Perspectives on Energy Storage
CEC Energy Storage Workshop

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Energy Storage Perspective - Planning

- Resource Planning
  - What do you need when?
- T&D Planning
  - What is available at system peak?
- Smart Grid
  - How to optimize load profile?
  - Central versus distributed?

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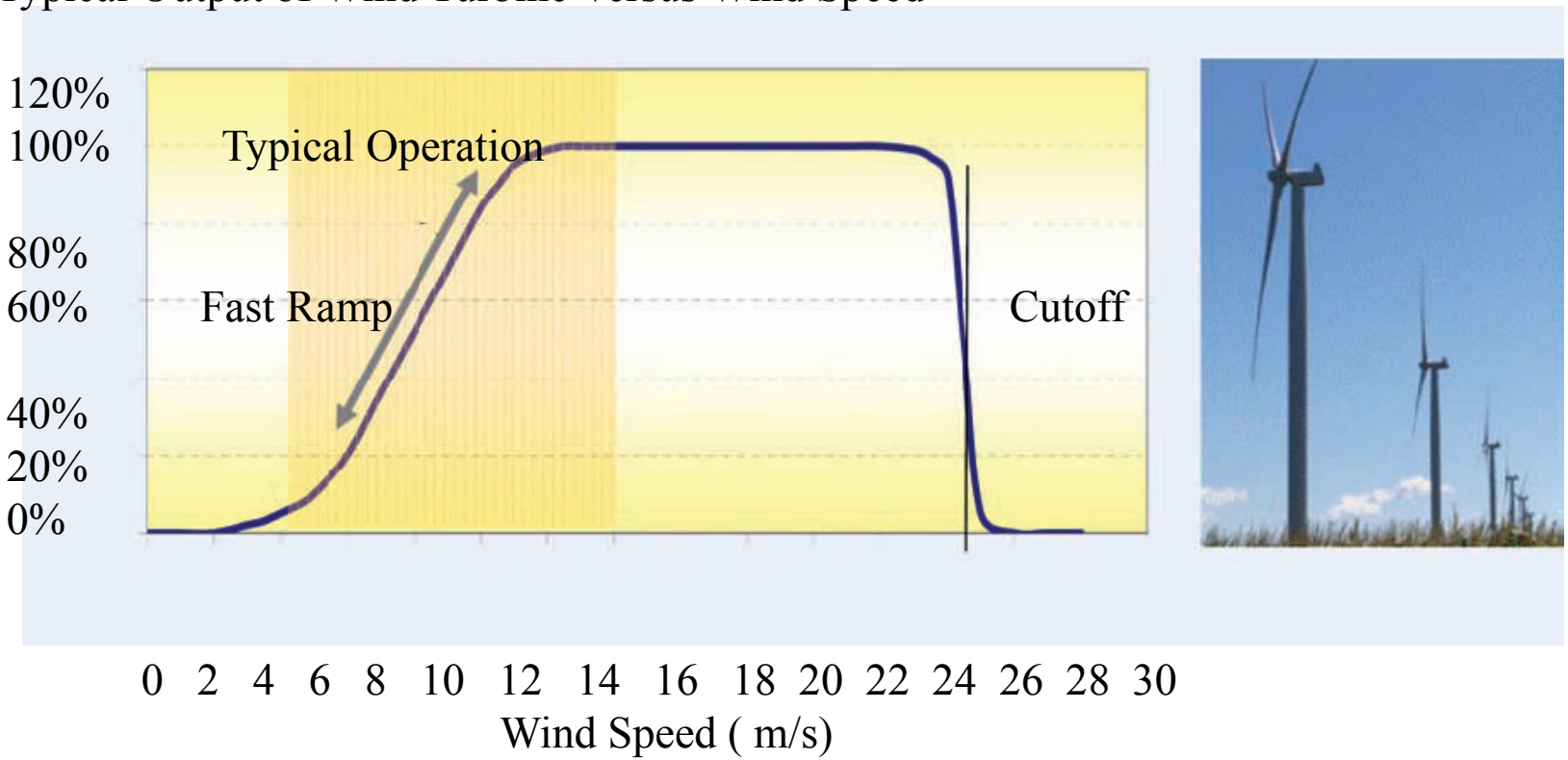
Energy Storage Perspective - Wind

figure 2. Wind turbine power curve.
Typical Output of Wind Turbine Versus Wind Speed



