

AVAILABILITY OF ELECTRICAL ENERGY IS *NOT* A CONSTRAINT FOR ELECTRIFYING ALL HOMES

- Electrification of all homes requires high domestic electrification rate
- Despite this, DEFENDUS estimates of total energy requirement are *lower* than those of the Power Surveys
- 15th PS projects 41,763 Gwh for 2006-07 electricity requirement vs DEFENDUS FE and IE scenario estimates of 33,022 GWh and 25,128 GWh (inclusive of T&D losses)

AVAILABILITY OF ELECTRICAL POWER IS *NOT* A CONSTRAINT FOR ELECTRIFYING ALL THE HOMES

- DEFENDUS estimates of capacity are also lower than those projected by 15th Power Survey
- For 2006-07, 15th PS projects peak demand of 7,202 MW
- Total installed capacity required in the state as per DEFENDUS FE scenario is 6,458 MW and in the IE scenario 4,970 MW

COSTS OF IGNORING LEAST-COST PLANNING

- Costs of meeting next 10,000 GWH (from projects under construction) with current cost-supply schedule = Rs 2,127 crores @ '94-95 prices
- In contrast, cost is only Rs 1,079 crores through least-cost mix
- Hence, additional Rs 1,047 crores = cost of ignoring least-cost planning.

COSTS OF IGNORING LEAST- COST PLANNING (CONTD)

- Cost of the additional 1,878 MW (installed or avoided) capacity = Rs 15,841 crores with current schedule
- In comparison, cost is only Rs 1,872 crores with least-cost mix options

ADOPTION OF LEAST-COST APPROACH AFTER NON-LEAST-COST PROJECTS ARE UNDERWAY

- Rs 2,783 crores = costs of meeting an additional 15,508 GWh in 2006-07 over the total base-year generation
- In contrast, cost is only Rs 2,382 crores if the least-cost approach had been adopted at the outset.

IT IS COSTLIER TO GENERATE A KWH THAN TO SAVE IT

- As per least-cost curve, total costs (@ '94-95 prices) of saving expected 2006-07 use of 3,569.8 GWh = Rs 257 crores
- Weighted average cost of saving energy = Rs 0.72/kWh
- In comparison, generation through new options would involve Rs 661 crore
- Weighted average cost of generation = Rs 1.85/kWh

IT IS COSTLIER TO INSTALL NEW CAPACITY THAN TO SAVE POWER

- Saving 1,515 MW through motors, IPSets, CFLs and SWHs would require Rs 1,105 crore (= weighted average of Rs 7,297/kW)
- New plants of same capacity require Rs 9,569 crore (= weighted average of Rs 63,166/kW)
- Conservation during peak (e.g., through improved lighting devices) also reduces peak-load.
- Difference excludes indirect costs incurred for generation (additional fuel supplies, environmental degradation, etc.)

TRANSMISSION AND DISTRIBUTION

- Annualized incremental costs of construction & maintenance of T&D facilities are 6.9% till the EHV lines, 1.9% till the HV lines and 37.2% till the LV lines
- Additional T&D costs of delivering electricity till the LV lines = 46% of the generation costs
- Thus, **total** costs of delivering electricity = about 1.5 times costs of generation.
- Match new generation capacity with appropriate T&D facilities to effectively evacuate power

EXPECTED ADDITIONS TO INSTALLED CAPACITY

- KPCL's new plants under consideration = 2,473 MW
- NPC plant of 440 MW
- Private plants with assured fuel linkages = 1,160 MW
- Total = 4,073 MW

POSSIBILITY OF SURPLUS CAPACITY

- If additional 4,073 MW by 2006-07 are commissioned as scheduled, there should be a 8,168 MW including the base-year capacity of 4,095 MW
- But 15th PS estimates utility peak demand to be only 7,202 MW
- Hence, *a "surplus" situation could occur*

POSSIBILITY OF GROSS SURPLUS CAPACITY

- If all the other projects being talked about (MW) come through, there will be *gross* excess capacity
- and price escalation

BRIDGING THE GAP

- Gap between available projects and estimated requirement of electricity and power can be bridged by
 - increased generation
 - and/or higher utilization of the existing captive generation capacity
 - and/or from additional centralized generation, decentralized generation or conservation

PRIVATE SECTOR PARTICIPATION

- No pre-determined selection of
 - generation or conservation
 - centralized or decentralized generation
 - public or private sector
- A level playing field should be set up
- And unit costs should be used as a criterion for selection of projects