Orange County Sanitation District Technology Demonstration Project Update

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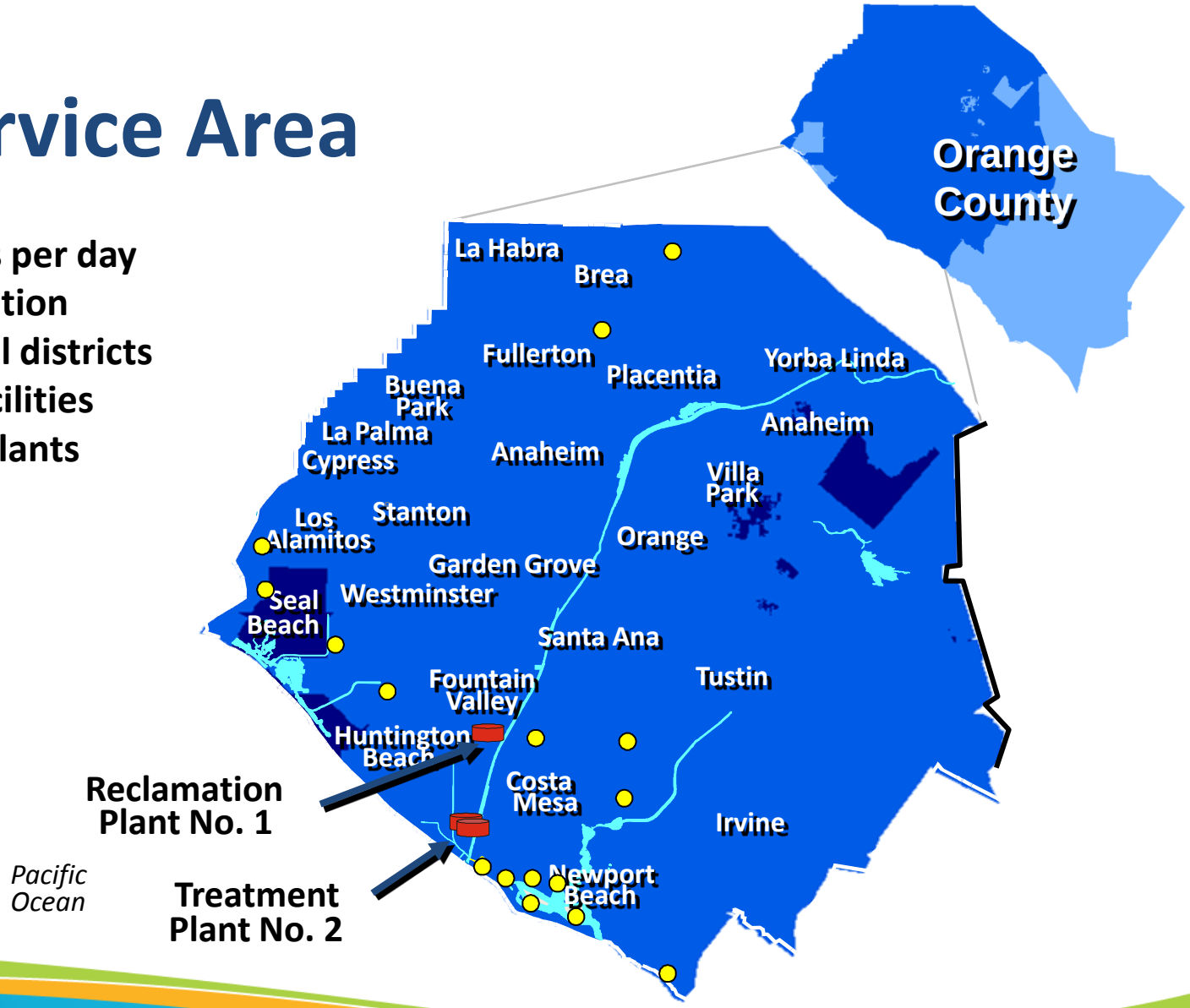
OCSD Service Area

- 471 square miles
- 207 million gallons per day
- 2.5 million population
- 21 cities, 3 special districts
- 15 pumping facilities
- 2 treatment plants



Central Power Generation Facilities

Plant No. 1 – Fountain Valley

- 3 identical IC engines
- 3471 hp each; lean burn
- 2500 kW generator
- **Total nameplate capacity: 7.5 MW**

