Decision Memo – May 2009

East Unit Minimums
Energy Costing and Reporting System (ECR)

Background

The Energy Costing and Reporting System (ECR) uses the following data sources and business rules for hourly unit limits when performing hourly cost reconstruction.

Hourly unit limits are sourced from CEAS (GenCheckOut) for all active dispatchable units. Within the CEAS (GenCheckout) tool, ECR uses the Economic Low Limit (ELL) that is located on the Gencheckout screen for cost reconstruction purposes.

When hourly actual generation is lower than the hourly low limit, the low limit is reset in ECR with actual generation MWh. Similarly, when the hourly high limit is lower than the actual generation, then ECR resets the hourly high limit to actual generation MWh.

If the hourly limit from CEAS is zero, then for cost reconstruction purposes, ECR uses monthly seasonal limits stored within an ECR database file. The source of the monthly seasonal limit information is the UDR Unit Capabilities Application, Default Normal Mini. (The UDR system is targeted to replaced with PowerTracker in the fall of 2009)

In the event of low load condition, for cost reconstruction purposes, ECR goes progressively through a series of adjustments in reducing the low limit from hourly low to monthly seasonal low to oil point minimum to emergency minimum to zero (0) to achieve a resource level sufficient to cover off-system sales. The values for the monthly seasonal low and oil point minimum are default values stored in an ECR database file. The source of the emergency minimum information is the UDR Unit Capabilities application, Default Emer Mini.

Maintenance and Responsibilities

- **Production Optimization** – normal operation.

- **Real-Time Market Operations** – perform day-after checkout in CEAS (GenCheckOut) to ensure the hourly low limits are lower then the actual generation. If the hourly low limit is higher than the hourly generation, then the hourly low limit is reduced to reflect real-time generation level.

- **East Commodity Settlements** – verify unit limits are correctly passed from CEAS to ECR and properly used in reconstruction.

Special Cases

Operational issues and tests that require elevated unit minimum limits:

Certain operational conditions / unit tests may require elevated unit minimums to be used in ECR when cost reconstruction is performed. The fuel costs associated with the unit minimums are assigned to the LSE, pursuant to the AEP Interconnection Agreement, because a minimum output of the unit is required to meet testing requirements or ensure reliable operations.

Maintenance and Responsibilities

- **Production Optimization** – for scheduled events, denote the unit condition in the outage management log or other applicable log with the proper identifier.

- **Real-Time Market Operations** – for scheduled and unscheduled events, perform day-after adjustment in CEAS to elevate unit minimum limit to reflect required real-time generation level.

- **East Commodity Settlements** – verify elevated unit limits are correctly passed from CEAS to ECR and properly used in reconstruction.

List of Operational Issues and Tests for Elevated Unit Minimum Limits:

- **Water loss tests**
  Tested weekly, or as needed, to identify potential tube leaks
  Typical frequency: Weekly

- **Capability Testing**
  Required real and reactive testing by a reliability region and / or RTO
  Typical frequency: Real Capability - winter and summer
  Reactive Capability – 20% per year

- **Unit Performance Testing**
  Periodic testing to confirm / evaluate unit operational characteristics

- **Controls tuning**
  Periodic tuning to improve unit performance

- **Stack temperature limitations for acid dew point**
  Need to maintain stack temperature above a certain level; usually an issue on multi-unit stacks with some units out of service; more prevalent with cooler overnight ambient temperatures

- **Supply steam for other unit start ups**
  Provides a more reliable and inexpensive alternative to auxiliary boilers when an option

Decision Memo – May 2009

- **Water chemistry and other holds after start up**
  Increased boiler circulation, within limits, improves chemistry more quickly

- **Relative Accuracy Test Audit (RATA) / Particulate Emissions Test (PET)**
  Required annual emissions testing

- **Slag tapping problems on wet bottom boilers**
  At lower loads, slag taps get cold and may seal over, resulting in a unit outage

- **Precipitator conditioning**
  On certain units, load cycling reduces precipitator performance, resulting in opacity exceedances

- **Maintain scrubber chemistry**
  For example, Gavin – extended operation at low loads will result in decreased removal efficiency and other operational issues

- **Selective Catalytic Reduction (SCR) temperatures**
  Low SCR inlet temperatures may foul the catalyst and reduce efficiency

- **Turbine vibration**
  If a unit is experiencing high vibration levels, constant load may reduce the risk of unit trip and further vibration increases/equipment damage

- **Turbine Valve Tests**
  Various required daily/weekly/monthly testing of control and stop valves that may require a constant load

- **Blackstart & Automatic Load Rejection (ALR) Testing**
  Required annual NERC testing

- **Verbal Dispatch Instruction (VDI)**
  RTO/Transmission requirements to elevate unit minimum limits

- **Alternate Steam Supply Issues**
  Some units have multiple sources of steam to the feedpump turbine and due to valve issues, may not be able to transfer sources to obtain lower loads

- **Testing after Major Outages / Overhauls**
  Due to equipment upgrades and change outs

Decision Memo – May 2009

- **One Up and One Down Daily Operation**
  e.g. Circular Letter requirements associated with Automatic Voltage Regulators in service to reduce the risk of generator damage, also to minimize impacts of other operational conditions such as steam seal header pressure problems and deaerator cracking

- **Other operational conditions that warrant intervention**
  As needed, to minimize the likelihood of equipment damage or unit trip