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TECHNICAL ASSISTANCE TO THE ETHIOPIAN ELECTRIC AUTHORITY (EEA) ON OFF-GRID REGULATORY FRAMEWORKS

TASK 3B: IMPLEMENTATION PLAN

September 2020
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TASK 3B: IMPLEMENTATION PLAN (DRAFT REPORT)

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Acronyms & Abbreviations

DoE	Directorate of Electrification
EEA	Ethiopian Energy Authority
EEP	Ethiopian Electric Power
EEU	Ethiopian Electric Utility
GoE	Government of Ethiopia
HH	Household
MOFEC	Ministry of Finance and Economic Cooperation
MoWIE	Minister of Water, Irrigation, and Energy
NEP	National Electrification Program
REB	Regional Energy Bureau
PPP	Public Private Partnership
PSNP	Productive Safety Net Program

Implementation Plan

1. Introduction and Overview

The Ethiopian government has set forth an ambitious goal of 100% electricity access by 2025[1]. To achieve this goal the country plans to electrify rural communities through off-grid technologies, primarily mini-grids. To spur the adoption of mini-grids throughout the country, the Ethiopian Energy Authority (EEA) is charged with developing and implementing a comprehensive set of mini-grid policies framework ~~. policiesframework~~framework. framework. framework. ~~These policies, directives, and regulations – or what is referred to as~~ T~~t~~he mini-grid framework will provide certainty for developers regarding the project approval process and important financial metrics associated with mini-grids.

This document summarizes the steps that EEA can take in order to implement the mini-grid framework within the current Ethiopian legal context. This Implementation Plan includes the following sections:

- **Section 2** summarizes EEA's objectives in implementing the country's mini-grid framework, including the current state of the draft mini-grid directive and the goal state.
- **Section 3** provides an overview of the stakeholders relevant to the implementation of the mini-grid framework and the country's mini-grid sector development.
- **Section 4** outlines the short-term, medium-term, and long-term steps that EEA can take to implement and regularly update the mini-grid framework.
- **Section 5** summarizes specific capacity and legal considerations relevant to each element of the framework.

This Implementation Plan was developed beginning in January 2020, and thus captures ongoing progress the EEA has made throughout the first half of 2020. This document can be used by EEA as a guide to organize its implementation process for its mini-grid framework over the next year and beyond. As relevant, EEA may need to update the timing and context outlined within this document to reflect evolving conditions and circumstances in Ethiopia, especially given political and socioeconomic considerations related to the COVID-19 pandemic.

2. Summary of Objectives

The Implementation Plan is intended to guide the EEA's mini-grid framework from its "current state" to its "goal state." The sections below summarize the current state of the mini-grid framework within Ethiopia as of September 2020, and the proposed draft directive~~s and regulations~~ that EEA aims to implement.

Current State. ~~EEA's~~ Ethiopia's mini-grid sector is currently governed by a set of directives and regulations implemented in 2005. These include:

- Directive for Maximum Duration of License for Non-Hydro Power Generation Plants for Commercial Purposes No.1/2005
- Pricing Procedure for Small and Very Small Self-Contained Systems (SCS) No.2/2005

[1] National Electrification Program 2.0. Federal Democratic Republic of Ethiopia. 2019.

Additionally, EEA currently has a draft mini-grid directive that is summarized in the "goal state" section below.

Goal State. As noted in the introduction, EEA's goal is to implement a comprehensive regulatory framework to support development of mini-grids within the country. A brief summary of the issues ~~that EEA is~~ currently cover~~ed~~ing through existing regulation or draft directive~~s~~ includes:

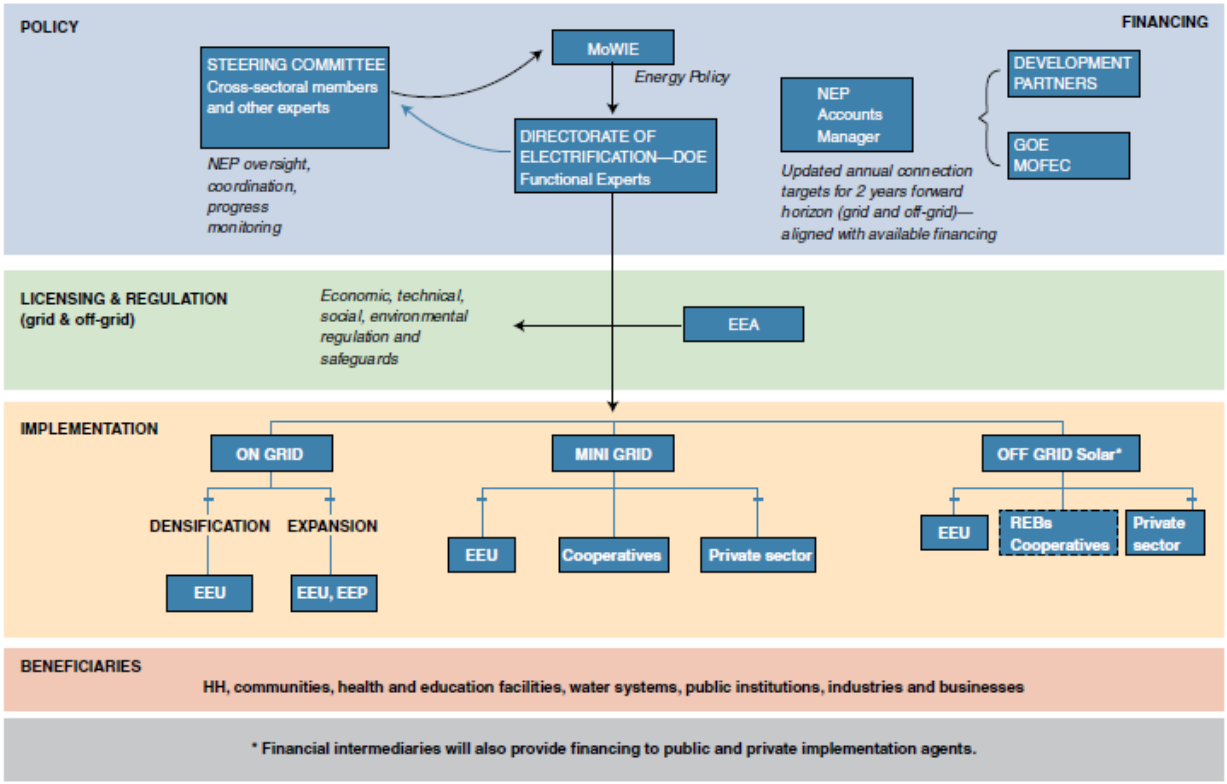
- **Council of Ministers Energy Regulation No. 447/2019.** Summarizes EEA's regulatory authority to oversee a variety of activities related to mini-grid regulation.
- **Draft Mini Grid Directive NO…./2020 (Version 3, Aug 2020)[2].** The Mini Grid Directive further clarifies mini grid specific issues including licensing procedures, technical standards, quality of service, tariff regulations and related issues pursuant to Energy Regulation No. 447/2019. It is applicable to off grid commercial electrification by the public or private developers with installed capacity of 10MW or below. Sections include:
    - Part Two: Mini-grid License. Outlines the licensing procedures and requirements for different classes of mini grids. This section also includes the rights, procedure, and process for computing compensation in event of grid encroachment to mini-grid service territory.
    - Part Three: Tariff Guidelines and Methodology for Mini-grids. The main objective of the tariff guideline and methodology is to determine the methodology for setting and reviewing transparent mini grid tariffs.
    - Part Four: Quality of Service Standards. Sets the quality of service standards and reporting requirements.
    - Part Five: Technical Standards. The objectives of the technical standards are to prescribe minimum design standards for electricity supply with mini grids.

