

# 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 and how approves?



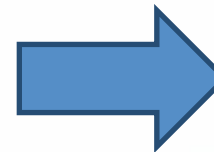
## Estimation for a hypothetical medium-size European country:

- 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

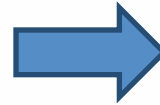


**1400 units**

## 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**

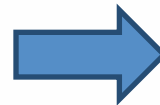
**0,09% – 0,17%**

830 million €/year

CAPEX of the GRID

### •Operational expenses

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



**OPEX: 525 000 – 1 050 000 €/year**

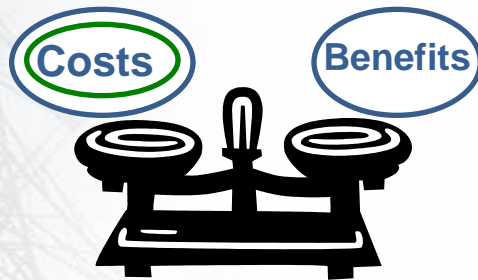
**0,08% – 0,15%**

700 million €/year

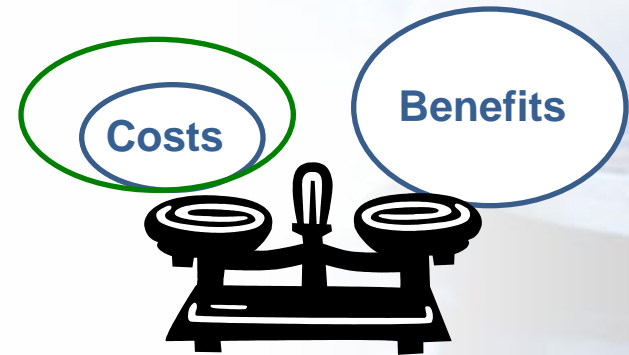
OPEX of the GRID

## Financing Framework

- Grid tariffs



DOMESTIC



INDUSTRIAL

**Well designed grid tariffs can fairly distribute the expenses!**

➤ **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 to keep 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 0,2% 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 to approve annual budget for national VQM programs. However, the figures of such investment should be more detailed and transparent.
- Further cooperation of the network operators with research institutes and universities to apply VQM data towards a more cost-effective planning and operation of the electricity network is needed.

Thank you for your attention!

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