

Sustainability at OCSD



Orange County Sanitation District

We're here for you.

James D. Herberg, General Manager

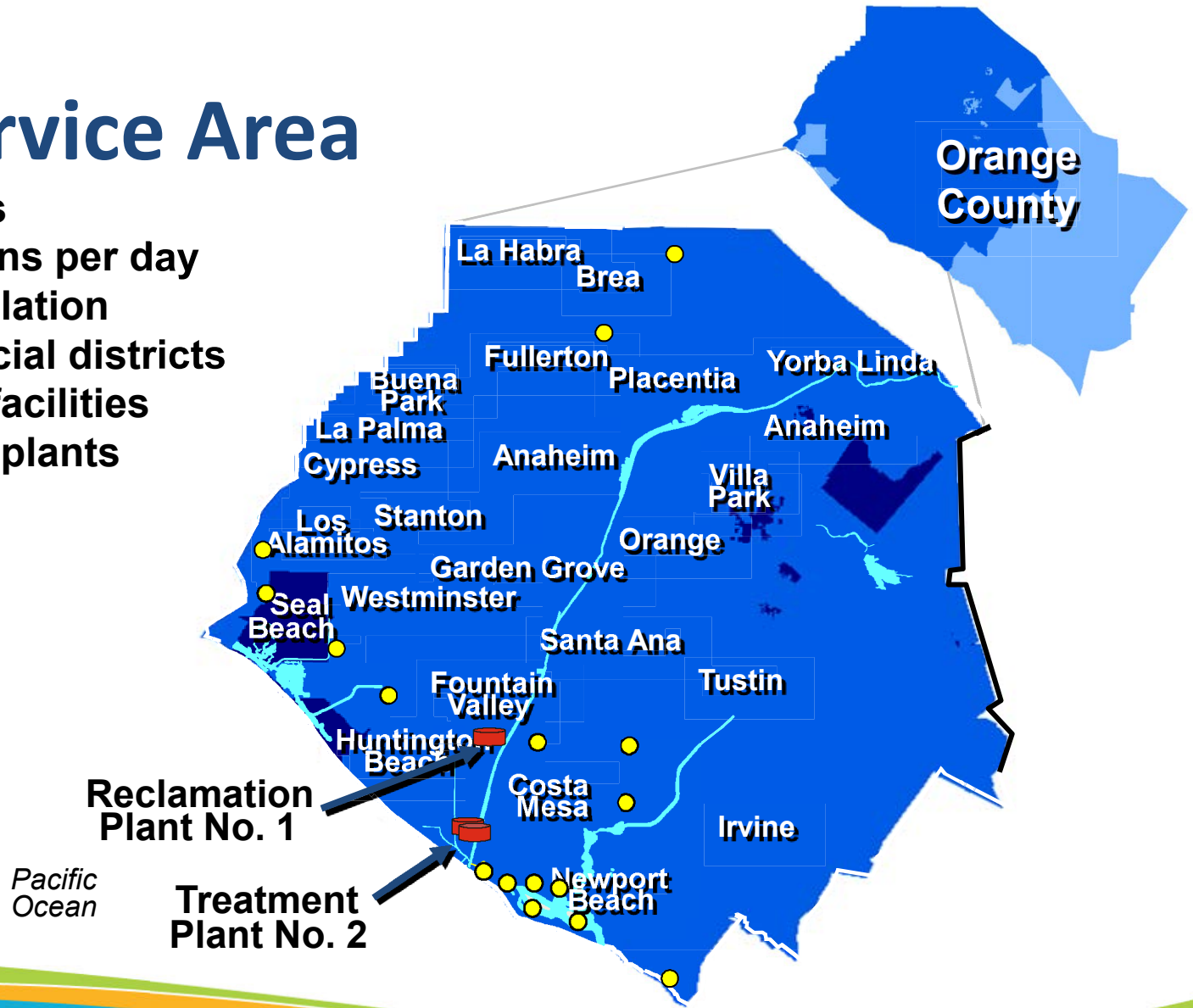
October 22, 2015



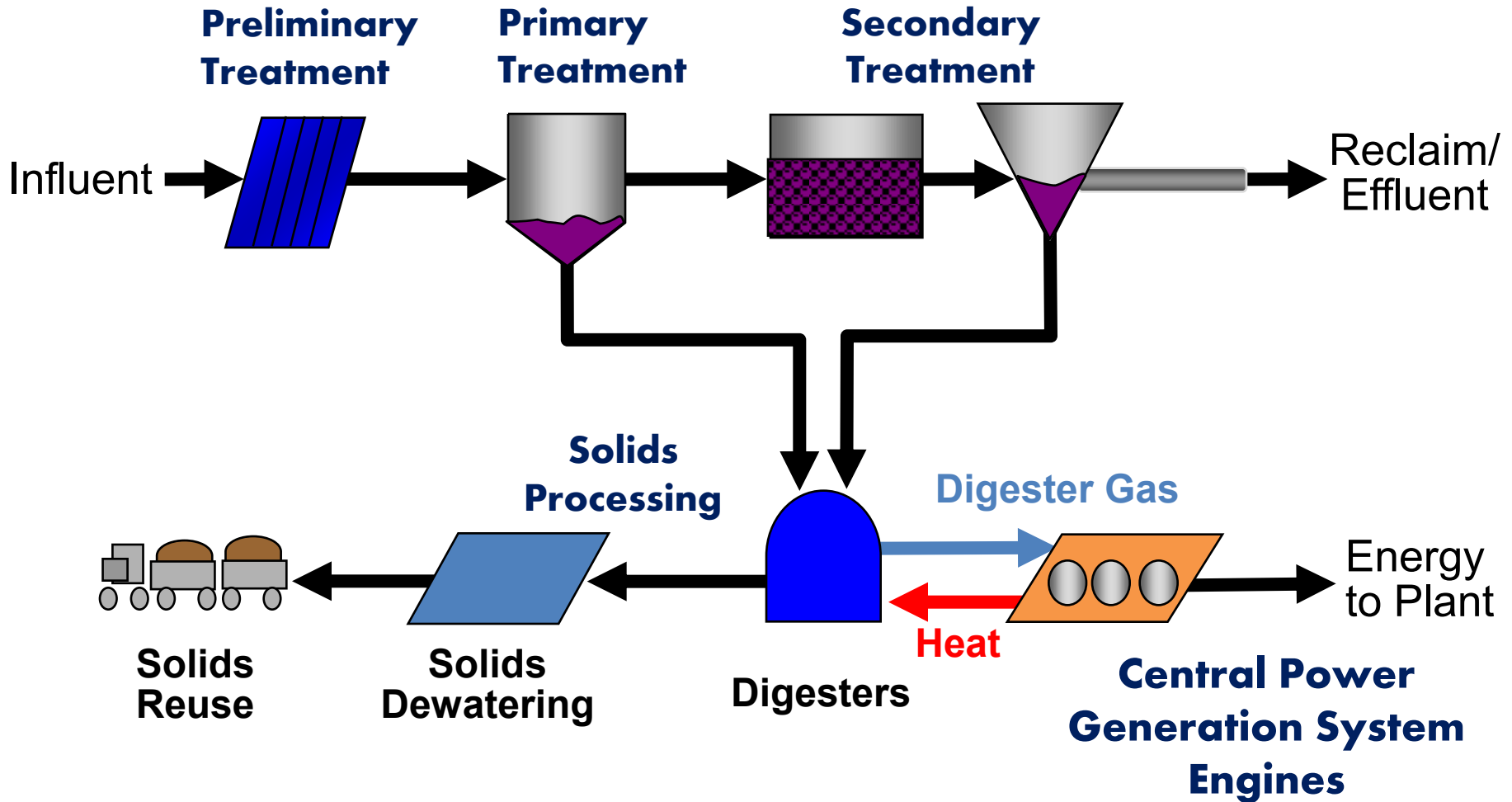
“To protect public health and the environment by providing effective wastewater collection, treatment, and recycling.”

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



Water Resource Recovery






30-Year Partnership






Water Factory 21 Project
(1970s)

Green Acres
Project (1991)

Ground Water
Replenishment
System
(2008/2015)

 Seawater intrusion
barrier

 Non-potable water for
landscape irrigation
(purple pipe)

 2008 - 70 MGD of potable
water
 2015 – 100 MGD of
potable water



Why Go Big?

