# Mercer Commercial Mercury Control Project: Results

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PSEG
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ADA-ES

# Overview

- Regulatory Drivers
- Unit Description
- Review of Performance Testing Results
- Operating Experience

# Current Timing & Technology

| | Emission Limits |
|---|---|
| SCR (NOx)<br><br>Baseline 1.4 lb/mmbtu | 0.100 lb/mmbtu (90 day)<br>0.130 lb/mmbtu (30 day)<br>0.150 lb/mmbtu (24 hour) |
| Dry Scrubber (SO2)<br>Baseline – 2.5-3.0 lb/mmbtu | 0.150 lb/mmbtu (30 day)<br>0.250 lb/mmbtu (24 hour) |
| Baghouse (PM)<br>Baseline – 0.3 lb/mmbtu | 0.0150 lb/mmbtu |
| Carbon Injection (Mercury)<br>Baseline – 38 mg/MWhr-net<br>or 9 ug.Nm3 | 90% Reduction or<br>3 mg/MWhr-net<br>Whichever is less stringent |

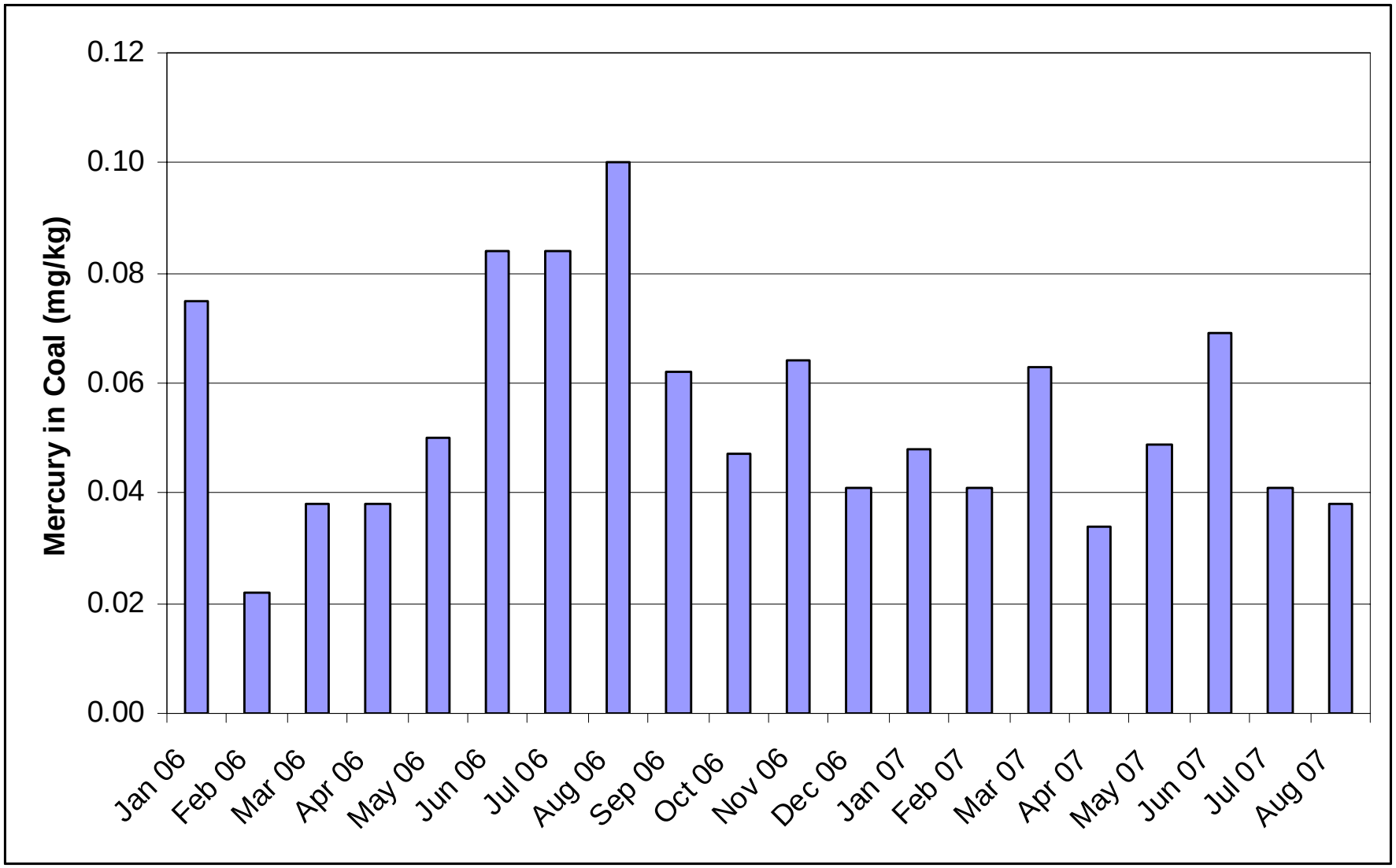
SCR – Complete – Summer 2004
Carbon Injection – Complete – January 2007
Baghouse and Carbon Relocation – December 31, 2008
Scrubber – December 31, 2010