3. Summary of Stakeholders

EEA operates within a dynamic landscape of stakeholders within the Ethiopia mini-grid sector. Figure 1 below demonstrates the National Electrification Program Implementation 2.0 (NEP 2.0) Framework, which highlights the important stakeholders and their roles within this process. As demonstrated by the figure, EEA operates in between the "Policy" and "Implementation" portions of the implementation landscape.

[2] As of September 2020, EEA's final draft mini-grid directive has been approved by their Board. The draft is currently awaiting approval from the Attorney General and incorporates previous inputs from the following documents reviewed earlier in development of this Implementation Plan: Directive for the Issuance of Licenses for the Electricity Supply Industry (Off-Grid Only), Tariff Guidelines and Methodology for Off-Grid Systems, Quality of Service Standards, and Design Standards for Rural Electrification.

Figure 1. NEP 2.0 Implementation Framework[3]



Descriptions and roles of key stakeholders are detailed further in Table 1 below. ~~The shading of each stakeholder in Table 1 correlates with their role in the NEP Implementation framework.~~ Note that while most stakeholders are portrayed in Figure 1, some stakeholders are not depicted in this graphic. This graphic, which is taken from the NEP, is intended to summarize the key players that EEA interacts with, but is not intended to show all relevant players in the system.

Table 1. Ethiopia Mini-grid Stakeholders

Stakeholder	Description
Ethiopian Energy Authority (EEA)	• Established as an independent sector regulator, including licensing and regulatory oversight. • Responsible for establishing standards and drafting regulations and issuing directives required for the implementation of the grid and off-grid programs. This includes social, safety, environmental safeguards, and compliance. • Defines and enforces licensing requirements, rights and obligations of parties, amendments, and certificates of competency. Moves

[3] National Electrification Program 2.0. Federal Democratic Republic of Ethiopia. 2019.

	regulatory policies into directives, including for tariff setting, for both grid and off-grid projects. • Advises the Government on licensee tariff proposals for grid and off-grid project. • Promotes energy efficiency, conservation, and standards for electrical equipment and labeling. • Responsible for settling disputes and serving as a mediator and arbitrator.
Minister of Water, Irrigation, and Energy (MoWIE)	• Federal agency with mandate to manage water resources, water supply and sanitation, large and medium scale irrigation and electricity within Ethiopia. • Shapes the design and implementation roadmap for the off-grid program via a High-Level Task Force. • Coordinates with the Steering Committee to oversee the NEP-IRM (National Electrification – Implementation Roadmap), for the grid and off-grid programs. • Approves EEA's directives and submits to the Council of Ministers for implementation.
The NEP Steering Committee	• Provides high-level strategic direction and policy guidance. • Chaired by MoWIE and supported by the DoE. • Facilitates coordination across Government Departments and Ministries. • Monitors sector-level "dashboard" of key indicators of progress and performance. • Oversees the National Electrification Program - Implementation Roadmap (NEP-IRM).
The Directorate of Electrification (DoE)	• A team within MoWIE that provides oversight and coordination of NEP implementation for the grid and off-grid programs. • Coordinates a sector-wide geo-spatial data, network, and connections planning platform • Facilitates a consultative process (coordinating the DoE, REBs, EEP, EEU, and Ministry of Health, of Education, of Water) leading to the preparation of updated geo-spatial plans. • Creates and manages the sector-wide dashboard of key indicators of implementation progress, and measures of program effectiveness.
The Council of Ministers	• Comprised of the Prime Minister, the Deputy Prime Minister, Ministers, along with additional members included by law. • ~~Reviews~~ Issues the regulations that will provide EEA with the authority to approve off-grid tariffs. • Charged with providing security to private investors in mini-grids in event of main-electric grid arrival to mini-grid site. • Issues ~~directives~~ regulations needed to regulate off-grid generation from mini-grids.
Ethiopian Electric Utility (EEU)	• Primary implementer for grid activities. • Coordinates off-grid scale-up through partnership of public and private efforts. • Currently managing development of 12 mini-grids through Engineering, Procurement, and Construction (EPC) contracts, and will ultimately own and operate those mini-grids