Planning in the 1990s

OCSD – Defer the need for a new ocean outfall

OCWD – Need more water

- Larger seawater intrusion barrier
- 5 year drought 1987–92
- Steady population increases
- Imported water supply challenges
- Improve groundwater quality



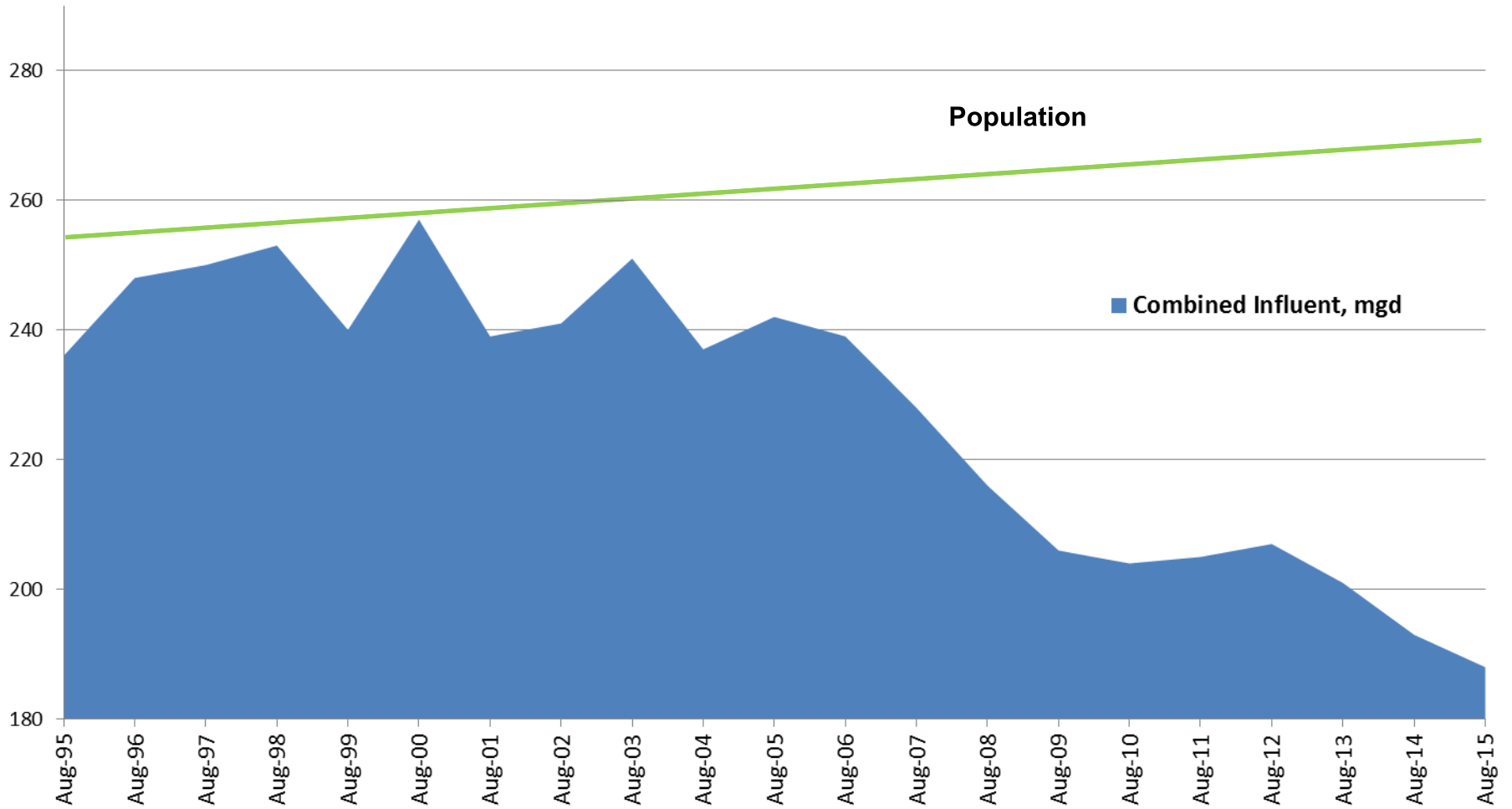


OCSD Focuses on Wastewater as a Resource

- Master planning
- Enhanced source control program
- Flow diversions
- Secondary treatment operations
- Communications