Plant No. 2 – Huntington Beach

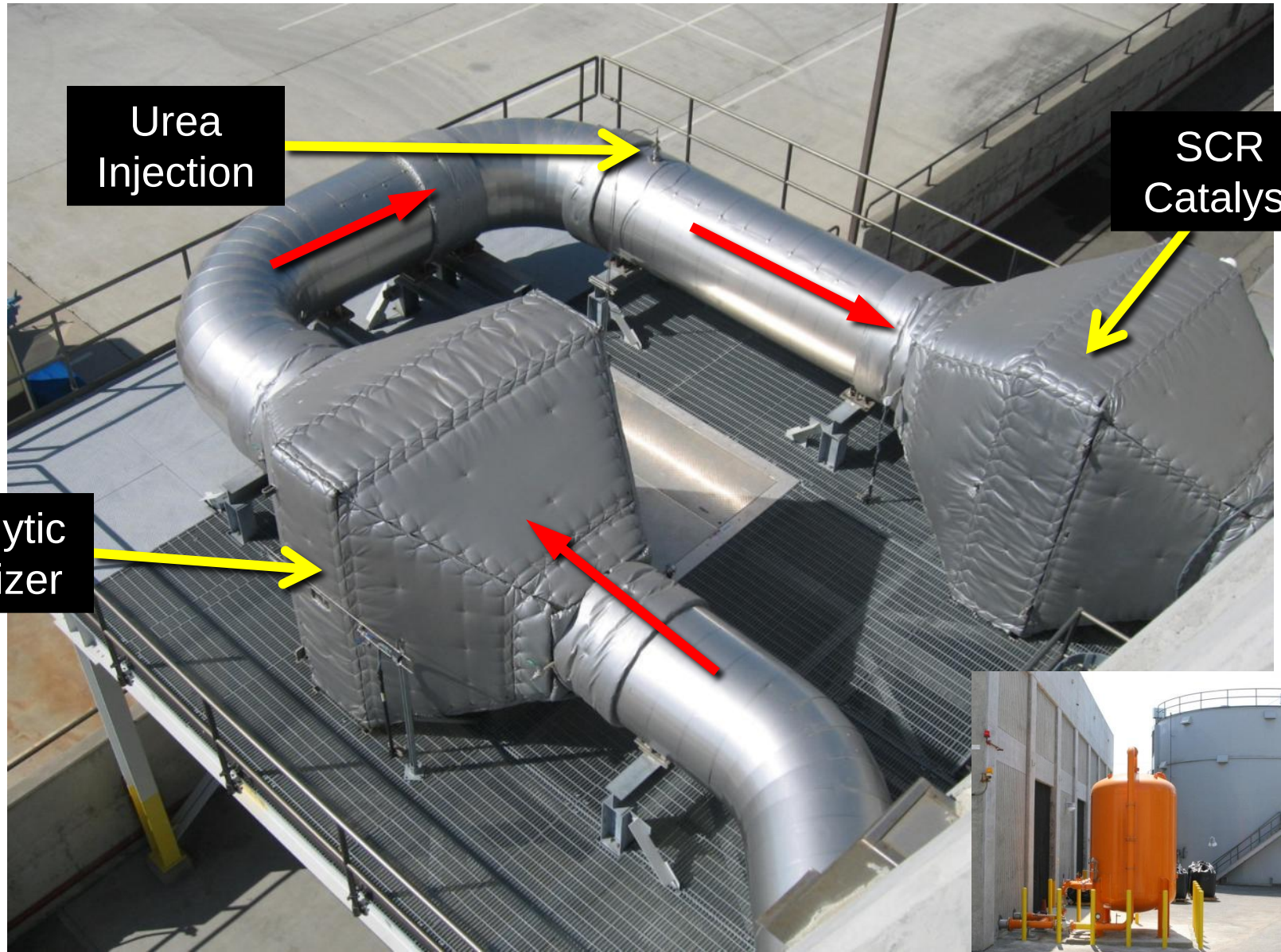
- 5 identical IC engines
- 4166 hp each; lean burn
- 3000 kW generator
- 1 MW steam turbine
- **Total nameplate capacity: 16 MW**

Both plants combined: 1.4 billion cubic feet of digester gas produced in 2013

One-Year Technology Demonstration

- ✓ *Demonstration monitoring conducted from April 1, 2010 to March 31, 2011*
- ✓ *Over 21,000 data points recorded (more than 5000 engine operating hours*
- ✓ *Final report submitted to SCAQMD in July 2011*