Ethiopian Electric Power (EEP)	• Engages in developing, financing, constructing, operating and managing plants, energy generation, and energy transmission. EEP is state-owned and was formed by the Council of Ministers.
Public Private Partnership (PPP) Board	• Responsible for encouraging and implementing private-sector infrastructure investments. (Note that the PPP Board is focused on bankable utility-scale projects and not actively promoting mini-grids). • Chaired by The Ministry of Finance and Economic Co-operation and supported by MoWIE, the Minister of Transport, the National Planning Commission, the National Bank of Ethiopia, two private sector organizations, and others.
Regional Energy Bureaus (REBs)	• Collaborates with microfinance institutions to implement the NEP off-grid program regionally. • Coordinates with Private Sector Enterprises (PSEs) and Micro Financial Institutions (MFIs). • Presently in the process of developing a grievance mechanism, demand estimation, demand activation and educational campaigns.
Productive Safety Net Program (PSNP)	• Public organization which employs members of food insecure communities for public works projects (including building infrastructure) for 6 months a year. • Established by the Government of Ethiopia and funded by international donors. • Assists with coordination of mini-grid implementation.

4. Regulation Implementation Plan

To implement a comprehensive mini-grid framework, EEA must undertake actions in the short-term, medium-term, and long-term. While other documents related to Ethiopia's NEP 2.0 define these time periods on a separate timescale, this document will use the following time periods (all relative to January 2020):

- **Short-term:** 0-6 months
- **Medium-term:** 6-12 months
- **Long-Term:** 1 year+

Table 2 provides a high-level summary of the short-term, medium-term and long-term actions for the EEA to take to implement its framework. This timeline reflects an ideal process for framework implementation. However, EEA faces uncertainty in coordinating with domestic stakeholders, so it may be necessary to extend this timeline in response to local circumstances.

Additionally, note that this Implementation Plan focuses specifically on the draft mini-grid directive. As noted above, EEA may also consider reviewing and revising existing or draft policies, directives, or regulations relevant to the mini-grid framework.

Table 2. Implementation Plan Priority and Action Summary

	Priority	Actions
Short-Term	**Priority 1:** Review, revise and finalize mini-grid framework (including draft mini-grid directive, other directives, and regulations)	• **1.1:** EEA reviews the framework and revises draft directives, with the support of USAID and NARUC. • **1.2:** EEA finalizes directives.
Short-Term	**Priority 2:** Review organizational capabilities and assess gaps	• **2.1:** EEA reviews organizational capabilities outlined in draft framework, with support from USAID and NARUC. • **2.2:** EEA assesses existing staff capacities and gaps, with support from USAID and NARUC. • **2.3:** EEA revises Implementation Plan to address gaps.
Medium-Term	**Priority 3:** Implement final mini-grid framework	• **3.1:** EEA reviews legal authority to implement mini-grid framework. • **3.12:** EEA commissions a financial feasibility analysis for mini-grids under finalized framework. • **3.23:** EEA independently or (as needed) in collaboration with others, implements framework.
Medium-Term	**Priority 4:** Supplement internal organizational capacity to meet existing gaps	• **4.1:** EEA and USAID/NARUC evaluate pathways for supplementing existing capacity. • **4.2:** EEA trains existing staff to meet new needs. • **4.3:** EEA hires additional staff and develops additional capabilities.
Long-Term	**Priority 5:** Establish a monitoring plan to track market conditions and revise the mini-grid framework	• **5.1:** EEA evaluate options for strategically revising the mini-grid framework, including policies, directives, and regulations. • **5.2:** EEA establishes process for tracking and monitoring conditions necessary for revision. • **5.3:** Under existing authority, and in collaboration with others as needed, EEA revises and updates the framework and associated policies, directives, and regulations.

