# Target Grid Planning for Distribution Systems with NEPLAN®

Challanges	Long-term network planning, optimization of network costs and reliability
Customer	Distribution grid utilities
Advantages	Powerful calculation algorithms, userfriendly graphical interface
Solution	Basic planning with the modules load flow and short circuit, modules Reliability and Hosting Capacity for specialized analyzes

A target network is intended to ensure long-term high efficiency in terms of network costs and reliability. Planning is based on power forecasts for existing consumers and producers. In addition, new potential consumers such as e-mobility and decentralized generation such as photovoltaic systems must also be considered.

Cost optimum
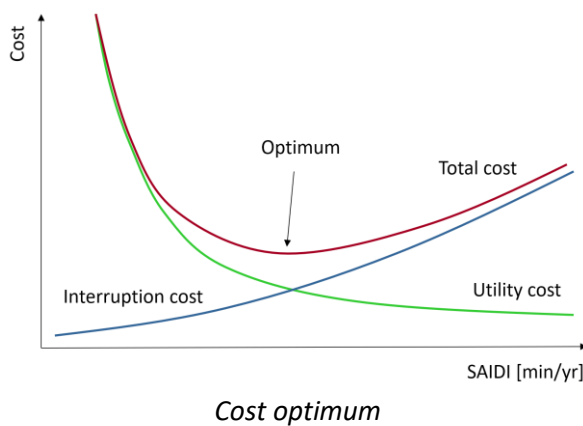
Loadflow and Short Circuit Calculation

Compliance with the defined planning criteria is ensured by the NEPLAN load flow and short-circuit calculation modules. Various technical requirements are checked, e.g.

- Voltage limits
- Network components loading
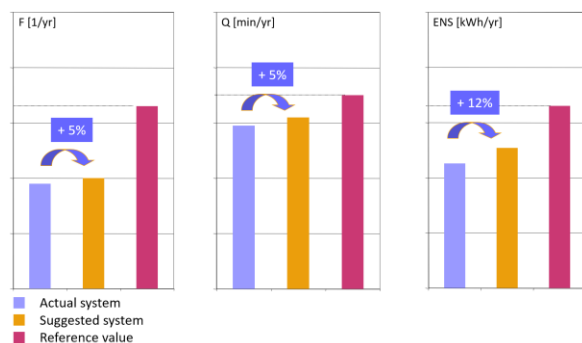- Minimum and maximum short circuit currents

Reliability Analysis

The reliability analysis module calculates the system reliability indices
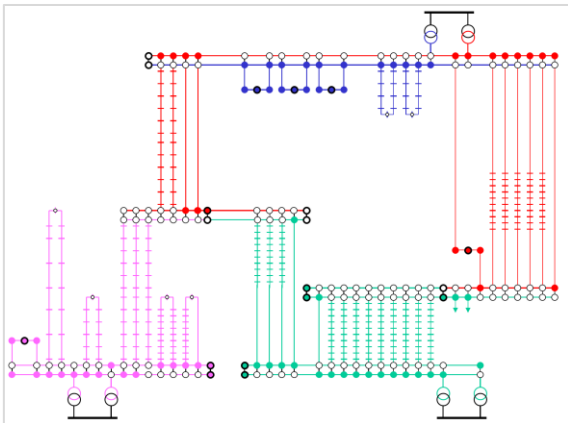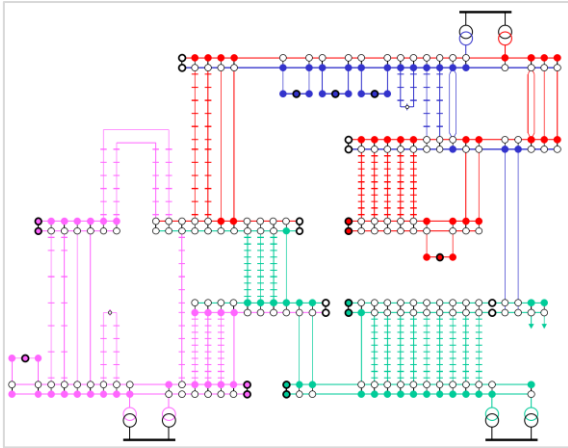
- SAIFI [1/yr]
- SAIDI [min/yr]
- ASIDI [min/yr]
- CAIDI [h]
- ASAI [%]

and also the reliability indices for each load element

- Interruption frequency [1/yr]
- Interruption time [h]
- Unavailability [min/yr]
- Energy not supplied [MWh/yr]

Reliability for actual and planned target system

Example of a actual system and the corresponding planned target grid

Hosting Capacity / E-Mobility

The module Hosting Capacity uses stochastic methods to analyze the additional installable power for consumers and dispersed generators for a specific network planning variant. This ensures that predicted additional load or generation power can be added to a planned network, even if the future locations of new consumers and generators are not yet known.
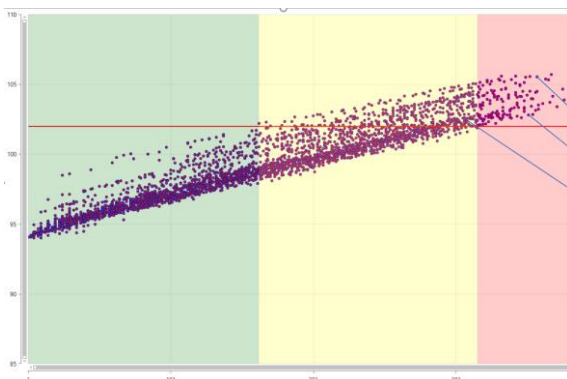
Hosting capacity of a medium voltage feeder