Catalytic Oxidizer/SCR System

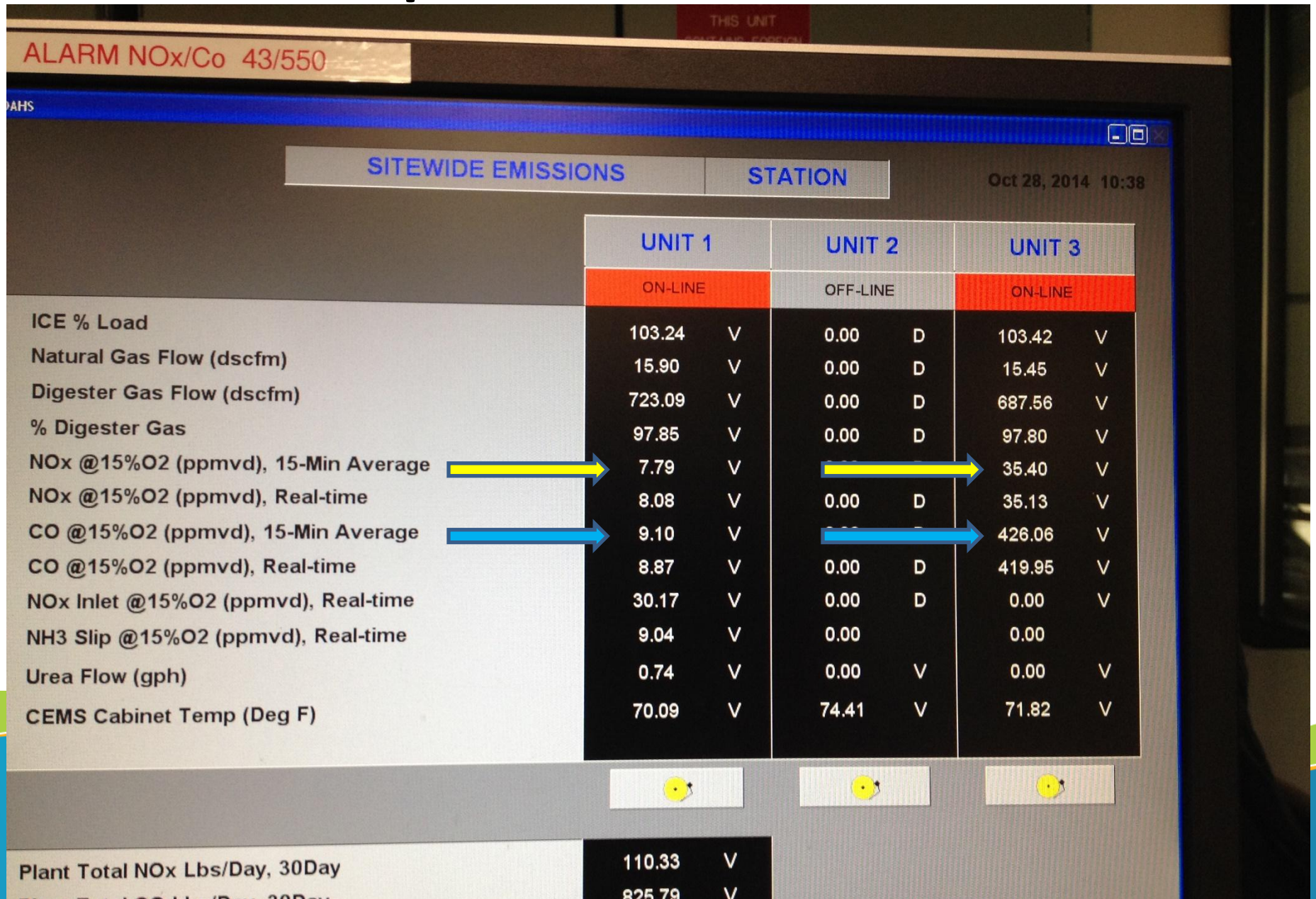


Technology Demonstration Project (April 1, 2010 – March 31, 2011) Emissions Levels Achieved

Pollutant	Engine Exhaust w/o Catalysts (ppmv)	Engine Exhaust With Catalysts (ppmv)	Rule 1110.2 limit (ppmv)
NOx	31	**7.2** (0.8 to 21.8)	11
CO	452	**7.5** (4.0 to 42.2)	250
VOC	97	**3.6** (0.73 to 5.42)	30

15-minute averages. Validated data only. Excludes exceedances during engine start-up (30 minutes) and due to operational issues/systems adjustments.

CEMS Comparison – October 28th 2014



Recent CEMS Data

Nearly 30,000 operating hours later – still using original catalysts

May 2014 – October 2014:

8.2 ppm NO_X

8.4 ppm CO

5.5 ppm NH_3 slip

11.5 ppm VOC (not CEMS)

Full Implementation: Project J-111

- Gas cleaning units in primary/polishing configuration
- Construction RFP issued Dec 27th 2013
- OCSD Board of Directors approved contract April 23rd 2014
- Notice to Proceed issued May 27, 2014

Current Construction

All Engines Will Not Meet Rule 1110.2 Deadline

- January 8, 2016
  - One engine complete at Plant 1
  - Two engines complete at Plant 2
- May 17, 2016
  - Substantial completion of all 8 engines

Rule 1110.2 (d)(1)(H)(ii)

interval averaging time for the first 4 months of the retrofitted engine's operation and up to a 24 hour fixed interval averaging time thereafter. For purposes of determining compliance using a longer averaging time:

(i) An operator shall not average data during one-minute periods in which the underlying equipment is not operated or when the CEMS is undergoing zero or calibration checks, cylinder gas audits, or routine maintenance in accordance with the provisions in Rules 218 and 218.1.

(ii) Notwithstanding the requirements of Rules 218 and 218.1, for one-minute time periods where NOx and/or CO CEMS data are greater than 95 percent of the Rule 218.1 Full Scale Range while the underlying equipment is operating, an operator shall use substitute data. A concentration equivalent to 3 times the NOx and/or CO emission limits in Table III-B (each corrected to 15% O2) shall be used as substitute data.

Thank You

CONTACT:

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