Eskom Distribution

Controlled load shedding

April 2023

Key Challenges around Emerging Risks

Challenges and risks

- The key response objectives to manage the emerging risk in this regard are:
  - Ensure the operability and security of the national power system
  - Manage the impact on critical loads and customer plants with essential load requirements
  - Minimise the impact on the economy and society
  - Manage reputation and stakeholder confidence
- The requests to minimize the impact of loadshedding are as a direct result of the hardships experienced and the potential human catastrophe within the following sectors:
  - Hospitals (Threat to Life)
  - Water
  - Agriculture (Food Security)

Load shedding Framework – NRS 048-9/2017

Principles for load shedding

1. Protection of under frequency scheme
2. Equitable participation by all customer loads
3. Protection for all critical and essential loads
   - Safety, environments, critical infrastructure
4. Availability of all load shedding schedules
5. Nature of the load shedding schedules
   - Deal with localized requests
6. Declaration of a system emergency
7. Minimized impact on customers
8. Predictability and advance warning of load reduction
9. Customers participating in load reduction

NRS 048-9/2017

Whilst laying down a national basis for the consistent application of load reduction and restoration practices by licensees (of NERSA), this part of NRS 048 also addresses:

a) options available to customers to minimize the impact of load shedding (e.g. alternatives to load shedding such as load curtailment);

b) the responsibilities of a variety of stakeholders (such as individual customers and local government) in relation to providing essential load information and protecting critical installations from the impact of load shedding; and

c) measures that need to be taken within individual customer installations in the event of supply interruptions or load shedding and curtailment.

The development of mandatory load reduction requirements requires several factors to be taken into consideration. These factors sometimes present conflicting requirements, and need therefore to be balanced on a pragmatic basis. The factors considered in developing this part of NRS 048 are:

a) the safety of people, the environment, and potential damage to plant associated with a critical national product;

b) predictability of when and for how long a customer will be interrupted or required to reduce demand;

c) equitable participation by customers, and how load reduction requirements are allocated between various regions across the country, metros, municipalities, large industrial customers, and international customers (see NOTES 1 and 2);

d) the social impact of load shedding and curtailment;

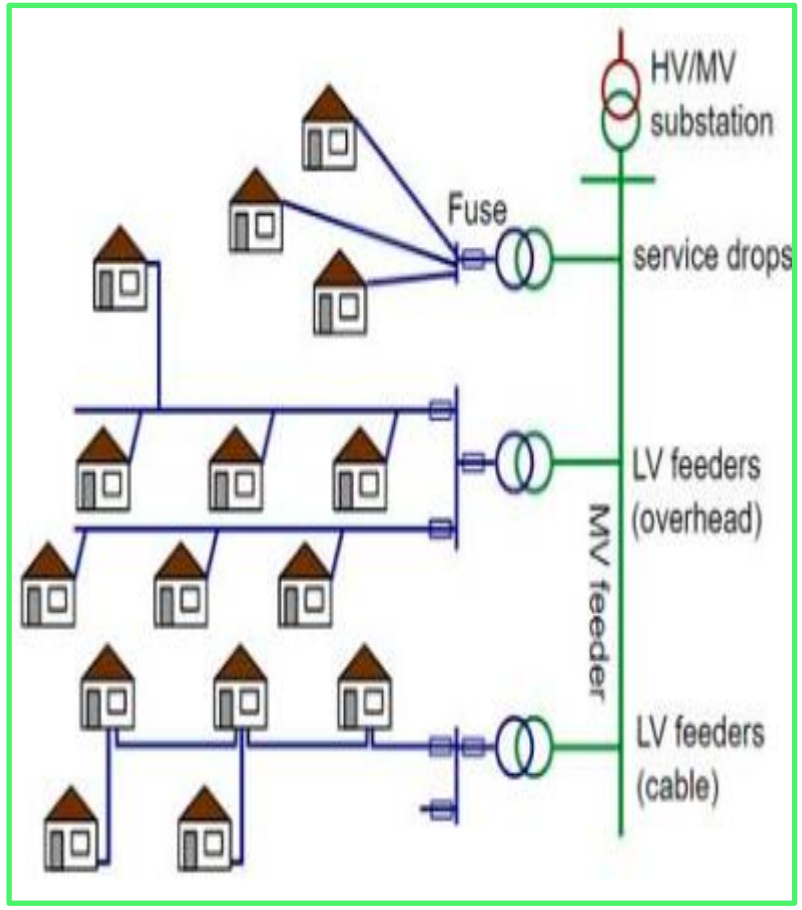
e) economic impact on the country;

