ENERGY AGENCY
OF THE REPUBLIC OF SERBIA

Features of tariffs in electricity sector in Serbia

Belgrade, 31. October 2007.

Energy law

New Energy law is adopted in July 2004.

What is new:

- Tariff and eligible customers
- Regulated and freely formed prices
- In electricity – 3 tariff systems

Tariff and Eligible customers

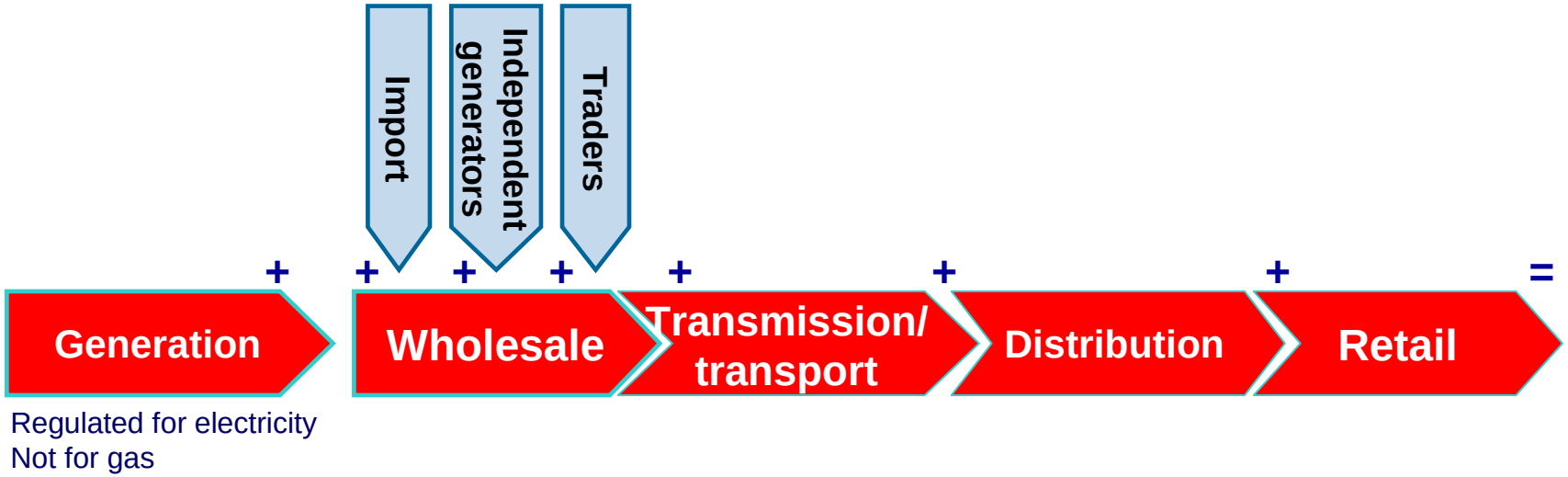
- Tariff customer – can not choose his energy supplier.
- Eligible customer - buys energy for own needs and can choose his energy supplier at his own discretion. Minimum annual energy consumption necessary to obtain the status of the eligible consumer is 3 GWh for electricity (potential opening of the market is 21%, 350 consumers).