# Mercer Unit 2

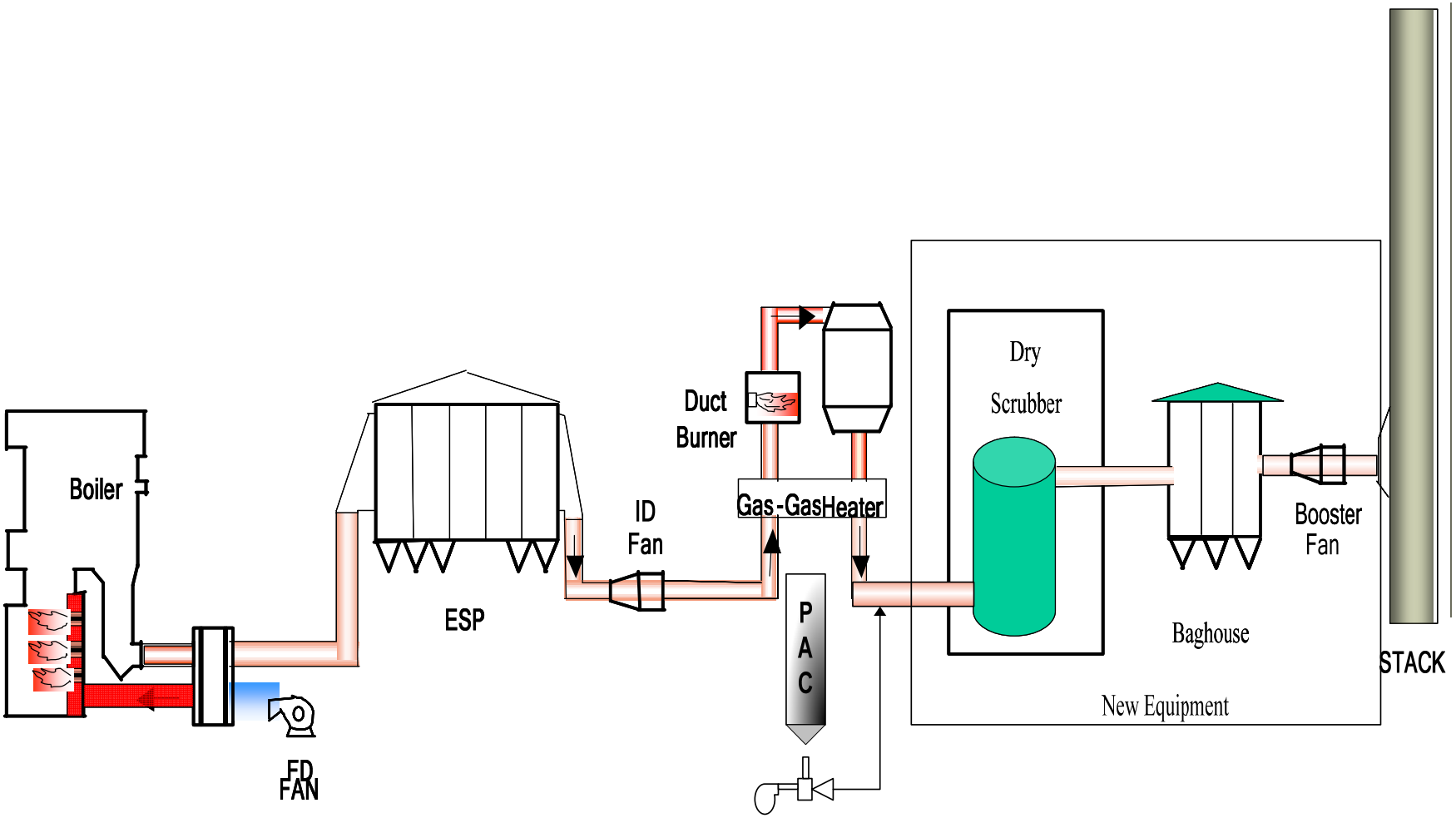
- PSEG Mercer Unit 2
  - -315 MW net (333 MW gross)
  - -Bituminous Blend
    Venezuelan (50%)
    Hg: 0.021 to 0.088 ppm*
    Cl: 190 to 433 ppm*
    Virginia Pocahontas (50%)
    Hg: 0.039 to 0.074 ppm*
    Cl: ~ 970 ppm*
- Cold Side ESP
- PAC Injection system installed in 2006

