

GGP-VQM: Financing of VQM Programs

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- **Cost assessment:**

- VQ monitoring devices
- Data collection, transmission, analysis and storage
- Maintenance

- **Financing framework:**

- Source of funding?
- Who approves and how?



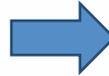
Estimation for a hypothetical medium-size European country:

- Network assumptions

- 150 EHV/HV substations
- 650 HV/MV substations
- 5 000 MV feeders
- 120 000 MV/LV transformers
- 10 million customers
- CAPEX: 83 €/customer/year
- OPEX: 70 €/customer/year

- National VQM program assumptions

- 1 bus monitored in:
 - each EHV/HV substations
 - each HV/MV substations
 - 0,5% MV/LV transformers



1400 units

National VQM program (1400 units):

- Capital expenses

- Device cost: 5000 – 10 000 €/device
- Device life-time: 10 years
- Roll out: 10 years



CAPEX: 0.7 – 1.4 million €/year

0,09% – 0,17%

830 million €/year

CAPEX of the GRID

- Operational expenses

- 375 €/device/year
- 375 €/device/year (calibration)



OPEX: 525 000 – 1 050 000 €/year

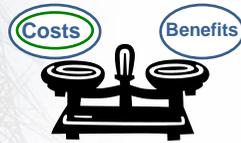
0,08% – 0,15%

700 million €/year

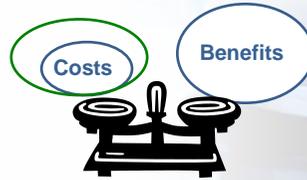
OPEX of the GRID

Financing Framework

- Grid tariffs



DOMESTIC



INDUSTRIAL

Well designed grid tariffs can distribute the expenses fairly!

- **Spreading expenses:**
 - per consumed energy
 - ratio of installed power
 - maximum hourly consumption

Financing of VQM Recommendations

- **Recommendations:**

- NRAs should follow their national VQM programs and keep an inventory of respective expenses.
- It is reasonable to allocate the national VQM program expenses to all customers, through the use of grid tariffs, since they represent less than 0,3% of the annual CAPEX and OPEX.
- Special attention should be given to grid tariffs design in order to balance the costs and benefits of the different type of customers.
- NRAs are responsible for approving the annual budget for national VQM programs. However, the figures of such investment should be more detailed and transparent.
- Further cooperation of network operators with research institutes and universities is needed in order to apply VQM data towards a more cost-effective planning and operation of the electricity network.

Thank you for your attention!

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