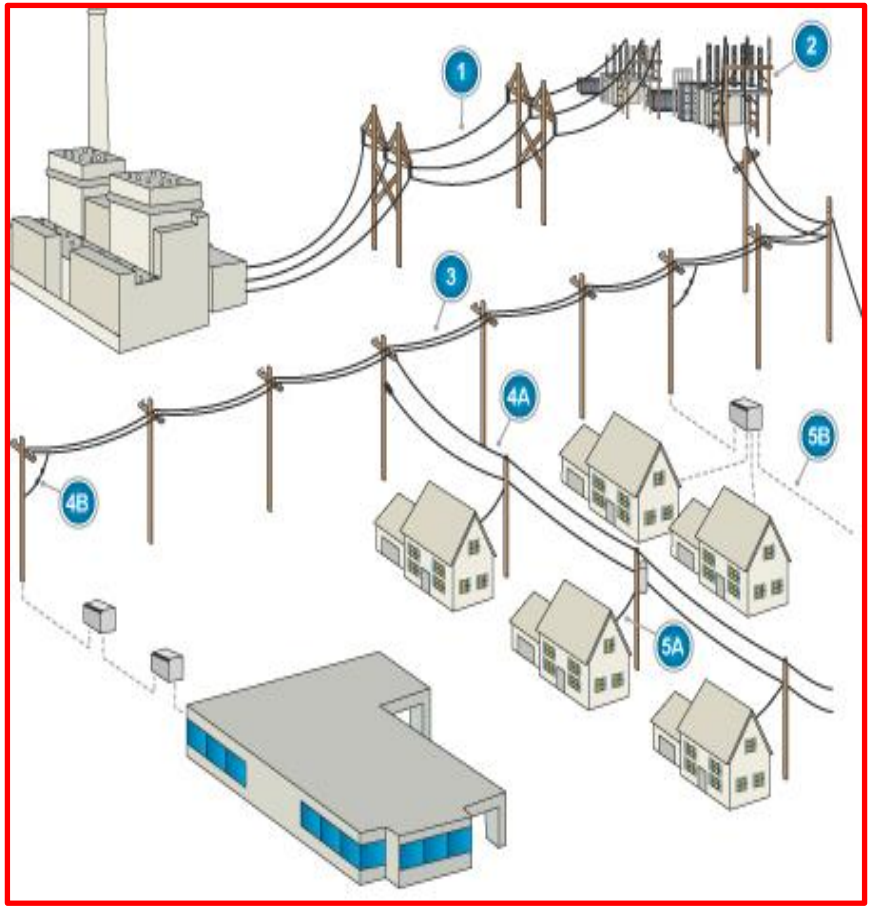
f) technical constraints on executing load shedding and curtailment or restoration; and