** Results from 11/06 through 2/07 analyses*

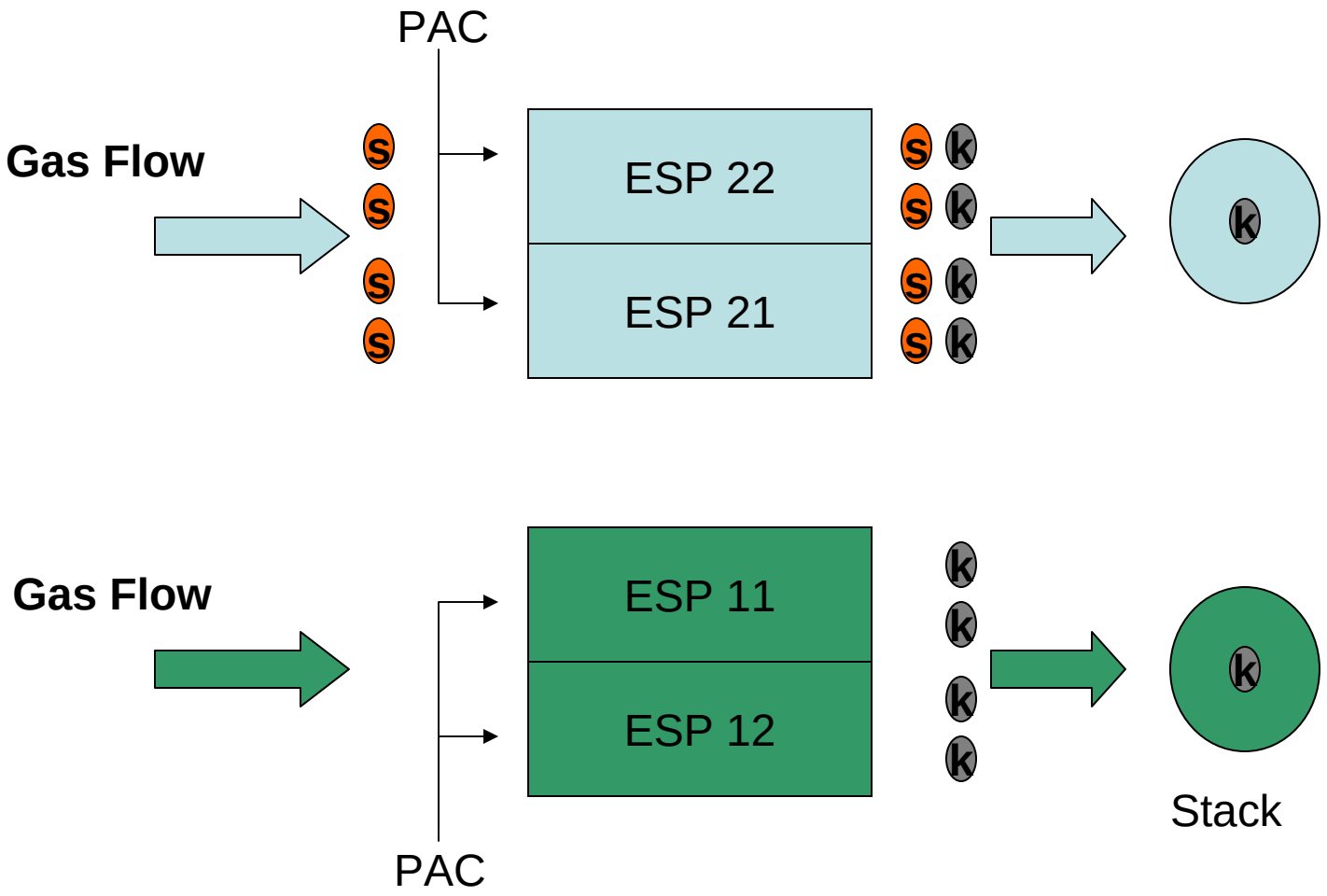
# Variability of Mercury in Coal



# Overall Plant – Gas Path



# Units 1 