainstream LED into	Number of municipalities provided with technical assistance					

Level of Results	Result Statements	Indicators	Baseline	LOP Targets	Results to Date ³	Annual Targets	
						2019	2020
Ultimate Outcome	Reduced greenhouse gas emissions through implementation of SA-LED initiatives						
	programming, planning and budgeting						
Activity 2.1.2	Implement SA-LED overarching capacity building plan	Number of capacity building plans implemented					
Activity 2.1.3	Conduct institutional capacity assessments of institutions working with SA-LED and develop institutional strengthening plans	Number of institutions assessed					
Activity 2.1.4	Implement institutional strengthening plans for above mentioned assessed institutions	Number of capacity building plans developed					
KRA: Technical skills and strategic knowledge within relevant national, provincial or municipal government entities developed		Number of people trained in LED	0	130	605	20	0
		Number of individuals receiving USAID SA-LED training who apply the new knowledge and skills	0	92 ⁵	69	49	12
Immediate Outcome 2.2	Increased municipal capacity for project assessment, design and development	Number of people trained in various aspects of LED (output)					
Activity 2.2.1	Provide capacity building support to individuals to strengthen LED capacity	Number of people provided with capacity building support					
Activity 2.2.2	Conduct study tours	Number of study tours conducted					

⁵ Year 1 and 2 unmet targets have been added across the 3 outer year targets in this indicator.

Level of Results	Result Statements	Indicators	Baseline	LOP Targets	Results to Date ³	Annual Targets	
						2019	2020
Ultimate Outcome	Reduced greenhouse gas emissions through implementation of SA-LED initiatives						
	KRA: Key stakeholder knowledge and awareness of LED technologies and implementation strategies improved	Number of communication products produced by SA-LED	0	50	21	23	8
	KRA: Technical products to facilitate GoSA development and management of LED developed	Number of technical products developed to facilitate GoSA development and management of LED (output)	0	8	5	4	1
Immediate Outcome 2.3	Strengthened municipal LED knowledge base	Number of organizations reached with awareness raising materials					
Activity 2.3.1	Develop and disseminate information on LED technologies and implementation strategies	Number of information products made available on LED (technologies) project and implementation strategies					
Activity 2.3.2	Document best practices on different LED implementation approaches	Number of best practices developed on various LED implementation approaches					
	KRA: Knowledge and awareness of the relationship between economic, gender, and youth implications of low emissions development increased	Number of projects supported by SA-LED that have co-benefits (output)	0	10	6	7	1
Immediate Outcome 2.4	Increased LED credibility as a pathway to local economic development, including gender and youth	Number of municipalities taking LED decisions					

Level of Results	Result Statements	Indicators	Baseline	LOP Targets	Results to Date ³	Annual Targets	
						2019	2020
Ultimate Outcome	Reduced greenhouse gas emissions through implementation of SA-LED initiatives						
Activity 2.4.1	Integrate youth and women into SA-LED projects and activities	Number of youth and women integrated into SA-LED Program					
Activity 2.4.2	Capture learnings on multiple benefits from projects supported	Number of case studies on co-benefits from projects supported					
Activity 2.4.3	Roll out further multi-benefit analyses for other SA-LED initiatives	Number of co-benefit analyses disseminated					
KRA: GoSA skills to monitor, report, and communicate on GHG emissions improved		Number of people capacitated in GHG MRV	0	130 ⁶	91	29	10
Immediate Outcome 3.1	Improved skills to monitor, report and communicate GHG emissions at sub national and project level	Number of people of trained on communicating on greenhouse gas emissions					
Activity 3.1.1	Support municipalities with project level GHG (MRV)	Number of national, provincial and municipal officials trained in the use of GHG MRV tools and approaches					
Activity 3.1.2	Support municipal level GHG inventorying	Number of municipalities with GPC compliant inventories					

⁶ This is a general training target to which training in GHG MRV contributes.

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