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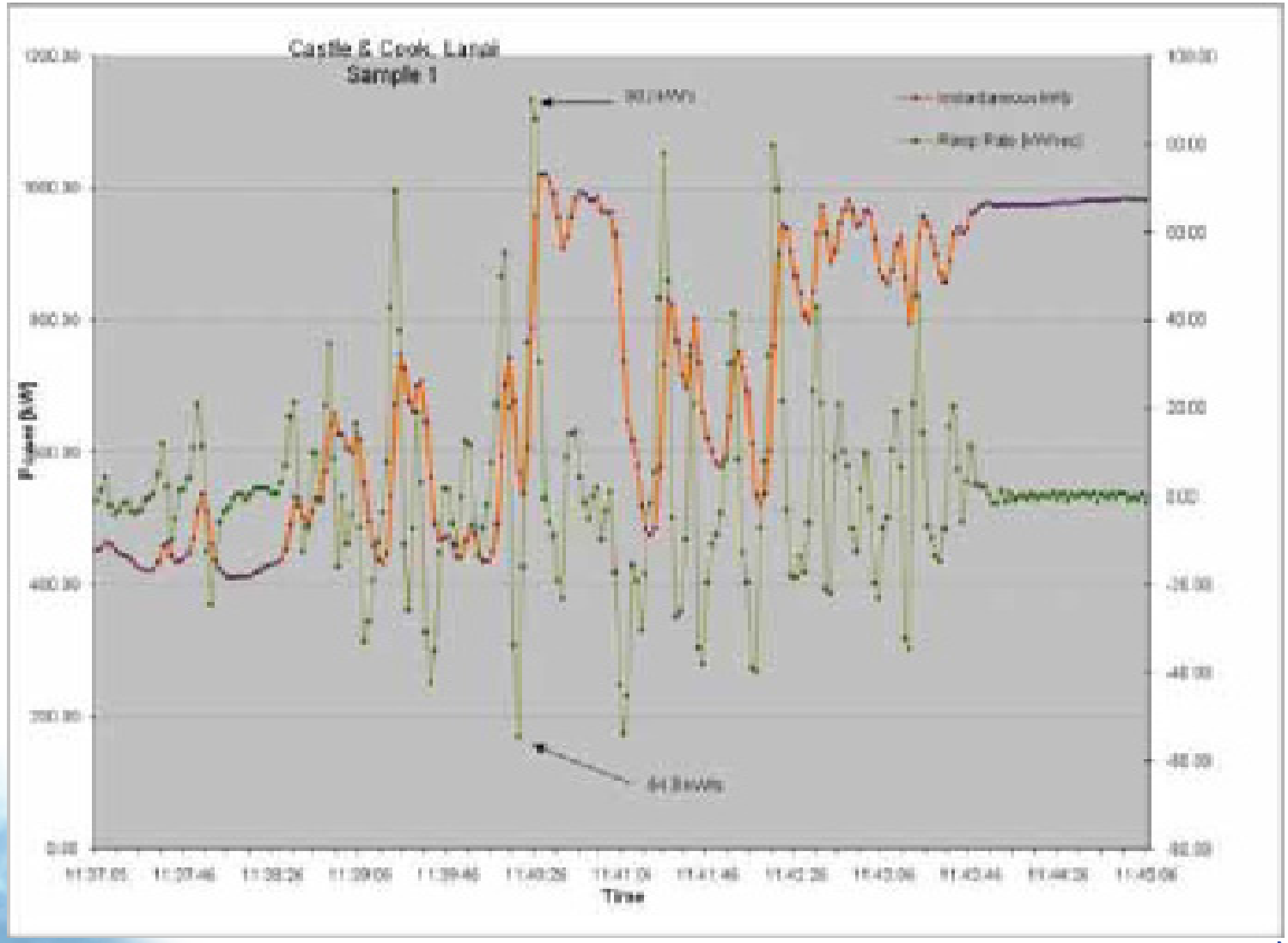
Energy Storage Perspective - Solar



