MINISTRY OF MUNICIPALITY AND ENVIRONMENT

INFRASTRUCTURE PLANNING DEPARTMENT.

Planning and Load Criteria for Electrical Distribution Substation (Government Housing Subdivision)

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1.0 INTRODUCTION

Most planned subdivisions in the State of Qatar are planned and serviced by the Government. As part of their duties, the Infrastructure Planning Department (IPD) of the Ministry of Municipality and Environment (MME) has been entrusted to ensure that the new development is provided with all required services. The Infrastructure Planning Department has therefore set some criteria to be applied to any new government housing development concerning the required electricity network as shown in the following pages.

2.0 ABBREVIATIONS

Abbreviations used in this document are the following:

Abbreviation	Description
MME	Ministry of Municipality and Environment
IPD	Infrastructure Planning Department
UPD	Urban Planning Department
QGEWC	Qatar General Electricity and Water Corporation
KME	Kahramaa Electricity

3.0 REFERENCES

1. EP-DP-C1: Electricity Planning Regulations for Supply
2. 2014/302-684: Kahramaa Standard Substation Plots
3. IPD-MME-EE-SS: Standard Parameters, Types & Orientations of Substations
4. IPD-MME-EE-GLED: Electrical Distribution Guidance for Location

4.0 PLANNING CONSIDERATIONS

The government housing subdivisions are planned by the Urban Planning Department. UPD then requests from IPD to study and to ensure that the infrastructure requirements for the subdivision are satisfied.

Based on the subdivision design, the Infrastructure Planning Department has the following considerations with respect to the supply of electricity:

- Satisfy the electrical network requirements with correlation to the width of proposed Right of Way and the MME utility cross sections.

- Maximize the numbers of intended residential plots and avoid reducing and eliminating as much as possible while taking into consideration the required substations.
- If possible, avoid utilizing Green Land or Landscape area for the location of Substations.
- Precautionary of possible future relocation of existing/substation plots.
- Avoid allocating a Double Indoor substation in a narrow Right of Way.
- Allow even distribution of LV cables considering the limit of 350m maximum length.
- Reduce, as much as possible, the visual impact of the substations from the road visibility.
- Avoid allocating an excessive numbers of substation plots. However, some general utility plots will need to be set aside to cater for potential future network expansion.
- Avoid allocating substation plot next to an intended residential plot that will be ground to future relocation of substation plot.
- Allow extra plots and ensure government land to be available for future network expansion in case needed.

5.0 LOAD CRITERIA

The specified distribution substation plots in a subdivisions has been designed to cater only for the residential areas which is limited and depend on the plot sizes as tabulated below:

LOAD CRITERIA		
Plot Size	**Plots /Feeder**	**Allowable Cutout**
500 +/- SQ.M	4	150A/90kW
501 SQ.M - 1500 +/- SQ.M	2	200A/120kW
1501 SQ.M - 3000 +/- SQ.M	1	350A/210kW
3001 SQ.M - 5000 +/- SQ.M	2 FEEDERS / PLOT	2(350A)/420kW

In general, substation plots will accommodate a single indoor substation consisting of two (2) transformers. Each transformer has a feeder pillar of six (6) ways. Thus, there will be twelve (12) feeders per single indoor substation (maximum). However, IPD considers a maximum of only 10 feeders per single indoor substation to be used so as to allow for two (2) feeders as a spare for future use.

[Note: Standard substation parameters required by Kahramaa Electricity are illustrated in the MME - 2018 Guidelines for Types of substation plots and Orientations document number IPD-MME-EE-SS-01-R0].

6.0 LOW VOLTAGE SUPPLY RESTRICTION

In case a residential plot is greater than 5,000 square meters, its electrical supply from Kahramaa will be restricted. In this case or in case of large residential and commercial plot requiring more than 700 Amperes (420 Kilowatts), the plot owner shall be responsible to provide, either his own substation or cede part of his land to Kahramaa, to permit them to install a substation for this particular user.

7.0 MAJOR CONFLICT

Major conflict with any existing network will be highlighted by the Infrastructure Planning Department prior to the finalization of the proposed Government Housing Subdivisions infrastructure design. Major existing networks are defined as follows:

- Kahramaa existing overhead transmission lines such as 132kV, 220kV and 400kV networks.
- Kahramaa existing extra high voltage underground cables.
- Kahramaa main water pipes
- Qatar Petroleum existing pipes and other major existing networks

[Note: Qatar Rail route with its protection zone also considered a major conflict].

8.0 RESERVED PLOTS OR GOVERNMENT LAND

The Infrastructure Planning Department will advise as to the number of the required substation plots for any government housing subdivisions based on loading criteria and planning considerations. Utility plots are parcels that are reserved for future use in case of need for additional substations or other utility and thus will be readily available for Kahramaa or other service provider network expansions.