and 2 General Arrangement




s SCEM Measurement (Parametric)

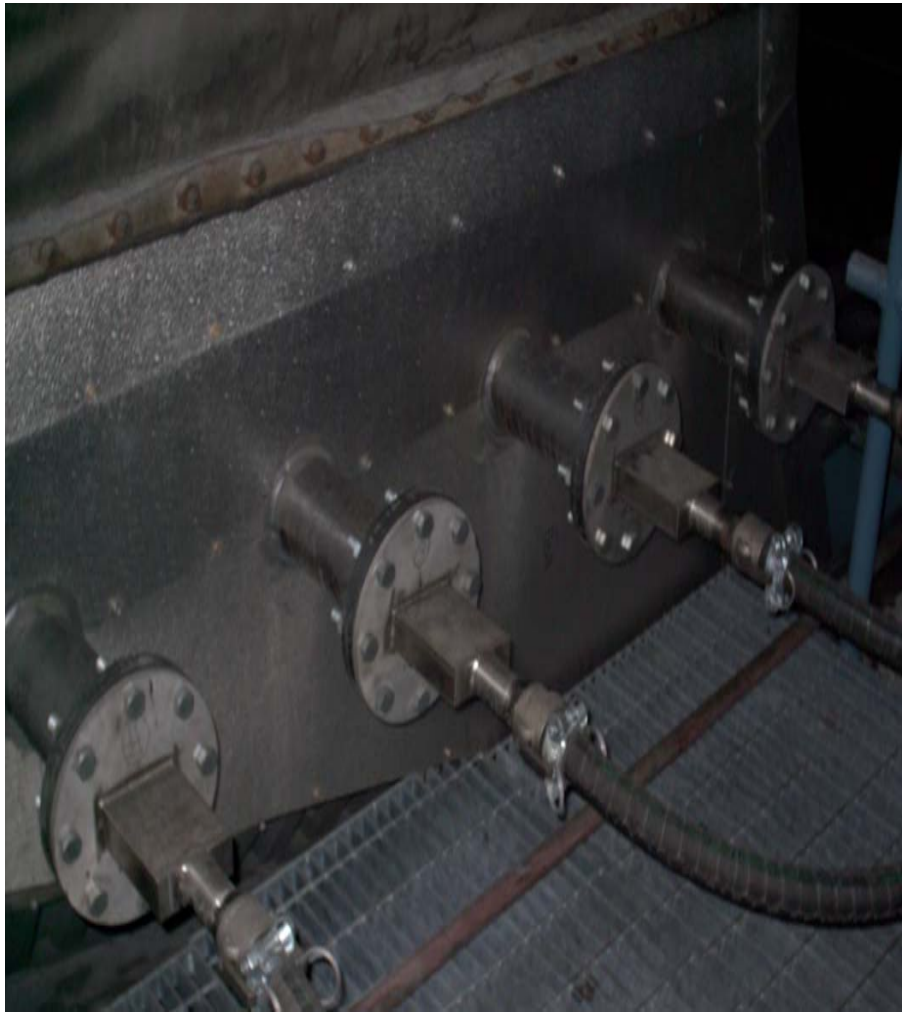
k Modified Appendix K Measurement (Parametric, Long-Term)