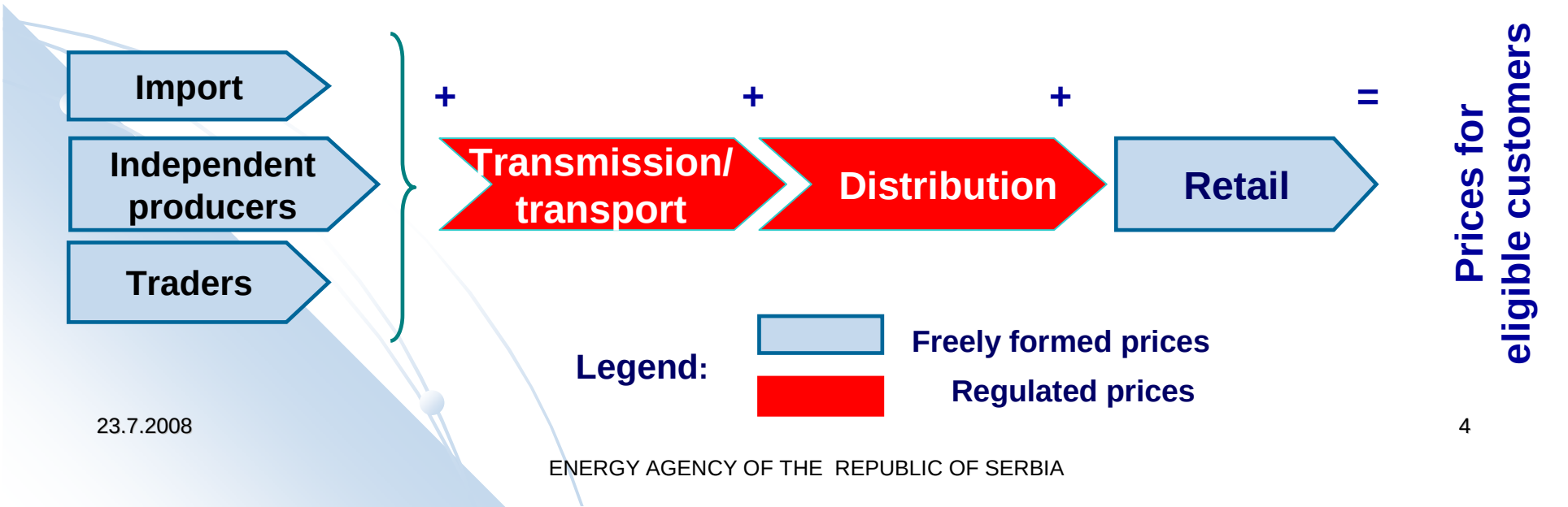
From 2008. all customers except residential will be eligible customers.

From 2015. all customers will be eligible customers.

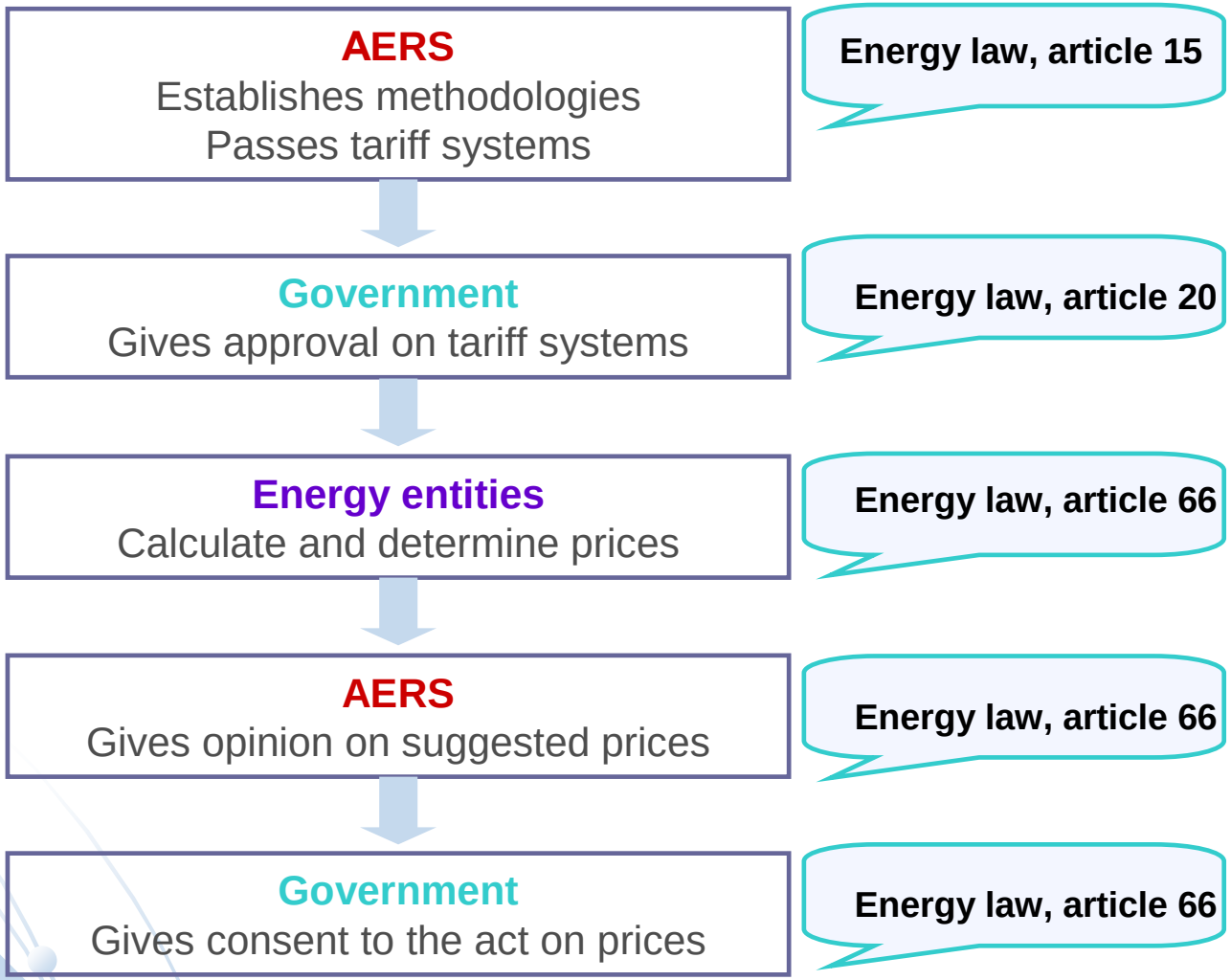
Prices for tariff and eligible customers

