ELMP (Extended LMP) Design Overview

Market Subcommittee

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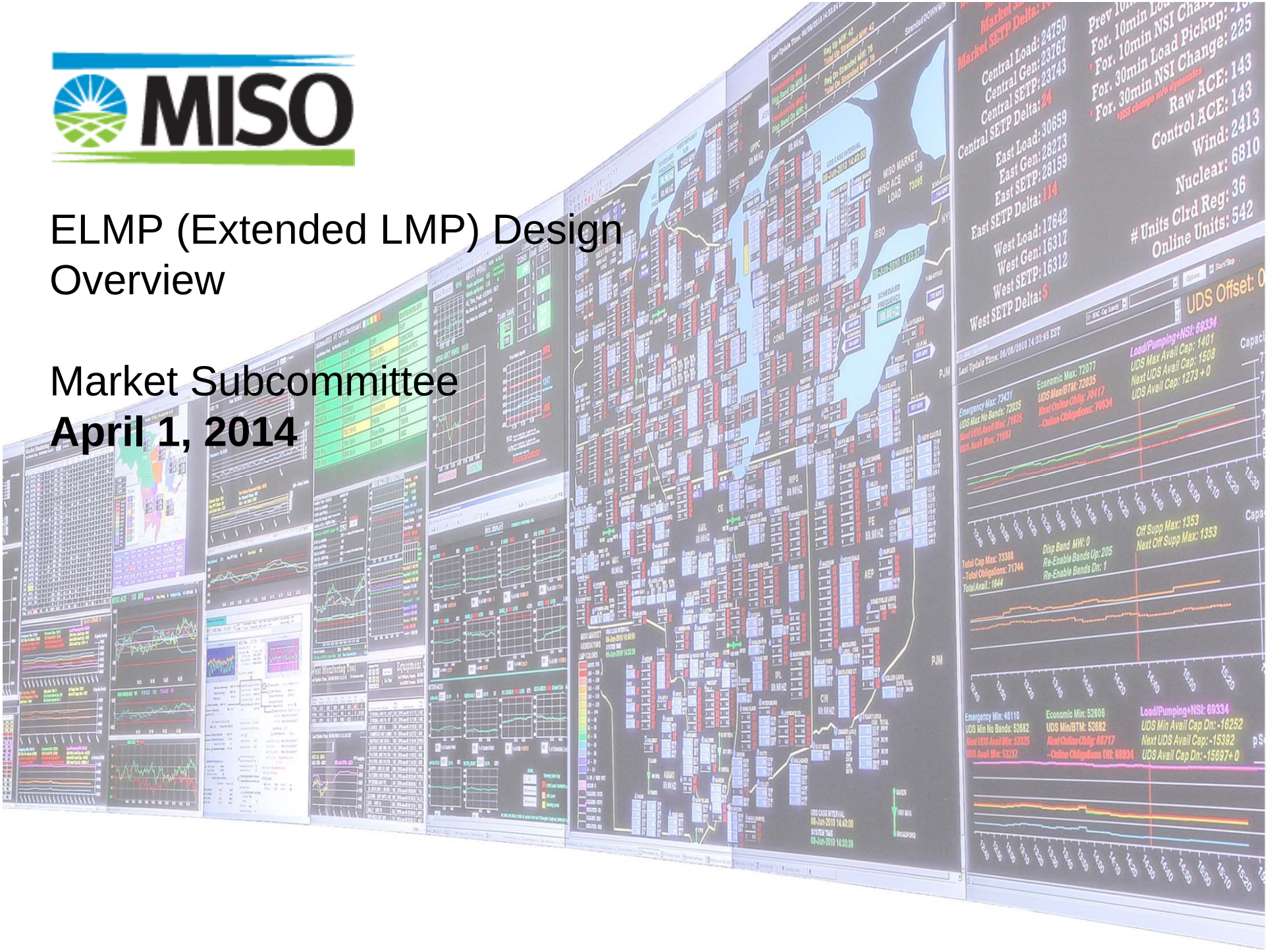

Overview

- **Purpose**
  - Review of ELMP design
- **Key Takeaways**
  - The calculation of ELMPs does not change commitment and dispatch
  - Planned ELMP implementation will provide improved pricing on single interval basis
    - Multi-interval version may be pursued later
  - Allows reflection of true cost of energy from fast start units
    - Participation of slow start units will be same as today
  - Emergency Demand Response called on by MISO can participate in ELMP

Pricing Intervals and Applicable Resources

- **ELMP method is implemented as a pricing engine based upon existing DA and RT economic dispatch software**
  - DA and RT dispatch are performed on single interval basis
    - One hour for DA and 5 minutes for RT
  - ELMP will be calculated under the same construct
- **Applicable to Fast Start Resources defined as:**
  - Notification time plus start up time less than or equal to 10 minutes
  - Minimum run time less than or equal to 1 hour

Fast Start Resources: Price Setting

- **Start-up, no-load and incremental energy offer costs of such resources will be considered in setting in ELMP**
- **The start-up cost for these resources will be allocated over the resource's minimum run time**
- **Fast Start resources that are block loaded and/or dispatched at limit can set price**
  - The Economic Minimum limit can be relaxed for pricing
- **Allow partial commitment of such resources**
  - Results in reflection of a portion of the total start-up and no-load costs in the price

Fast Start Resources: Online versus Offline

- **Online Fast Start Resources will always be eligible to participate in setting ELMPs under normal operating conditions**
- **Offline Fast Start Resources will participate in setting ELMPs when Security Constrained Economic Dispatch shows reserve scarcity and/or transmission constraint violations**
  - If transmission constraint violations exist without scarcity, only offline fast start resources that can alleviate a constraint will participate in setting ELMPs

Slow Start Resources and EDR

- **Participation of slow start units will remain the same as today**
  - Online slow start units will participate
  - Offline slow start units will not participate
- **Emergency Demand Response (EDR) resources will participate in setting prices in Real Time only when MISO schedules EDR demand reductions**
  - EDR will be treated the same as online Fast Start Resources if MISO calls on the associated EDR

Pricing During MaxGen and MinGen Events

- **ELMP will adopt the same logic as Real Time operation with respect to use of emergency limits under MaxGen and MinGen conditions**
- **Under MaxGen situations, ELMP will use same emergency limits as Real Time dispatch calculation instead of economic limits**
  - The relaxation procedures for Fast Start Resources described earlier will be applied to the emergency limits
- **Under MinGen situations, Economic Minimum limit for Fast Start Resources will not be relaxed**

Summary of Price Signal Improvement

- **Better reflection of the cost of actions by operators to manage brief, transitory deficits in ancillary services or transmission**
- **Block loaded Fast Start Resources and Fast Start Resources dispatched at limits are eligible to set prices**
- **Emergency Demand Response (EDR) resources are eligible to set prices**

Contact Information

Tengshun Peng (tpeng@misoenergy.org)

Dhiman Chatterjee (dchatterjee@misoenergy.org)