4.1 Short-Term Plan

Priority 1: Review, revise, and finalize the mini-grid framework. EEA's first priority is to complete final drafts of planned directives and regulations to prepare the documents for implementation. USAID and NARUC have provided a detailed review of and recommendations for each document in the "Preliminary Draft Off-Grid Regulations Review." During the inception mission, NARUC and EEA discussed recommended revisions to the draft directive and regulations. The details of this discussion are available in the document, "NARUC Inception Mission Trip Report." The actions associated with completing this priority are summarized in the table below.

Action	Description	Status
Action 1.1	EEA, USAID, and NARUC review existing framework for content and structural revisions.	Complete
Action 1.2	EEA reviews consultant feedback and recommendations on each document.	Complete
Action 1.3	EEA, in consultation with other Ethiopian stakeholders as necessary, implements changes in documents to finalize directives and regulations.	Complete

Priority 2: Review organizational capabilities and assess gaps. To effectively implement and enforce the mini-grid framework, EEA needs to be prepared to conduct the relevant review of developer license applications, implement a tariff-setting methodology, review proposed project design set technical standards, and fulfill multiple other responsibilities detailed in the framework. In parallel to developing and finalizing the framework, EEA should consider conducting an internal capacity review to assess its abilities to perform these responsibilities. Key actions for conducting this analysis are detailed below.

Action	Description	Status
Action 2.1	USAID and NARUC review draft directive to assess organizational capabilities required to implement directive as structured. See Section 5 of this document for a summary of the key EEA required organizational capabilities outlined in each element of the framework.	Complete
Action 2.2	EEA assesses existing staff capacity to perform the work outlined in directives and identifies existing gaps. Note that EEA's capacity to complete review of mini-grid applications was discussed at a high-level during the inception mission.	Complete
Action 2.3	EEA refines the Implementation Plan to address existing capacity and capability gaps.	In Progress

4.2 Medium-Term Plan

Priority 3: Implement final mini-grid framework. Once framework language is finalized in the near-term, EEA needs to formally pass each directive according to the rules dictating EEA's authority. Additional information on EEA's jurisdictional capabilities relevant to each regulation is provided in Section 5.

Action	Description	Status
Action 3.1	EEA commissions an independent analysis of the financial feasibility and bankability of mini-grids under regulations the directive finalized in the "Short-Term" steps above. This analysis will be used to assess whether mini-grids are financially viable as regulated. If they are not viable, it is likely that the directive will need to be revised or subsidies need to be provided in order to reach the goals stated in the NEP 2.0	Not Started
Action 3.2	Either independently, or (as needed) through cooperation with relevant external stakeholders, EEA implements the directive.	Not Started

Priority 4: Supplement internal organizational capacity to meet existing gaps. While EEA may have enough capacity to meet current demand for mini-grid applications, as the country's mini-grid markets scale to meet the NEP 2.0 targets, additional support for mini-grid application review will be required. The actions below outline the steps that EEA and other stakeholders can take to ensure that there is enough capacity to meet demand. Based on a review of their capacity, EEA plans to strategically address gaps to meet required demand for mini-grid review.

Action	Description	Status
Action 4.1	EEA, in collaboration with the consultant team, evaluates pathways to address existing gaps.	Complete
Action 4.2	EEA identifies opportunities to train existing staff to perform necessary duties (e.g., train existing staff in finance, etc.) or leverage existing capacity within partner agencies (e.g. Regional Energy Bureaus).	Not Started
Action 4.3	EEA hires additional staff and develops new capacities to fill gaps in required organizational capabilities.	Not Started

4.3 Long-Term Plan

Priority 5: Establish a monitoring plan to track market conditions and revise the mini-grid framework. To ensure that the directive are regularly updated to meet evolving market conditions, EEA will need to establish and implement a process for reviewing existing directive at standard intervals. The actions below outline key steps that EEA can take to implement this process.[4]

