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## **Lodi Energy Center Project Participant Committee Operational Report**

**Agenda Item No.: 4**

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**Date:** 12/11/2017

**To:** Lodi Energy Center Project Participant Committee

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### **Safety**

- OSHA Recordable: 0 Accidents

### **Notice of Violations**

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

### **Outage Summaries:**

- None

### **Planned Outage Summaries:**

- 2018 – April 4<sup>th</sup> – 15<sup>th</sup> Steam Turbine , BOP, HRSG Seals, Generator Inspections

**Generating Unit Statistics:****Report  
Date:**

11/1/2017

1. Monthly Production	126,577	MWH
2. Productivity Factor		
a. Service Hours	487	Hours
b. Service Factor	67.7	%
c. Capacity Factor @ 280MW Pmax	62.8	%
d. Capacity Factor @ 302MW Pmax	58.2	%
3. Equivalent Operating Availability (EOA)	100.0	%
4. Forced Outage Rate (FOR)		
a. Total LEC Plant FOR	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	0	0.00%	0	\$0
Seg. 2 284 - 296	6870	6,997	1.85%	142	\$72
Seg. 3 275 - 284	6971	7,018	0.67%	2,347	\$438
Seg. 4 250 - 275	7081	7,080	-0.02%	16,315	-\$83
Seg. 5 225 - 250	7130	7,139	0.13%	4,693	\$177
Seg. 6 200 - 225	7200	7,242	0.58%	2,953	\$492
Seg. 7 175 - 225	7450	7,538	1.18%	3,800	\$1,338
Seg. 8 165 - 175	7760	7,875	1.48%	1,948	\$894
	<b>7,164</b>	<b>7,270</b>	<b>0.67%</b>	<b>32,197</b>	<b>\$3,327</b>

## 6. AGC Control Deviation

MW Range	High Dev MWH	Low Dev MWH	Total Dev MWH	Cost \$
<b>Bad AGC Data for May</b>				
Seg. 1 296 +	0	0	0	\$0
Seg. 2 284 - 296	101	-485	586	\$16,399
Seg. 3 275 - 284	36	-231	267	\$7,489
Seg. 4 250 - 275	69	-39	109	\$3,082
Seg. 5 225 - 250	42	-27	69	\$1,970
Seg. 6 200 - 225	24	-36	60	\$1,748
Seg. 7 175 - 225	26	-65	91	\$2,743
Seg. 8 165 - 175	5	-4	9	\$274
	<b>303</b>	<b>-887</b>	<b>1,191</b>	<b>\$33,704</b>

## 7. Starting Reliability

Start Type	Hot Starts	Warm Starts	Cold Starts
Number of Starts	8	16	0
Start Time Benchmark (Minutes)	75	110	200
Start Time Actual (Average Minute)	70	89	0
Start Time Deviation (%)	-7%	-19%	0%
Start Fuel Benchmark PMOA (mmBTU)	1,300	1,800	3,500
Start Fuel Actual (Average mmBTU)	1,270	1,640	0
Fuel Deviation (%)	-2%	-9%	0%
Costs of Fuel Deviations (\$)	<b>-\$121</b>	<b>-\$641</b>	<b>\$0</b>

**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 =  $(FOH / (FOH + SH)) \times 100\%$
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 =  $(Actual Fuel Consumed - Expected Fuel) \times Cost of Fuel$