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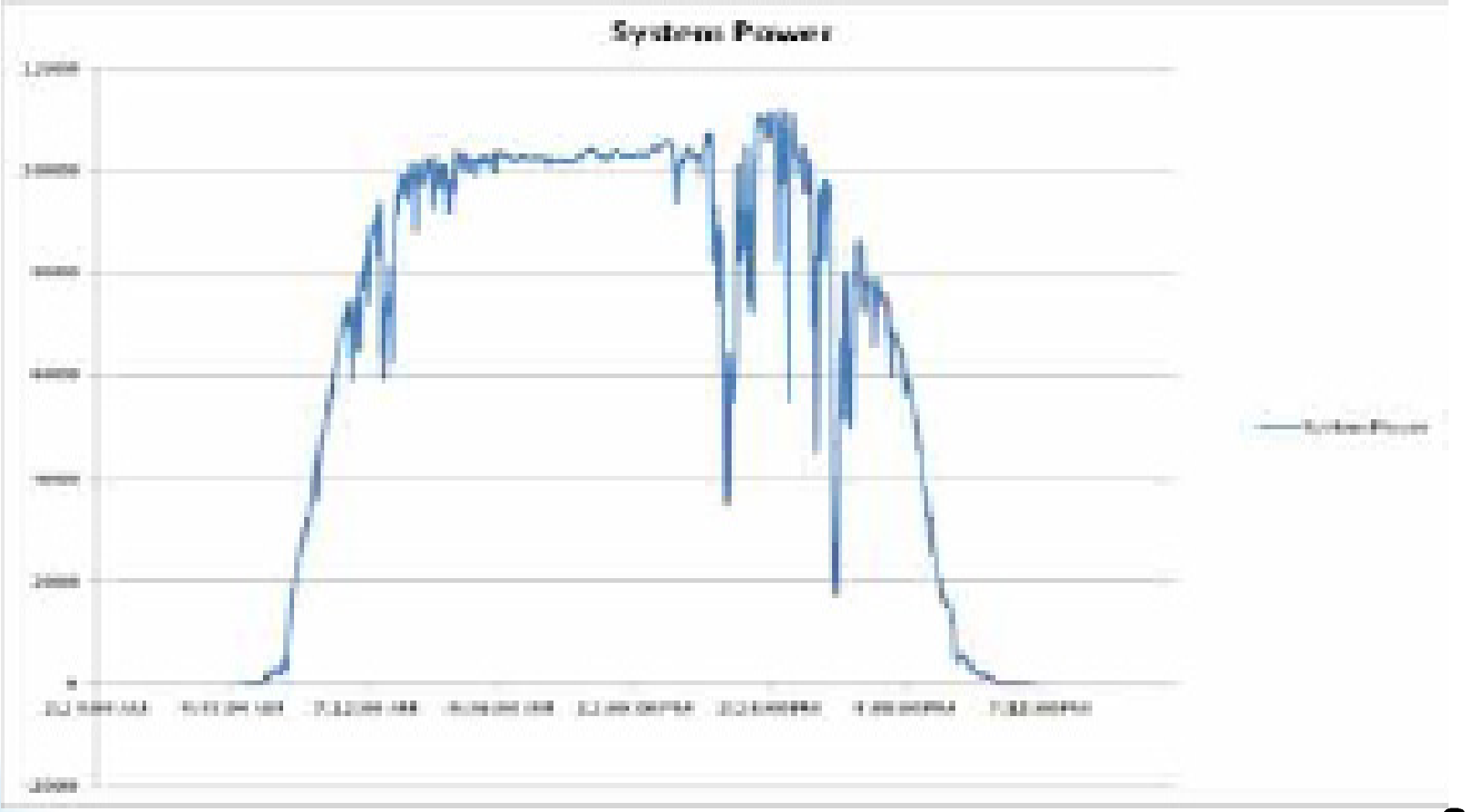
Energy Storage Perspective - Solar