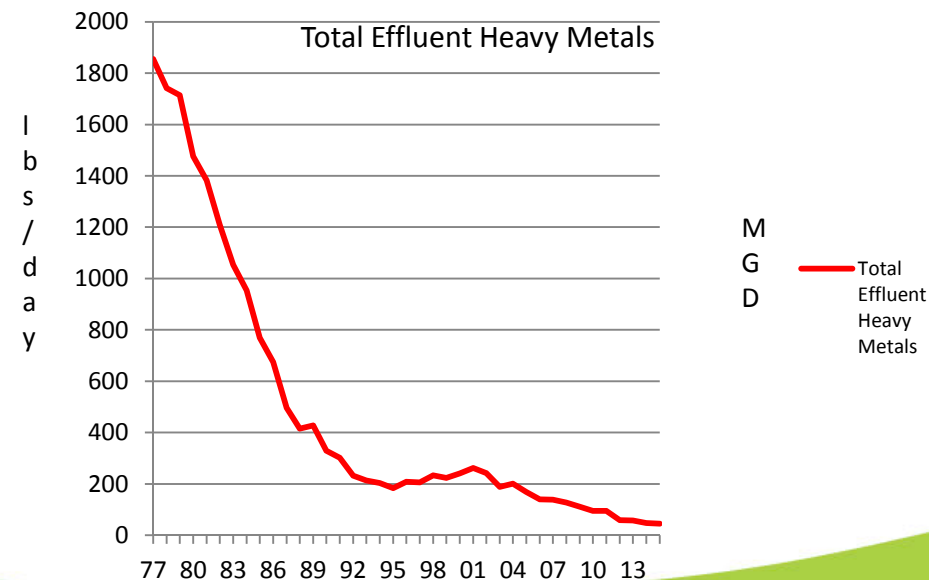


News Flash: Flow has dropped!