Action	Description	Status
Action 5.1	EEA considers options for implementing a review process of the mini-grid framework, including policies, directives, and regulations.	In Progress
Action 5.2	EEA establishes process for tracking and monitoring conditions necessary for revision.	Not Started
Action 5.3	Under authority granted, EEA revises and updates the framework and associated policies, directives, and regulations.	Not Started

5. Directive Implementation Needs

Each draft regulation directive has been reviewed in detail to assess the organizational capabilities and capacity required for implementation of the directive. This section of the Implementation Plan provides further detail on considering EEA's capacity requirements to implement the directive.

EEA Capability and Capacity Requirement

For Ethiopia to meet the electrification goals set out in the NEP 2.0, the country will need to start receiving and approving mini-grid projects at a much faster pace than it has in previous years. Specifically, the NEP 2.0 estimates that 285 mini-grid projects need to be installed by 2025.[5] EEA will be responsible for reviewing and approving each of these mini-grid projects. As a regulatory agency, EEA has several

[4] Refer to this project's "Task 4C: Regulatory Approaches for Continued Modification of Mini-Grid Regulation Directives" for more information on long-term process options.

[5] National Electrification Program 2.0. Federal Democratic Republic of Ethiopia. 2019.

key responsibilities for regulating the mini-grid sector, outlined in the mini-grid framework and summarized in the table below. The table also contains preliminary staff time estimates for each of the regulatory tasks.[6]

Table 3: EEA Upfront Mini-Grid Licensing Responsibilities Per Application

Regulatory Task	Required Technical Capabilities and Duties	Preliminary Staff Time Estimate (per MG)
Project Management	• Coordinate with mini-grid developer • Meetings and correspondences related to application	*4 to 5 days*
License Review	• Review mini-grid project financial information • Review site layouts and drawings • Possess a technical understanding of mini-grid directive	*2 to 3 days*
Tariff Application Review	• Assess reasonableness of cost inputs and key operational parameters (load growth, etc.) • Conduct revenue requirement analysis • Conduct tariff review within 60 days of receipt and explain response	*3 to 4 days*
Quality of Service Standards	• Reviewing and approving terms and conditions of supply agreements	*1 day*
Technical Standards	• Review technical standards of mini-grid projects to assess whether they are compliant with, or exceed, the current regulations	*1 day*

In addition to the upfront regulatory review time, EEA also has several ongoing tasks related to regulating mini-grid projects. A summary of these tasks and preliminary time estimates is provided in Table 4.

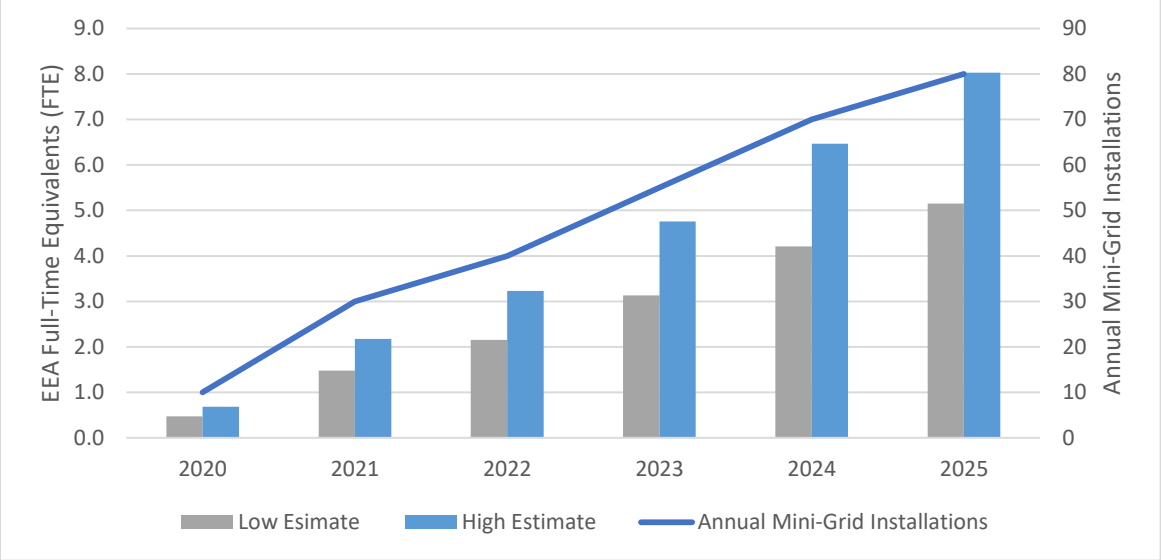
Table 4. EEA Ongoing Mini-Grid Oversight Responsibilities