for electricity and natural gas





Algorithm of price regulation and jurisdiction



Adopted methodologies (electricity sector)

Methodologies for:

- use of system for electricity transmission
- use of system for electricity distribution
- calculating electricity prices for tariff customers

Process of calculating prices

There are 2 phases in a process of calculating prices:

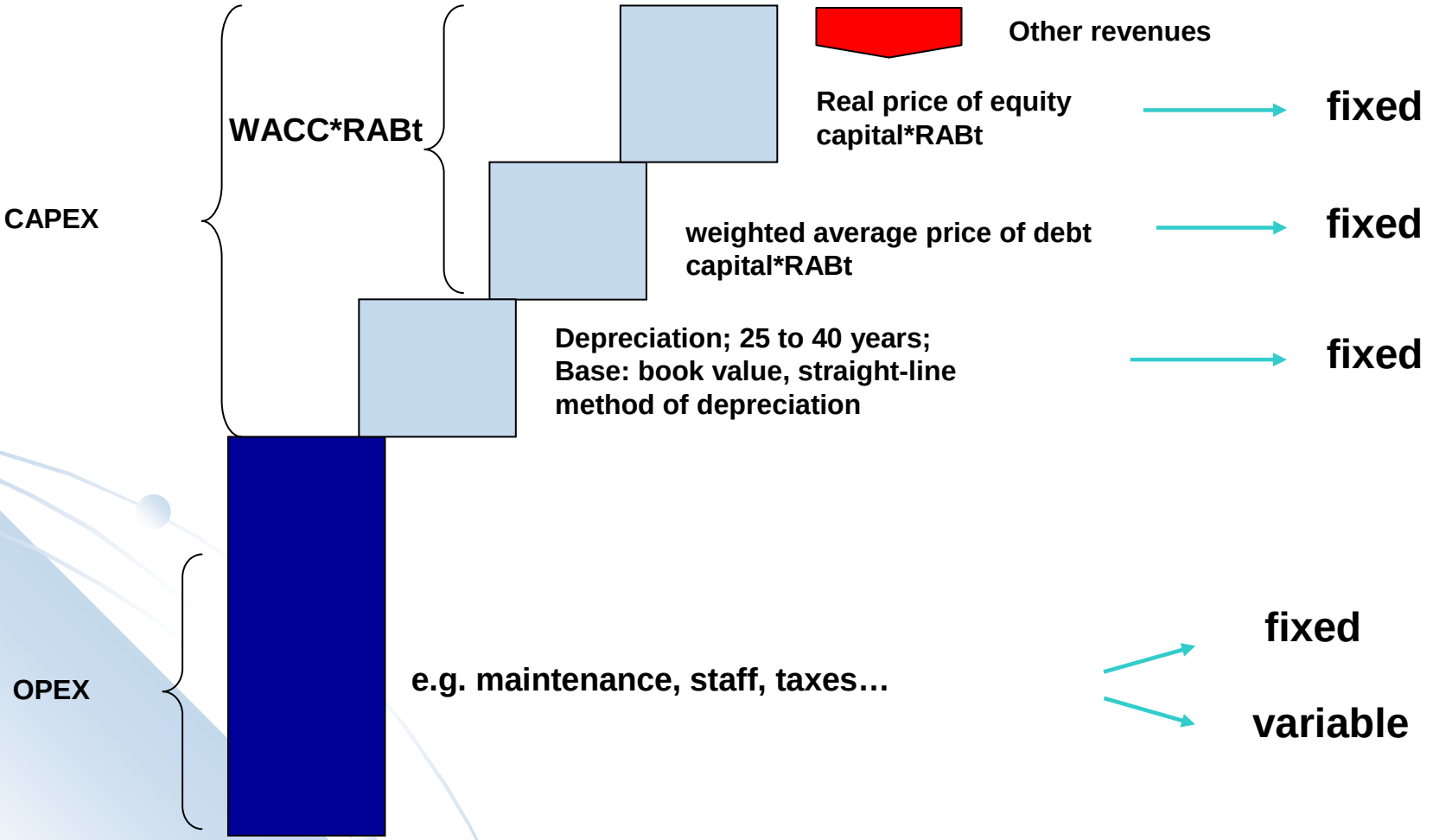
- Phase 1:

  Setting of Maximum allowed revenue of an energy entity (based on Methodologies...)

- Phase 2:

  Allocation of Maximum allowed revenue to tariff elements, tariff rates and category and groups of consumers (based on Tariff systems)

MAR – Building blocks approach



Typical elements of MAR

MARt = OPEXt + Dt + WACC * RABt – ORt + KEt

where:

- t – regulatory period,
- MARt – maximum allowed revenue for the performance of the regulated activity in the period t (dinars),
- OPEXt – operational costs in the period t (dinars),
- Dt – depreciation costs in the period t (dinars),
- WACC – the rate of return on regulated assets (%),
- RABt – regulated asset base in the period t (dinars),
- ORt – other revenues in the period t (dinars),
- KEt – adjustment factor in the period t (dinars).

Desegregation of activities

- Costs, Assets and Other Revenues reported in regulatory accounts must be disaggregated among regulated activities and non-regulated activities.
- Energy entities are obliged to provide independent audit and to submit audited reports for each energy activity to AERS.

OPEX

Operating costs are costs which are directly incurred by the regulated activity, and those which represent a share of joint or common costs. They comprise further justified costs:

- material costs
- costs of salaries, benefits and other personal expenditures
- production services costs,
- non-material costs

DEPRECIATION

Depreciation is a systematic allocation of the cost of an asset to the accounting periods in which the asset provides benefits to the entity.

Tariff methodologies use straight-line depreciation method.

The depreciation costs are calculated for:

- existing assets
- assets that will be activated in the monitored regulatory period.

WACC

WACC is defined as the average rate of return needed to provide an appropriate return to investors.

WACC is calculated according to the following formula:

$$WACC_{(pre\text{-}tax)} = (SK * CSK) / (1 - SP) + PK * CPK$$

where:

- SK – share on equity in financing regulated assets (%),
- CSK – actual price of equity prior to taxation (%),
- SP – rate on tax on profits (%),
- PK – share on debt in financing regulated assets (%),
- CPK – weighted average price of debt (%).

where SK + PK = 1

RAB (1)

RAB is used for the calculation of the rate of return on assets employed that the energy entity is allowed to obtain in the regulatory period.

The value of the regulated assets is calculated according to the following formula:

RSt = (pRSt + kRSt)/2

where:

- RSt – regulated assets in period t,
- pRSt – opening value of regulated assets in period t,
- kRSt – closing value of regulated assets in period t.

RAB (2)

RAB includes only fixed assets such as:

- intangible assets (without goodwill) and
- tangible assets (real estates, equipment and plants).

RAB does not include:

- capital contributions and
- investments in assets which are not going to be activated in the regulatory period and which are not prudent and efficient.

Other Revenues

Other revenues, besides revenues earned through carrying out the regulated energy activity are revenues earned by employing regulated assets for carrying out activities such as:

- revenue from selling side products and services,
- revenues earned through improving own performance,
- revenue earned through selling assets,
- and other revenues.

Adjustment Factor

Adjustment factor corrects the MAR for the following regulatory period.

The deviation between actual revenue and calculated revenue based on actual energy parameters and the value of justified costs and revenues earned in the previous regulatory period.

Specific items in methodologies (1)

Transmission and TSO:

OPEX

- regulatory fee
- costs of ancillary services
- costs of reimbursing losses

Other revenues

- ITC (CBT) mechanism
- Allocation of interconnection capacities

Specific items in methodologies (2)

Distribution and DSO:

OPEX

- use of transmission system costs
- costs of reimbursing losses

Specific items in methodologies (3)

Generation:

New element

- The penalty for unavailability on the basis of exceeded planned rate of equivalent forced interruptions

Other revenues

- part of the revenue from selling electricity in the free market
- part of the revenue from providing system (ancillary) services

Adopted tariff systems (electricity sector)

AERS passed and Government gave approval on 3 tariff systems:

- for electricity transmission system access and utilisation
- for electricity distribution system access and utilisation
- for electricity settlement for tariff buyers

Application of tariff rates - electricity

- Tariffs for transmision
  - post stamp method
  - tariffs are same for all users of system
- Tariffs for use of distribution system
  - post stamp method
  - tariffs are diferent among distribution companies
- Tariffs for tariff customers for delivered electricity to the same category are equal on the whole territory of the Republic of Serbia.

