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Lodi Energy Center Project Participant Committee Operational Report

Agenda Item No.: 3

Date: 02/13/2017

To: Lodi Energy Center Project Participant Committee

Safety

- OSHA Recordable: 0 Accidents

Notice of Violations

- Permits: 0 Violations
- NERC/WECC: 0 Violations

Outage Summaries:

- No Forced Outage
 - LEC Recycled Water Obligation - There were 180 hours of water curtailment to LEC; no operation impact to LEC.

Planned Outage Summaries:

- 2017 May: Steam Turbine Limited Overhaul has been deferred (Steam Turbine Bearing Inspection, Steam Turbine Valve Inspection, Alignments, etc.). Outage will center around HRSG and valve maintenance

Generating Unit Statistics:

LEC

Report

Date:

Start Date 1/1/2017

End Date 1/31/2017

- 1. Monthly Production 34,465 MWH
- 2. Productivity Factor
 - a. Service Hours 177 Hours
 - b. Service Factor 23.8 %
 - c. Capacity Factor @ 280MW Pmax 16.5 %
 - d. Capacity Factor @ 302MW Pmax 15.3 %
- 3. Equivalent Operating Availability (EOA) 100.0 %
- 4. Forced Outage Rate (FOR)
 - a. Combustion Turbine Generator 0.0 %
 - b. Steam Turbine Generator 0.0 %
- 5. Heat Rate Deviation
 - a. Fuel Cost (Not Current Market Price) 4.00 \$/mmBTU

MW Range	PMOA HR BTU/kW- Hr	Average HR BTU/kW- Hr	Deviation %	Production MWH	Cost \$
Seg. 1 296 +	6850	6,850	0.00%	0	\$0
Seg. 2 284 - 296	6870	7,016	2.12%	1,882	\$1,097
Seg. 3 275 - 284	6971	7,008	0.53%	1,030	\$152
Seg. 4 250 - 275	7081	7,024	-0.80%	8,505	-\$1,939
Seg. 5 225 - 250	7130	7,094	-0.51%	4,636	-\$675
Seg. 6 200 - 225	7200	7,227	0.37%	4,410	\$471
Seg. 7 175 - 225	7450	7,450	0.00%	6,994	\$7
Seg. 8 165 - 175	7760	7,827	0.87%	3,422	\$922
	7,164	7,187	0.37%	30,879	\$34

6. AGC Control Deviation

MW Range	High Dev MWH	Low Dev MWH	Total Dev MWH	Cost \$
Seg. 1 296 +	0	0	0	\$0
Seg. 2 297 - 302	6	-8	14	\$380
Seg. 3 298 - 302	5	-2	7	\$183
Seg. 4 299 - 302	36	-7	43	\$1,221
Seg. 5 300 - 302	24	-12	35	\$1,005
Seg. 6 301 - 302	25	-24	49	\$1,425
Seg. 7 302 - 302	50	-56	106	\$3,159
Seg. 8 303 - 302	12	-3	15	\$470
	158	-111	269	\$7,843

7. Starting Reliability

Start Type	Hot Starts	Warm Starts	Cold Starts
Number of Starts	0	14	3
Start Time Benchmark (Minutes)	75	110	200
Start Time Actual (Average Minute)	0.0	106.4	188.3
Start Time Deviation (%)	-100.0%	-3.2%	-5.8%
Start Fuel Benchmark PMOA (mmBTU)	1,300	1,800	3,500
Start Fuel Actual (Average mmBTU)	1,300	1,974	3,578
Fuel Deviation (%)	0.0%	9.7%	2.2%
Costs of Fuel Deviations (\$)	\$0	\$696	\$312

Definitions:

1. Monthly Production = Plant Net MWH's
2. Capacity Factor
 - a. Service Hours = In Production or in Service State
 - b. Service Factor = $SH / PH \times 100\%$
 - c. Capacity Factor = $Production / 302MW \times PH$
 - d. Capacity Factor = $Production / 280MW \times PH$
3. Monthly Equivalent Availability Factor (EAF) = $(AH - EPDH - EFDH) / PH \times 100\%$
4. Forced Outage Rate = $(FOH)/(FOH+SH) * 100\%$
5. Heat Rate Deviation (HRD)
 - a. Fuel Cost = Cost of Fuel in \$/mmBTU
 - b. Average Heat Rate = The Average Heat Rate for the given Range
 - c. Heat Rate Deviation = $(Heat Rate Average - Heat Rate Expected) / Heat Rate Expected \times 100\%$
 - d. Production = The Sum of Production for the given Range
 - e. Costs of Heat Rate Deviations = $(Average Heat Rate - Expected Heat Rate) \times Production \times Cost of Fuel$
6. AGC Deviation-
 - a. MWH's = AGC Set Point Generation - LEC Actual Generation
 - b. Cost of Deviations = Fuel Cost x Heat Rate x Generation
7. Starting Reliability
 - a. Number of Starts = Start Count for Hot, Warm, and Cold
 - b. Start Time = Average Time from 0 Fuel Flow to Pmin
 - c. Start Fuel = Average Fuel Consumption to Pmin
 - d. Cost of Fuel Deviation = $(Actual Fuel Consumed - Expected Fuel) \times Cost of Fuel$