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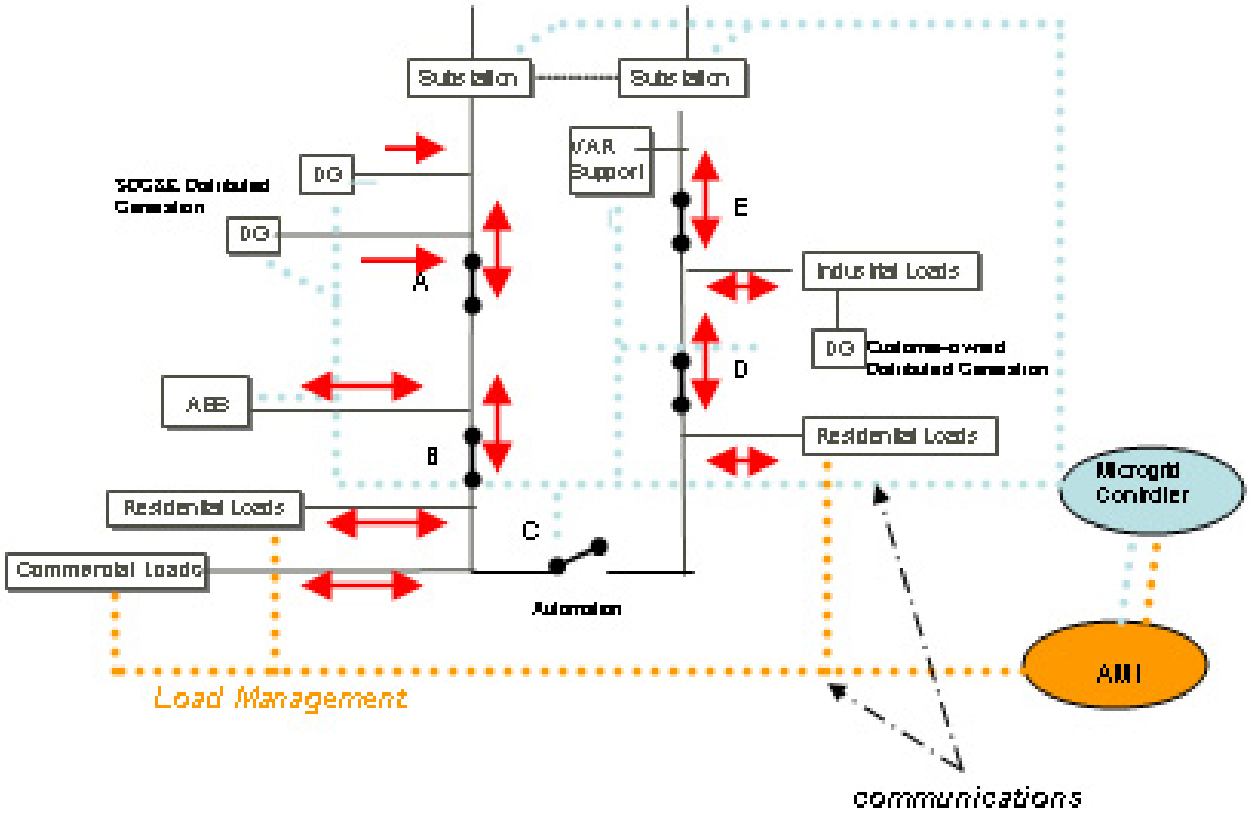
Energy Storage Perspective - Microgrid