Main principles

- **Each consumer pays for electricity proportionally to costs incurred in the system :**
  - according to volume and manner of electricity consumption
  - according to power used and point of connection to the system
- **Stimulating of rational consumption of electricity**
- **Efficient use of available generation, transmission and distribution capacities**
- **Non-discrimination which, amongst other things, implies lack of social component in tariff system**

Other requests

- **Applicability of Tariff System in practice depends on:**
  - technical equipment at metering points
  - legal restrictions

- **Straightforwardness/simplicity depends on:**
  - use and manner of electricity consumption
  - daily, monthly and season fluctuation in consumption
  - consistent application of ground principles of setting tariffs – greater simplification = greater discrimination of consumers

Criteria for cost allocation

Allocation depends on:

- **Cost structure**
  - fixed and variable
  - by voltage levels
  - costs of specific equipment and services
  - costs of losses and system services
- **Structure of generation, transmission and distribution capacities**
- **Electricity generation and consumption**
  - total
  - by type of generation capacity
  - by voltage levels
  - by consumption groups
  - within each consumption group

Tariff system for electricity settlement for tariff buyers (1)

Category of customers:

- metering - active energy, reactive energy and maximum demand
  - high voltage consumption
  - medium voltage consumption
  - low voltage consumption
- metering – active energy only
  - consumer spending (households, commercial)
  - public lighting

Tariff system for electricity settlement for tariff buyers (2)

Tariff elements are:

- demand (kW)
- active energy (kWh)
- reactive energy (kvarh)
- metering point

Tariff system for electricity settlement for tariff buyers (3)

Tariff rates for tariff element demand:

- accounting demand
  - monthly maximum active power – for customers with power metering - high, medium and low voltage customers
  - approved demand established by the approval for the connection – for customer spending (without power metering)
- excessive demand set-up
  - applied for customers with power metering

Tariff system for electricity settlement for tariff buyers (4)

Tariff rates for tariff element active energy:

- higher daily tariff rate for active energy
  - applied during the day – 16 hours
- lower daily tariff rate for active energy
  - applied during the night – 8 hours
- single tariff metering
  - applied during the all day
- active energy – public lighting
- active energy – neon signs
  - group within public lighting category – use electricity for the lighting of billboards

Tariff system for electricity settlement for tariff buyers (5)

- Tariff rates for tariff element active energy – category of customer spending:
  - tariff rate for rational consumption – green zone
    - monthly level by 350 kWh
  - tariff rate for moderate consumption – blue zone
    - monthly level over 350 kWh to 1600 kWh
  - tariff rate for high consumption – red zone
    - monthly level over 1600 kWh

Tariff system for electricity settlement for tariff buyers (6)

- Tariff rates for tariff element reactive energy:
  - reactive energy
    - applied to the amount of reactive energy corresponding to the factor $\cos(\varphi) \geq 0{,}95$
  - excessively taken reactive energy
    - applied to the part of the amount of reactive energy corresponding to the factor $\cos(\varphi) < 0{,}95$
- Applied for customers with reactive energy metering - high, medium and low voltage customers

Tariff system for electricity settlement for tariff buyers (7)

- Tariff rate for tariff element metering point:
  - metering point charge
    - applied for all customer categories
    - establish in equal monthly amounts for each metering point

Issues to be dealt with (1)

- Accounting unbundling – monitoring
- Incentive regulation
- Benchmarking

Issues to be dealt with (2)

- How to set tariff for low voltage consumers bearing in mind number(3200000) and consumption structure of households :
  - Connection demand from 5,75 kW to 63 kW
  - 50 % customers consumes, during one year, up to 350 kWh per month
  - 25 % customers consumes, during one year, 600 kWh per month
  - 5 % customers consumes, just during winter, over 1600 kWh per month

Issues to be dealt with (3)

- Dealing with and controlling power in households – power metering and limiting devices
- Part of power for all groups in all TS (electricity and use of distribution and transmission)
- What measures listed in TS stimulate rational and efficient electricity consumption
- Vulnerable customers
- Damage compensation – defined in TS or not?

THANK YOU!

Q U E S T I O N S ?

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