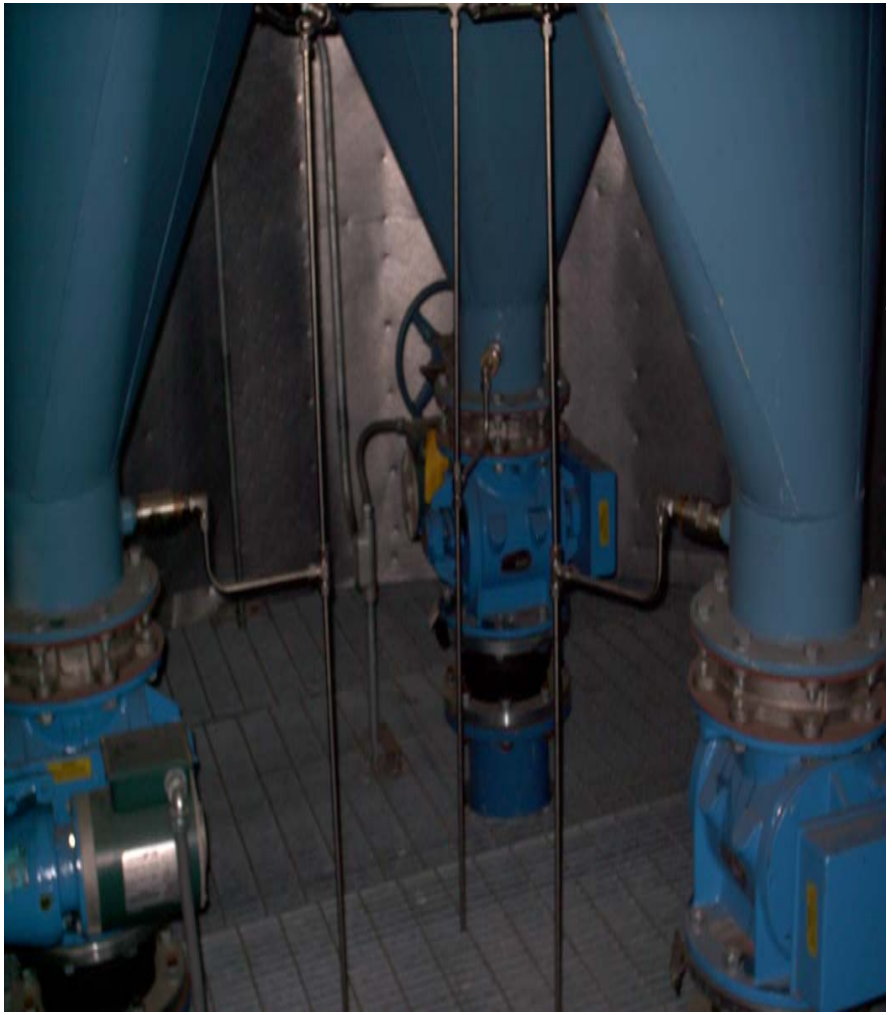
# Carbon Injection Silo

System provided by ADA-ES

