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Lodi Energy Center Project Participant Committee

Operational Report

Agenda Item No.: 3

Date: 09/11/2017

To: Lodi Energy Center Project Participant Committee

Safety

- OSHA Recordable: 0 Accidents

Notice of Violations

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

Outage Summaries:

- August 4th, 8th – (Noted in Low Dev) Curtailed unit ~20 MWs due to an inlet guide vane (IGV) servo actuator positioning error.
- August 14th – (4. 4 Hours) Ip Feed Water pneumatic controller for valve actuator failed.
- August 30th - (0 Hours) Auxilary Boiler level control instrument failure.

Operation Notable:

- Water Availibilty Update - City of Lodi is building a ground water recharge pond. The pond is 300 acre-ft. As a result of their unreliability this past year, they have modified the design of this pond so that they can draw water back from it and deliver it to LEC as back up storage. A pond of this size is about 48 days storage for LEC at maximum rate of consumption and 100% capacity factor. The project is approved and funded. It goes out to bid this coming winter, with construction starting around March and lasting 6 months.

Planned Outage Summaries:

- 2018 – April 4th – 15th Steam Turbine , BOP, HRSG Seals, Generator Inspections

Generating Unit Statistics: **Report Date:** 8/1/2017

1. Monthly Production	66,184	MWH
2. Productivity Factor		
a. Service Hours	290	Hours
b. Service Factor	38.9	%
c. Capacity Factor @ 280MW Pmax	31.8	%
d. Capacity Factor @ 302MW Pmax	29.5	%
3. Equivalent Operating Availability (EOA)	99.5	%
4. Forced Outage Rate (FOR)		
a. Total LEC Plant FOR	1.4	%

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	0	0.00%	0	$0
Seg. 2 284 - 296	6870	6,896	0.39%	142	$15
Seg. 3 275 - 284	6971	6,962	-0.13%	2,347	-$84
Seg. 4 250 - 275	7081	6,992	-1.25%	16,315	-$5,777
Seg. 5 225 - 250	7130	7,050	-1.12%	4,693	-$1,493
Seg. 6 200 - 225	7200	7,180	-0.27%	2,953	-$234
Seg. 7 175 - 225	7450	7,460	0.13%	3,800	$145
Seg. 8 165 - 175	7760	7,779	0.24%	1,948	$148
	7,164	7,189	-0.40%	**32,197**	**-$7,279**

6. AGC Control Deviation

MW Range **Bad AGC Data for May**		High Dev MWH	Low Dev MWH	Total Dev MWH	Cost $
Seg. 1 296 +		0	0	0	$0
Seg. 2 284 - 296		0	0	0	$10
Seg. 3 275 - 284		28	-11	39	$1,076
Seg. 4 250 - 275		91	-198	289	$8,094
Seg. 5 225 - 250		38	-20	58	$1,636
Seg. 6 200 - 225		21	-27	48	$1,376
Seg. 7 175 - 225		28	-47	74	$2,218
Seg. 8 165 - 175		12	-4	15	$481
		218	**-306**	**524**	**$14,890**

7. Starting Reliability

Start Type	**Hot Starts**	**Warm Starts**	**Cold Starts**
Number of Starts	4	16	4
Start Time Benchmark (Minutes)	75	110	200
Start Time Actual (Average Minute)	64	127	364
Start Time Deviation (%)	-14%	16%	82%
Start Fuel Benchmark PMOA (mmBTU)	1,300	1,800	3,500
Start Fuel Actual (Average mmBTU)	1,107	1,625	2,015
Fuel Deviation (%)	-15%	-10%	-42%
Costs of Fuel Deviations ($)	**-$771**	**-$700**	**-$5,942**

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 x 100%

    c. Capacity Factor = Production / 302MW x PH

    d. Capacity Factor = Production / 280MW x PH

3. Monthly Equivalent Availibility Factor (EAF) = (AH – EPDH – EFDH) / PH x 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 x 100%

    d. Production = The Sum of Production for the given Range

    e. Costs of Heat Rate Deviations = (Average Heat Rate - Expected Heat Rate) x Production x 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) x Cost of Fuel