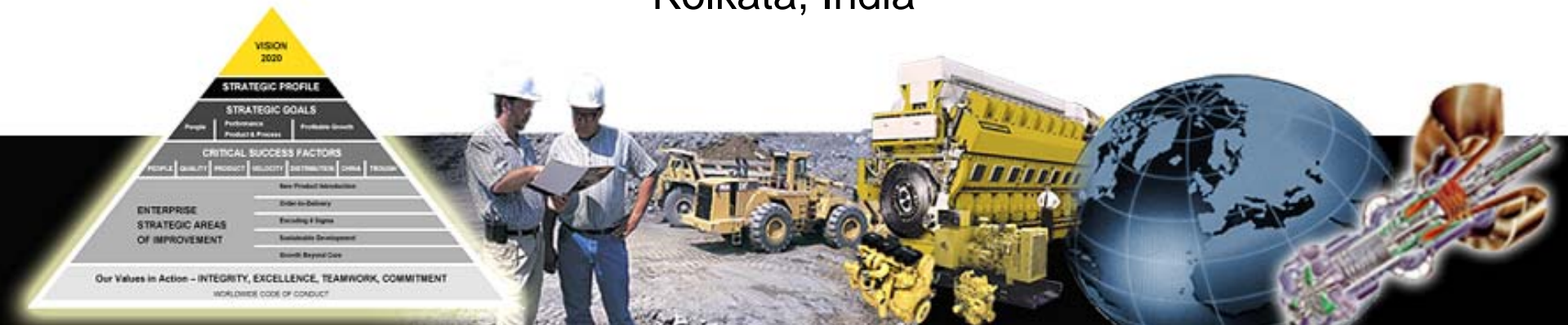


# Regulation Considerations Grid, Customer & India

Workshop on Grid Connected Renewable Energy &  
Combined Heat and Power

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**Solar<sup>®</sup> Turbines**  
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TODAY'S WORK. TOMORROW'S WORLD.™

- Energy Regulation can Contribute to Financial Investment by Private Sector
- Clean DG is a Energy Security Proposition
  - Custom energy tailored to criteria
    - Electrons, quality & availability
  - Energy = key to useful products
    - Increased opportunity to be productive
    - More hours are available
  - Self Sufficiency with Social Harmony
- Onsite Generation reduces cost of infrastructure



## Considerations:

### What Can Energy Regulation do to ...

- Better Harness the Potential of RE DG CHP for Grid supplement & support
- Present an Opportunity for C & I Entities to Contribute Private Sector funds
- Place into operation policies that are enablers
  - Technical & Contractual
  - Financial



- Cost of Electricity
  - DG enables Demand Response / Demand Reduction
    - Increases supply
      - Decreases market demand; reflects in pricing
    - Avoid or defers build-out ( G,T, & D )
- Quality of Energy
  - Reduced unstable power quality
  - Reliable electrons w/o disrupting business productivity
  - Avoid “lumpiness” of intermittent supply
    - Micro Grid / Smart grids w/ demand response



- Improves grid asset utilization
  - Provides ancillary services
    - Voltage support / stability
    - Volt-ampere reactive
    - Contingency reserves
    - Blackstart capability
- Contributes to supply build-out
  - Onsite generation as demand reduction
  - Higher efficiency is rewarded



- Interconnection
  - Technical IEEE # 1547 Std. For Interconnecting Distributed Resources with Electrical Power Systems
  - Contractual – US Federal Energy Regulatory Commission Order #2006
  - Terms and Conditions – National Association of State Regulatory Commissioners Model Interconnection Procedures and Agreement for Small Distributed Generation Resources



- Custom Energy
  - Allows customer to manage Energy Security
    - Self reliance, reducing grid dependency
    - Integrated powerhouse to facility operations
    - Combined Thermal and Electricity Requirements
- Clean Energy
  - Two/Three forms of useful energy from one feedstock
  - Efficiency = reduced emissions by reduced fuel use
  - Carbon reduction GHG offset
- Credit For Participating?



- Clean Energy Supply Requirements
- Net Metering
  - Grid as storage, off-taker
  - “zero” energy consumer
- Feed-in Tariff / Price for Clean Energy Technology
  - Avoided cost as a rate ? Percentage ?
  - Above market tariff for clean energy
    - Net Excess Electrons
- Standby Rate / “Variable” Energy Rate



- Minimal Standby Rate
  - “betting the DG unit doesn’t go down”
- High Energy Cost
  - Penalty for supporting load when on peak
  - Lower cost off-peak ( maintenance period)
- Probability of any one small-scale generation requiring energy service is low, and all interconnected is even lower



- Use Feed-in Tariff differential as income stream to service debt / return capital invested
- Capacity payment
  - Portion of Avoided Cost as a Rate
  - Shared savings
  - Dispatch-ability protocol



- Policy Issues
  - Rules, National and Provincial
- Contractual Issues;
  - procedures & process
- Regulatory Practices Issues;
  - Objective & components to encourage
- Financial Issues
  - Rates that stimulate investment
- Technical Issues
  - Integration without interruption



- Small scale, clean distributed generation adds value to the grid
- Regulatory procedures exist that stimulate deployment of distributed generation
  - Interconnection
  - Net metering
  - Demand response w/o sacrifice to productivity
  - Stand by & energy charges
- Regulation stimulates financing
  - Feed in Tariff; Assignment of...