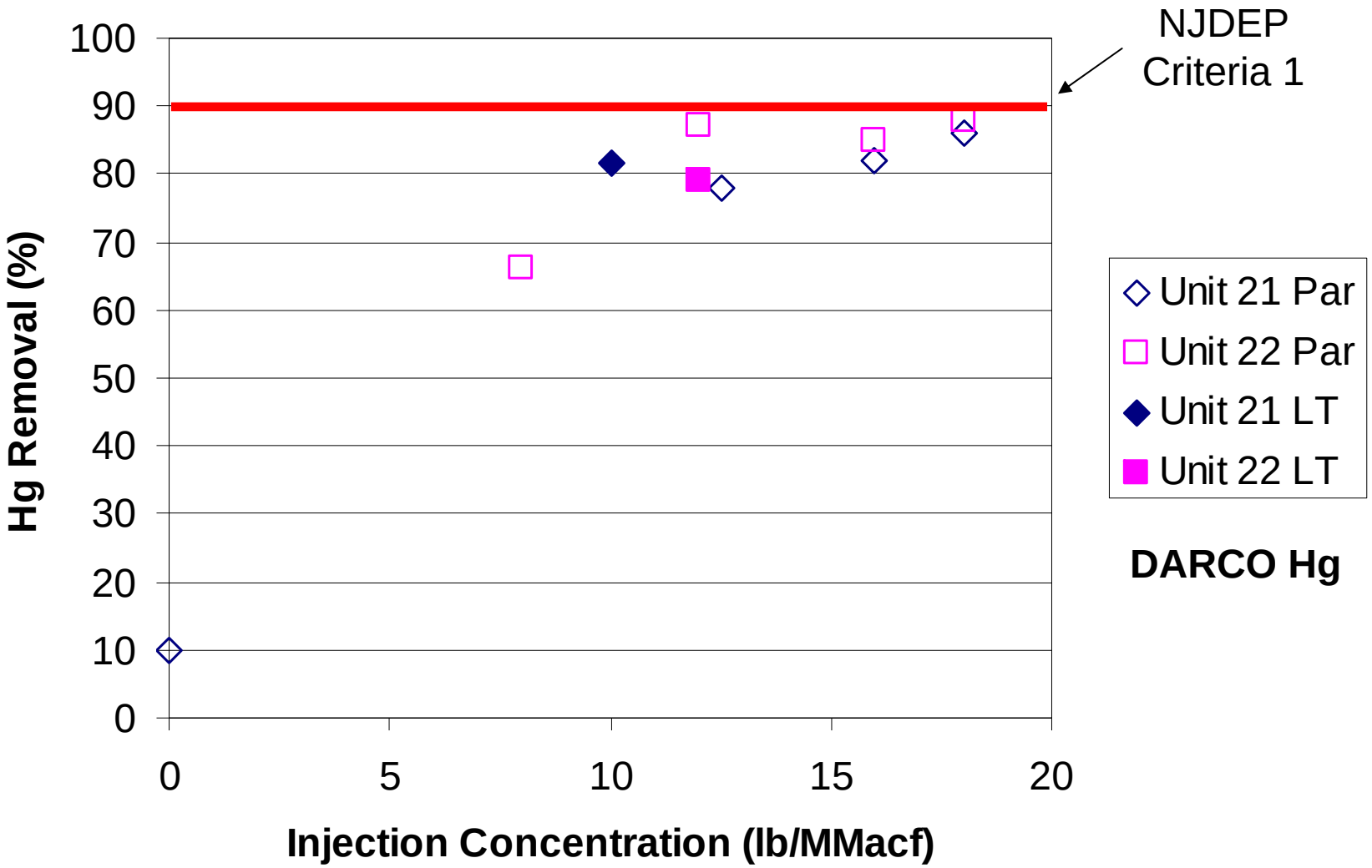
Designed for up to 18 lb/MMacf
(xx lb/hr)
Storage capacity xxx days