[6] Note: These estimates are developed based on the Consultant Team's experience supporting these tasks in other contexts and may not reflect the time required for each task in Ethiopia specifically. In particular, additional labor time may be required for the license review and the tariff application review processes.

Regulatory Task	Required Technical Capabilities and Duties	Preliminary Staff Time Estimate (per MG per year)
Complaint Investigation	• Investigate and adjudicate complaints regarding quality of service (or other complaints from community members)	*1 to 2 days*
Periodic Tariff Review	• Review tariff (currently conducted every four years based on draft regulations)	*1 day*

Based on an estimate of the time it takes to complete these upfront and ongoing steps of mini-grid project review, along with the number of mini-grid projects that are required for Ethiopia to meet its electrification goals, Figure 2 projects the required full-time employees EEA must maintain to review mini-grid applications until 2025. This analysis is intended to support EEA in considering the level of staff time investment it will need to reach the 2025 goals; however, the projection is not considered to be final. The figures can be adjusted as EEA learns more about how long mini-grid regulatory review takes, as well as how much efficiency it expects to gain from any combined or bundled applications for licenses for multiple projects.

Figure 2. Annual Mini-Grid Installations and Capacity Requirement (2020-2025) [7]



As demonstrated by the figure 2, EEA will need to scale up to five to eight full-time equivalents (FTE) by 2025 in order to review the number of mini-grid projects required to meet the NEP 2.0 goals. The greatest portion of the technical time will likely be for review of tariff applications, which requires an

[7] Note that the figure assumes a trajectory in annual installations to achieve NEP 2.0 goal of 285 mini-grids by 2025.

understanding of project finance and economics. Specialized expertise will also be required for reviewing licenses and design standards.

After initial mini-grid licensing procedures are completed for installed mini-grids in 2025, it is anticipated that the EEA will need to maintain a staff of 2-3 FTE for ongoing inspection and analysis for the estimated 285 mini-grid systems that will be in operation (assuming new mini-grid installations do not continue). This indicates that EEA's staffing requirement will drop off considerably once its electrification target is reached.

In light of this anticipated trajectory for mini-grid licensing demand, the structure of this staffing is also important for EEA to consider. As EEA is ramping up its staffing for mini-grid project review, it can consider how to implement a staffing structure that is resilient to potential staff departures or other disruptions. The greater the number of staff working on mini-grid project reviews, the more information is spread across team members, which insulates the EEA against a loss of capacity when staff turns over. This distribution of knowledge can be accomplished as EEA hires more staff, and in the near-term can be accomplished by assigning responsibilities across divisions. For example, team members that are responsible for conducting financial analysis for the main utility grid can also be assigned to reviewing tariff calculations. If multiple team members are trained across the main utility grid review and mini-grid review, then the number of staff with relevant knowledge and experience will increase and EEA will be more resilient to staff departures. Furthermore, once the need for license review is not as urgent, these staff can more easily be assigned to other work within the agency. The EEA can also explore opportunities to leverage the capabilities of partners, such as Regional Energy Bureaus, to alleviate some of the internal staff capacity that is required for implementing the framework.