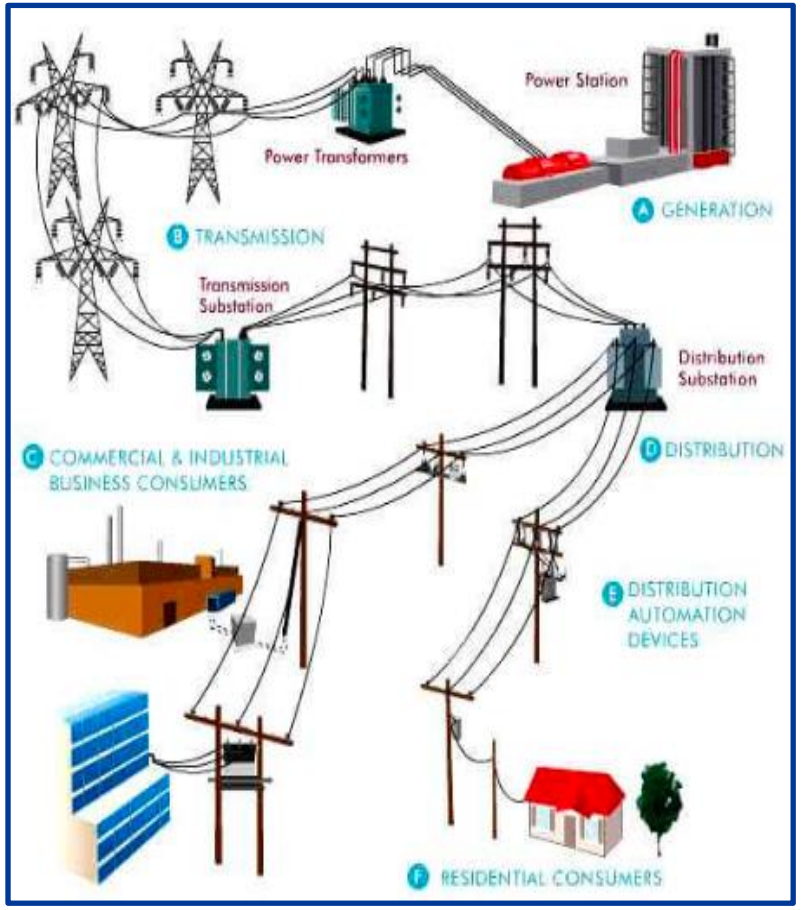
g) the magnitude of the load reduction required and the speed at which this can be achieved.

NOTE 1 *Equitable participation* refers to a *striving for general fairness* in the manner in which customers are required to participate in load reduction schemes. It is recognized that *equal participation*, on the other hand,

Typical Distribution feeder







- Different representations of various distribution feeders

The following shall be applicable to prioritized facilities where feasible:

Short term

- Customers with dedicated supply infrastructure should apply for load curtailment by completing the prescribed application form.
- Customers supplied by the same feeder/ substation can group together and apply for load curtailment.
- Review the schedule (duration and or time) where possible, to accommodate the needs of majority of customers (the criteria will be based on impact/number of commercial customers) – Customers are to submit their needs to Eskom and Eskom to ensure load is always available for reduction.
- Customers in municipal supply area where switching is done by Eskom and possible to exempt/curtail, municipalities to be allowed to do own switching to accommodate customers.
- Reconfigure the network to allow possible isolation where possible.
- Customers to install micro grids, PV's and battery containers for critical loads especially during critical times such as harvesting, irrigation and refrigeration- this will require customers to identify their essential load.

Medium/long term

- Where it is financially feasible, build infrastructure for a dedicated supply or isolation-this can be done by Eskom or via self-build process
- 4.7.2 Prioritise installation of smart meters on critical feeders supplying agriculture customers that contribute to food security to allow load limiting capabilities.

Review of the load shedding schedules

- Customers to submit the most favourable time slots in a day including substation name/feeder name if known or pole number and account numbers. Majority of the customers/load (whichever is higher) from a feeder should be commercial/industrial customers for the changes to be considered and effected.

- **Dedicated supply for Eskom customers**
- Customers opting for dedicated supply should apply by submitting applications to Eskom to isolate them, by completing the prescribed application form and submitting it to their local Eskom offices.

Next Steps

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- Ongoing review of society impact for loadshedding to avert humanitarian crisis
- Alignment and preparation for blackout across all division including readiness of back up facilities of buildings
- Simulation Exercises to be executed in line with national disaster declared
- Training on relevant protocols
- Continue with the established industry workgroup i.e. Control Centre Managers Forum (Eskom and Munics/Metros)

End