# PAC Injection Feeders and Grid



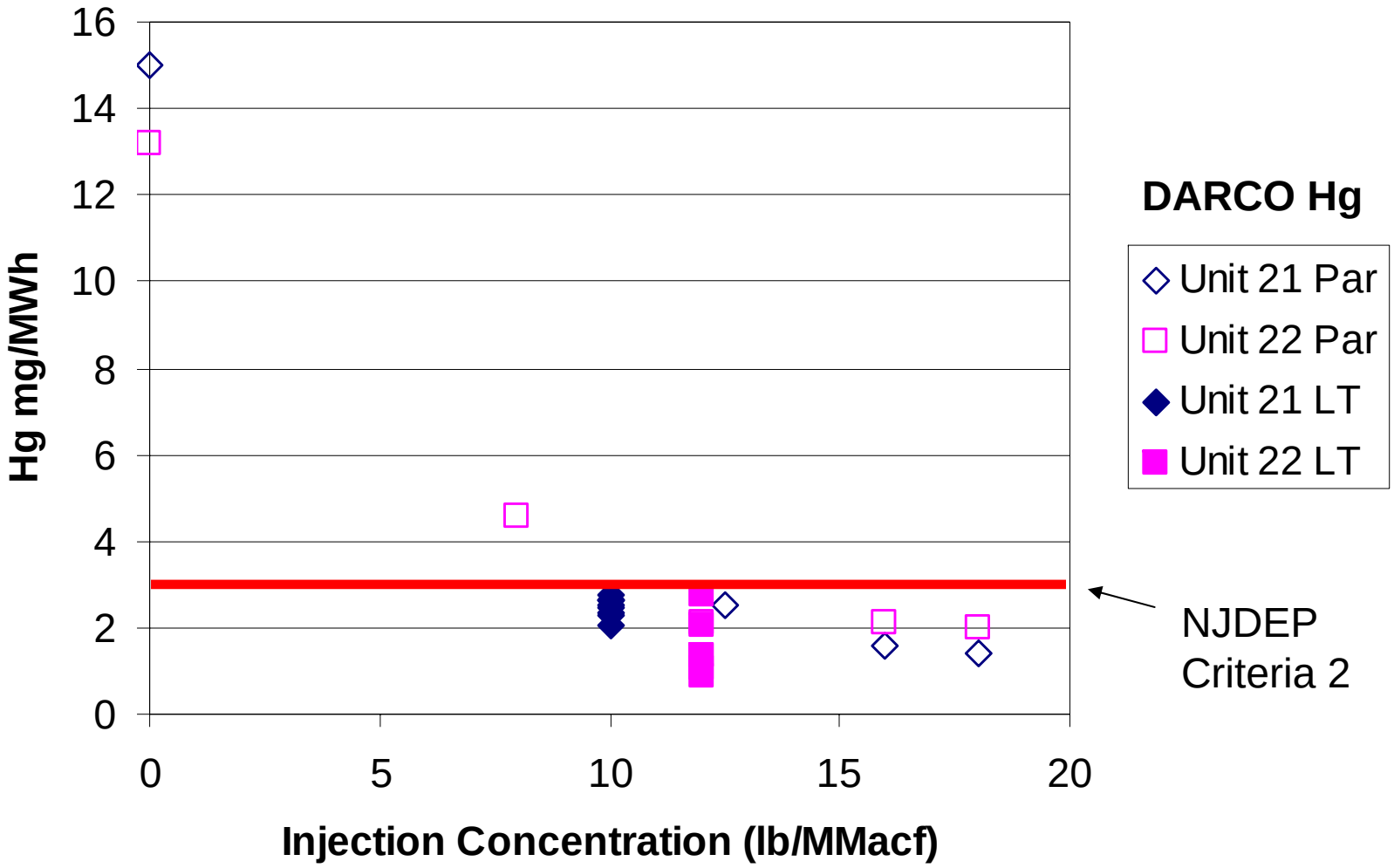


# Results from Performance Testing




*Performance testing conducted by URS*

# Results from Performance Testing




*Performance testing conducted by URS*

# Results Comparison

**COMPARISON OF OLD TEST VS CURRENT TEST, DARCO Hg**

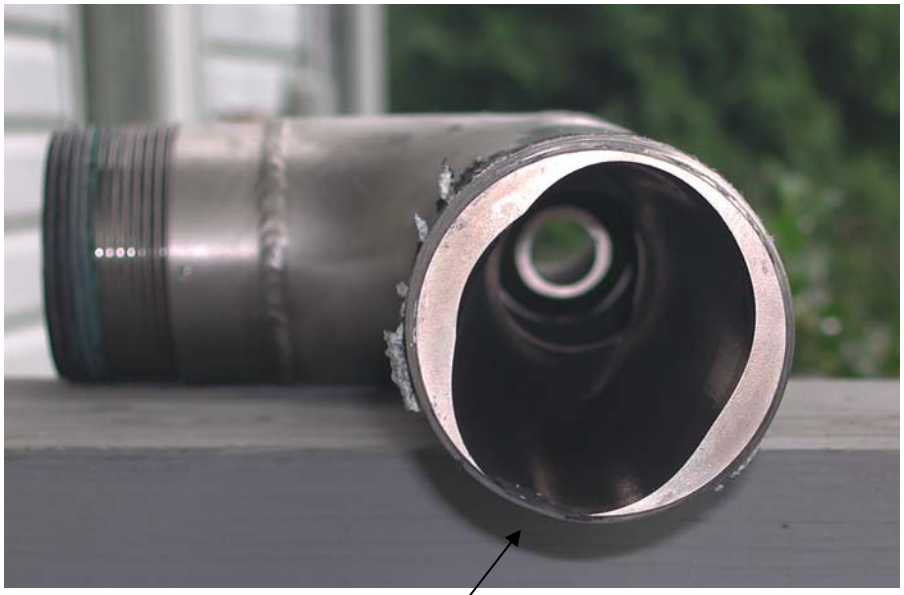
| Coal | System | Baseline Hg (mg/MWh net) | Percent Reduction | Hg Emissions (mg/Mwhnet) |
|---|---|---|---|---|
| **Domestic** | Demo | 18-27 | 84% | **3.1** |
| **50/50** | Demo | 11-12 | 67% | **4.2 – 4.3** |
| **50/50** | Commercial | 11-20 | 78% - 87% | **1.4-2.5** |

***Data for injection rates > 10 lb/MMacf***

# Balance of Plant

- No increase in opacity
- No change in precipitator performance
- Some handing issues with RWE HOK

Plastic in Delivered Carbon



Erosion

# Summary

**Baseline Mercury Content**

- Domestic baseline is high (>20 mg/MWhr)
- 50/50 baseline is lower (10 – 20 mg/MWhr)

**Sorbent Requirements**

- Good results when > 10 lb/MMacf
- Marginal Benefits over 12lb/MMacf

**NJDEP Requirements Achieved**

| **Percent Reduction (90% Limit)** | **- or -** | **Emission Limit (3 mg/MWhr net)** |
|---|---|---|
| 78 – 87% | | 1.4 to 2.5 |

**Balance of Plant**

- No change in ESP performance or opacity
- Materials handling issues with some sorbents