

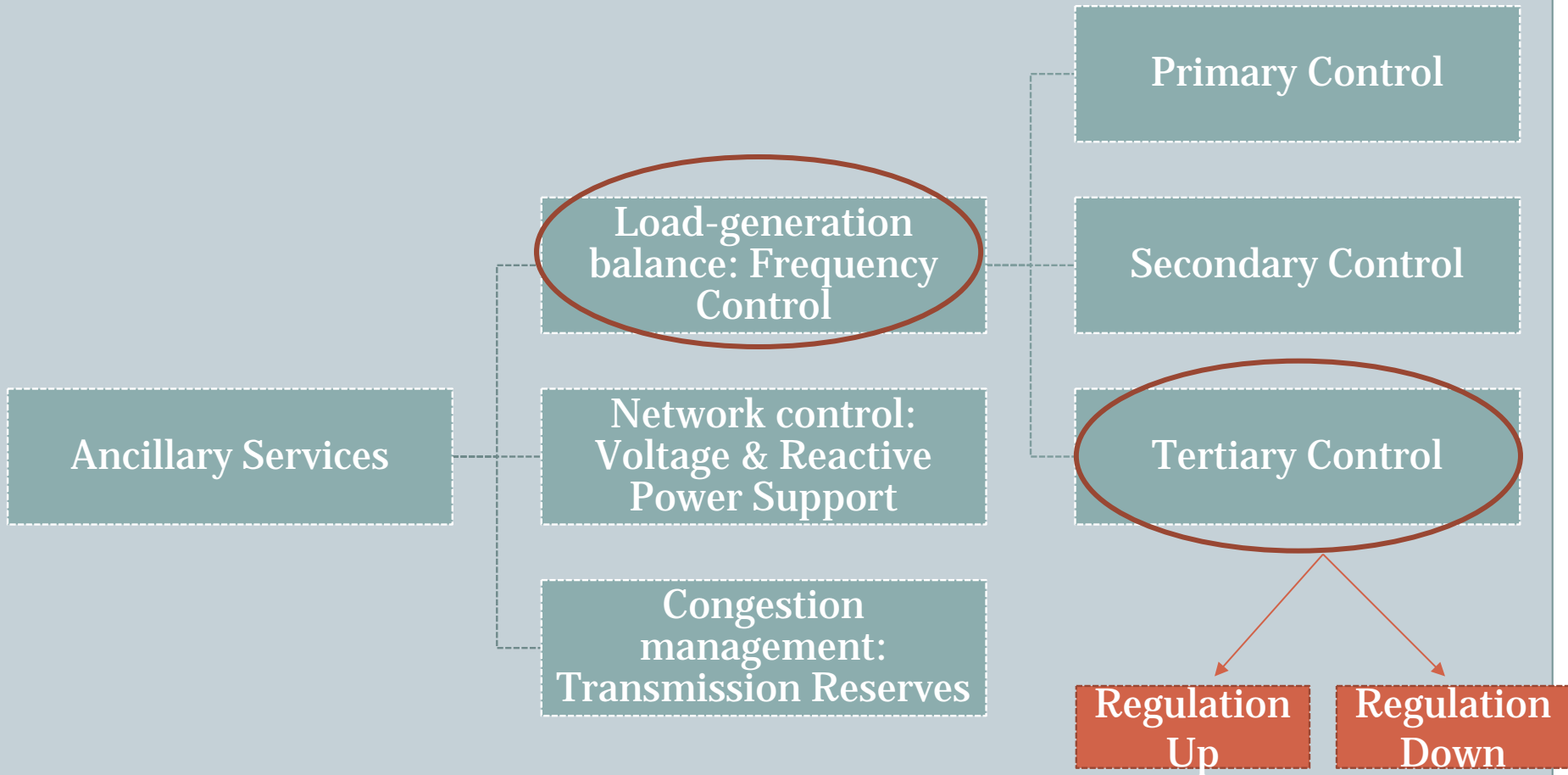
# Ancillary Services: Regulatory Framework



**USAID-GIZ INTERNATIONAL CONFERENCE  
ON LARGE-SCALE GRID INTEGRATION OF  
RENEWABLE ENERGY**

**7<sup>TH</sup> SEPTEMBER, 2017**

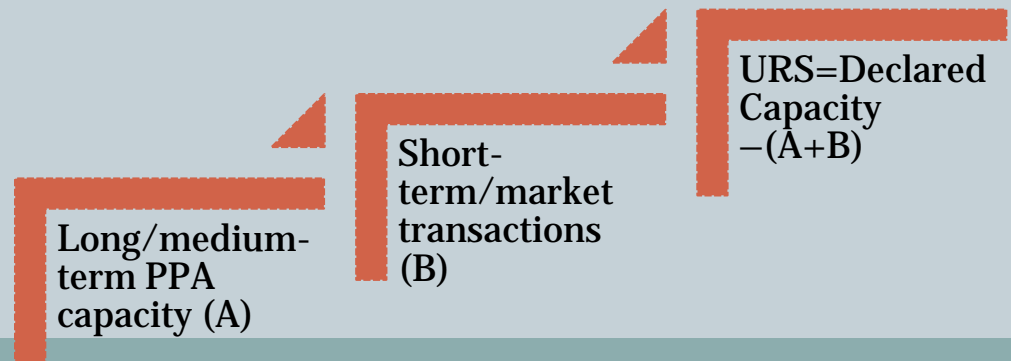
# Ancillary Services



# Reserves Regulation Ancillary Services: Objective & Scope



- **Objective:** to restore the grid frequency to desired level and to relieve congestion in the transmission network
- All generating stations that are regional entities and whose tariff is determined or adopted by the Commission for their full capacity
- **Regulation Up:** utilize un-requisitioned surplus of regional generating stations to increase supply
- **Regulation Down:** instructions to decrease generation if load is lower than expected