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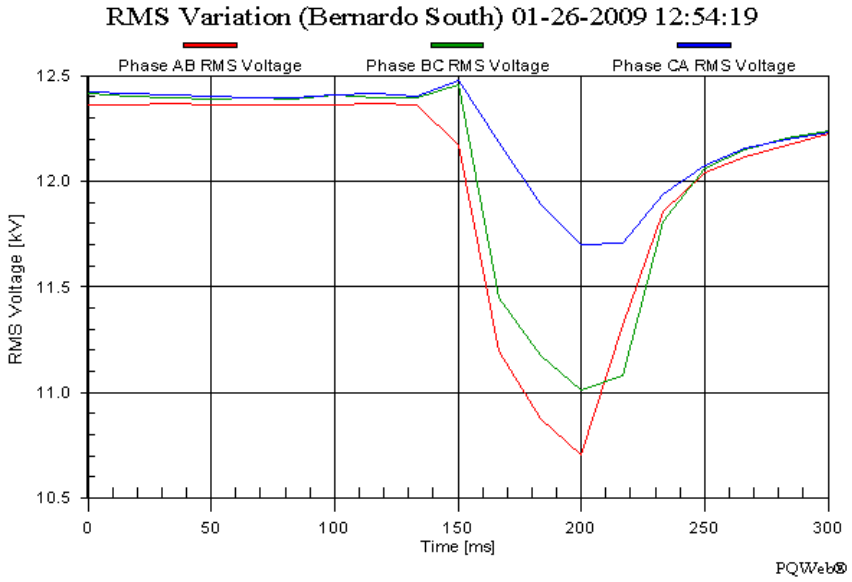
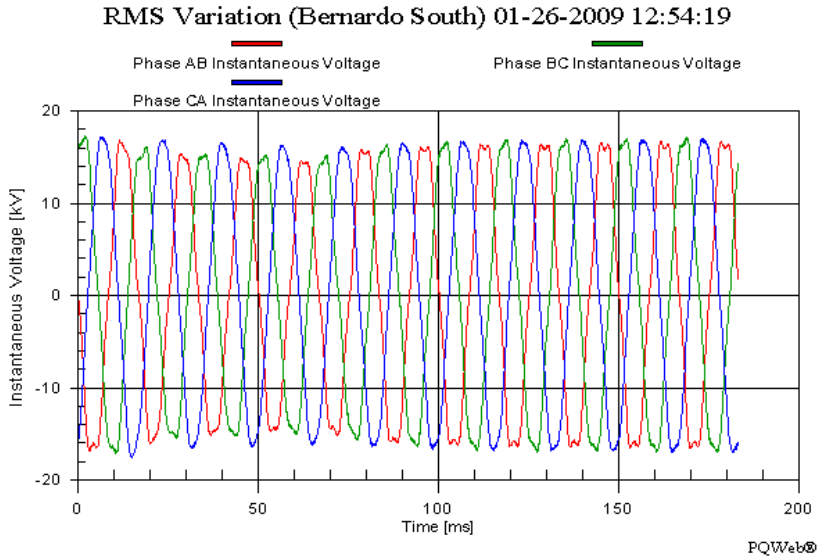
Energy Storage Perspective – Power Quality





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Energy Storage Perspective – Electric Vehicles

"This morning, we are announcing our partnership with Nissan to help bring one-hundred all-electric vehicles to San Diego. This regional partnership is aimed at assessing zero emission mobility for the San Diego region, and the first step in delivering all the benefits that can come along with it a reality. In this partnership, SDG&E and SANDAG will coordinate the deployment of electric vehicles throughout the region. SDG&E has entered into this agreement to lead the charge for the region, and assist others in incorporating these vehicles into their fleets and daily."

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Energy Storage Perspective

- Regulatory Challenges
  - Energy Policy Goals
  - Cost Recovery
  - Cost Allocation
- Barriers
  - Technology Cost
    - Expensive
  - Technology Maturity
    - Commercial to development phase
  - Technology Tradeoffs
    - Short versus long duration duty
    - Lifetime issues
    - Operation regime
  - Systems Integration
    - Batteries only vs complete system
  - Use Cases
    - Multiple value streams
  - Siting Issues
    - Environmental
    - Space

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