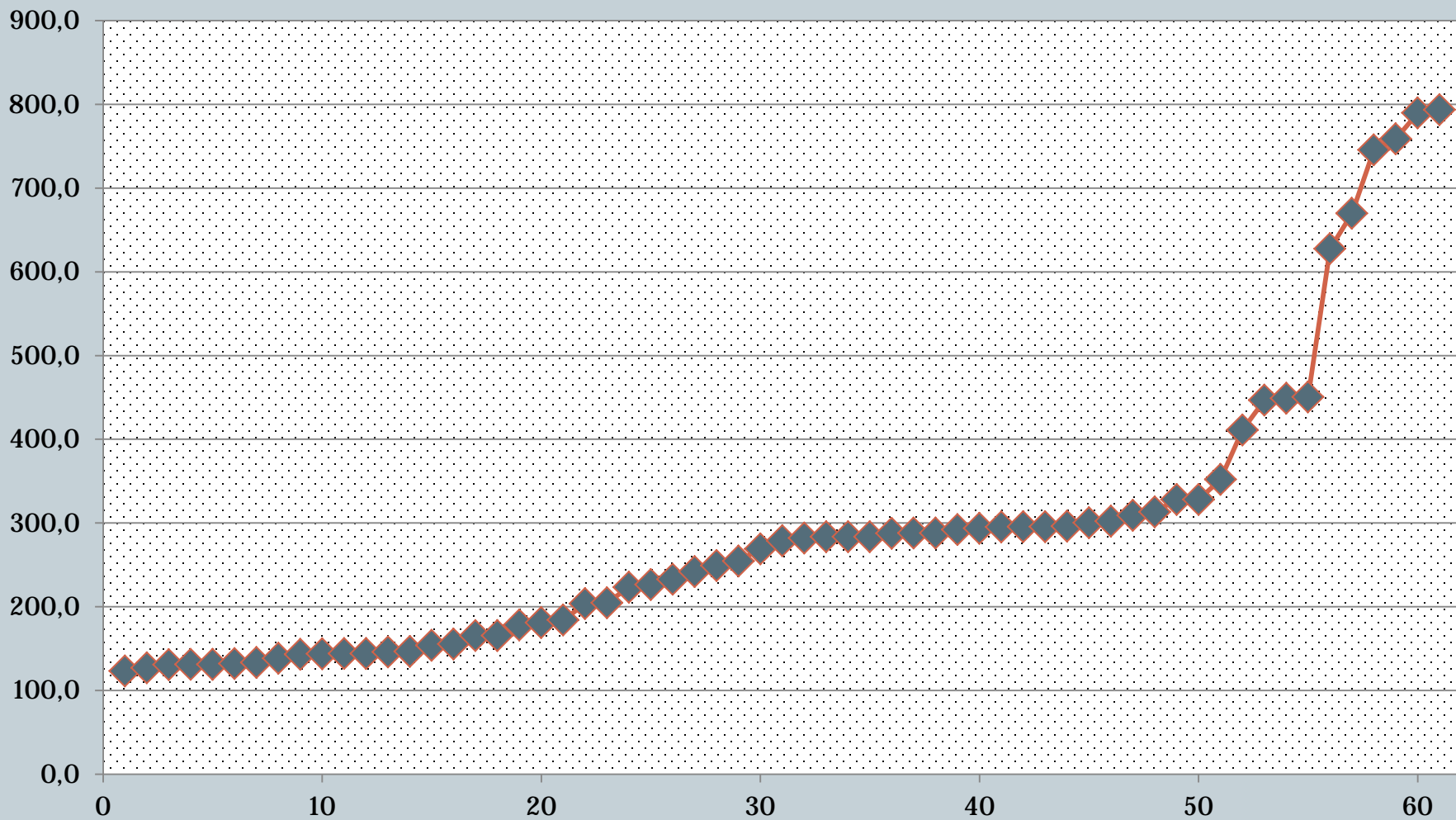
# Regulatory Framework



- **Nodal Agency- NLDC (through RLDCs)- merit order stack of surplus capacities available based on variable cost of generation**
  - Lowest VC to highest VC for Regulation Up
  - Highest VC to lowest for Regulation down
  - Regional / bid area wise stack
- **Nodal Agency- forecasts daily region-wise demand on day-ahead basis**
- **Nodal agency shall direct selected RRAS providers for Regulation Up or Regulation Down based on the trigger events.**
- **Generation under RRAS scheduled to *Virtual Ancillary Entity* in one or more Regional Grids as decided by the Nodal Agency**
- **The schedules of the RRAS Provider(s) considered as revised by the quantum scheduled by the Nodal Agency under RRAS**

# RRAS Provider Rate- Variable Cost

(Paise/kWh for the period 16.07.17 -15.08.17)



# Commercials



- **Weekly energy accounting by respective Regional Power Committee (RPC) along with Deviation Settlement Account**
- **Payment to RRAS provider from Regional DSM Pool**
- **Regulation Up- RRAS Provider paid fixed and variable charges, with a mark-up**
  - Fixed charges refunded to beneficiary to the extent of quantum surrendered
  - Mark-up : 50p/kWh
  - Fixed & variable charges at the time of delivery to calculate payment
- **Regulation Down- RRAS Provider pays back 75% of variable charges corresponding to quantum of RRAS scheduled, to Regional DSM Pool**

# Building blocks of a reliable grid



- **Primary Control-** mandated under Indian Electricity Grid Code (IEGC)
- **Secondary Control-** Automatic Generator Control (AGC)-pilot at NTPC Dadri Stg-II
- **Way forward:** POSOCO has made suggestions in the half-yearly report, to be included in amendment



# THANK YOU



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