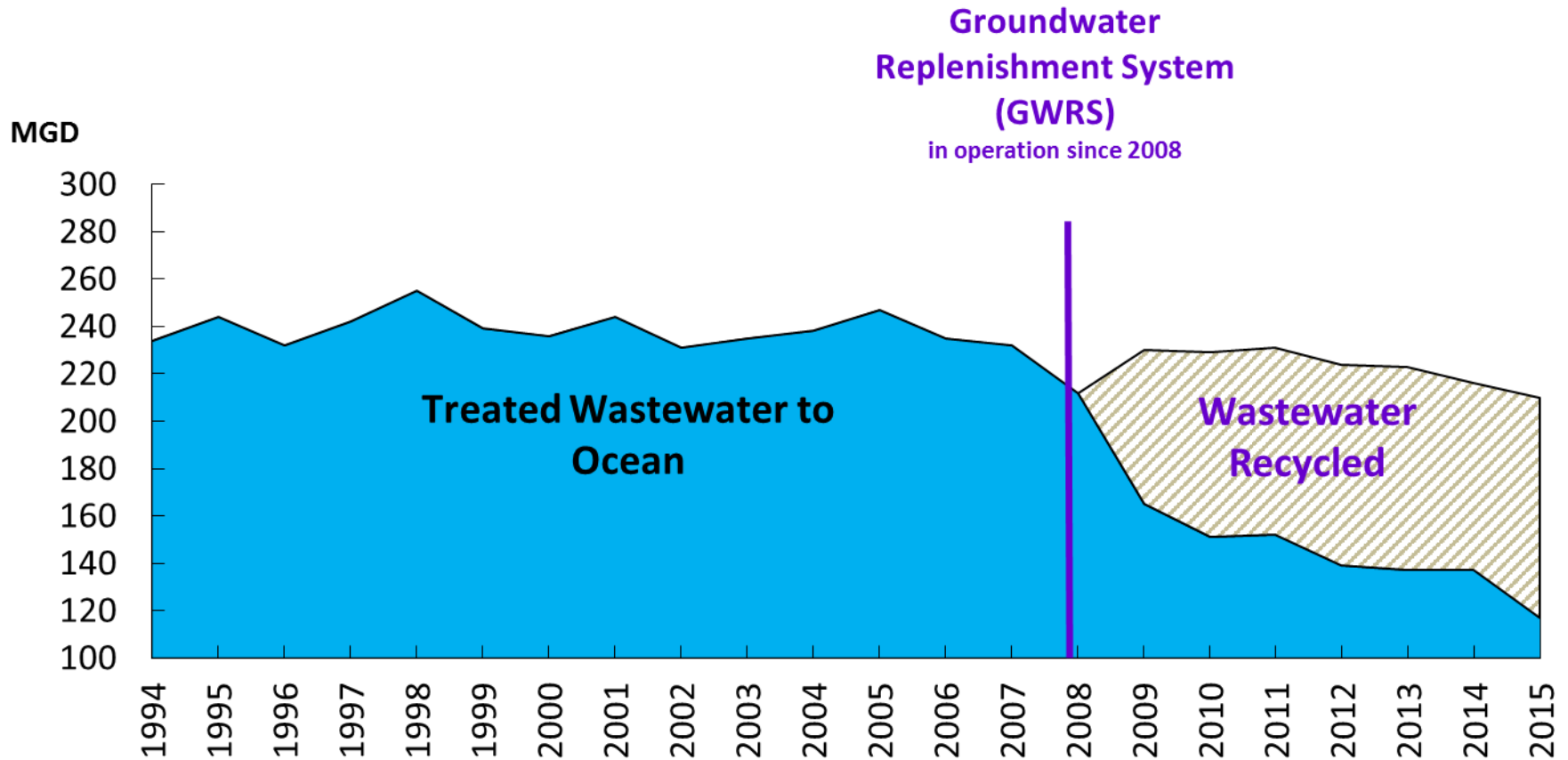


Enhanced Source Control Program

- Highly Effective Pretreatment Program
- Pollutant Source Control Examples
 - Source Reduction of *N*-Nitrosodimethylamine (NDMA) and its Precursors
 - Source Investigation and Reduction of 1,4-Dioxane
- Public Outreach Programs
 - “No Drugs Down the Drain”
 - Co-hosting events, tables, presentations and tours
 - Joint media efforts



More Water to GWRS, Less Water to Ocean Outfall



2013 Strategic Plan

On November 20, 2013, the Board approved the Five-year Strategic Plan which included the strategic goal for “Future Water Recycling”.

100% Reuse



Our Products: Energy

Produced

11 MW of Electricity

Recovered

1.3 M Therms Heat

Saved

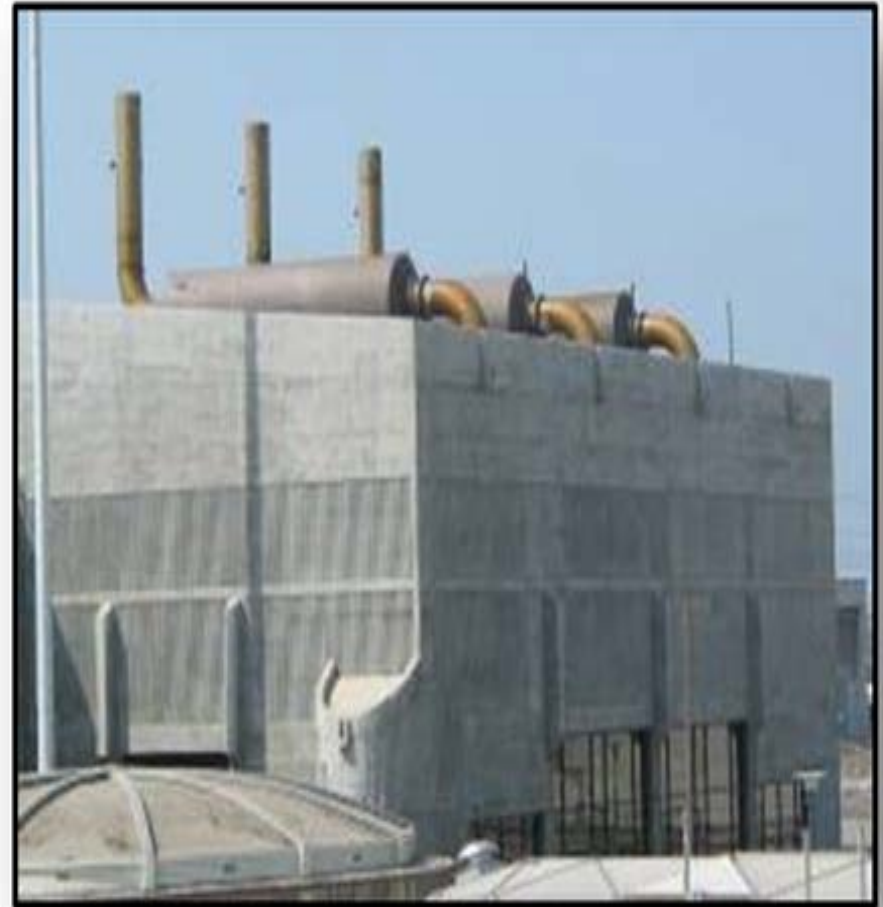
\$ 5 million annually



South Coast AQMD Rule 1110.2

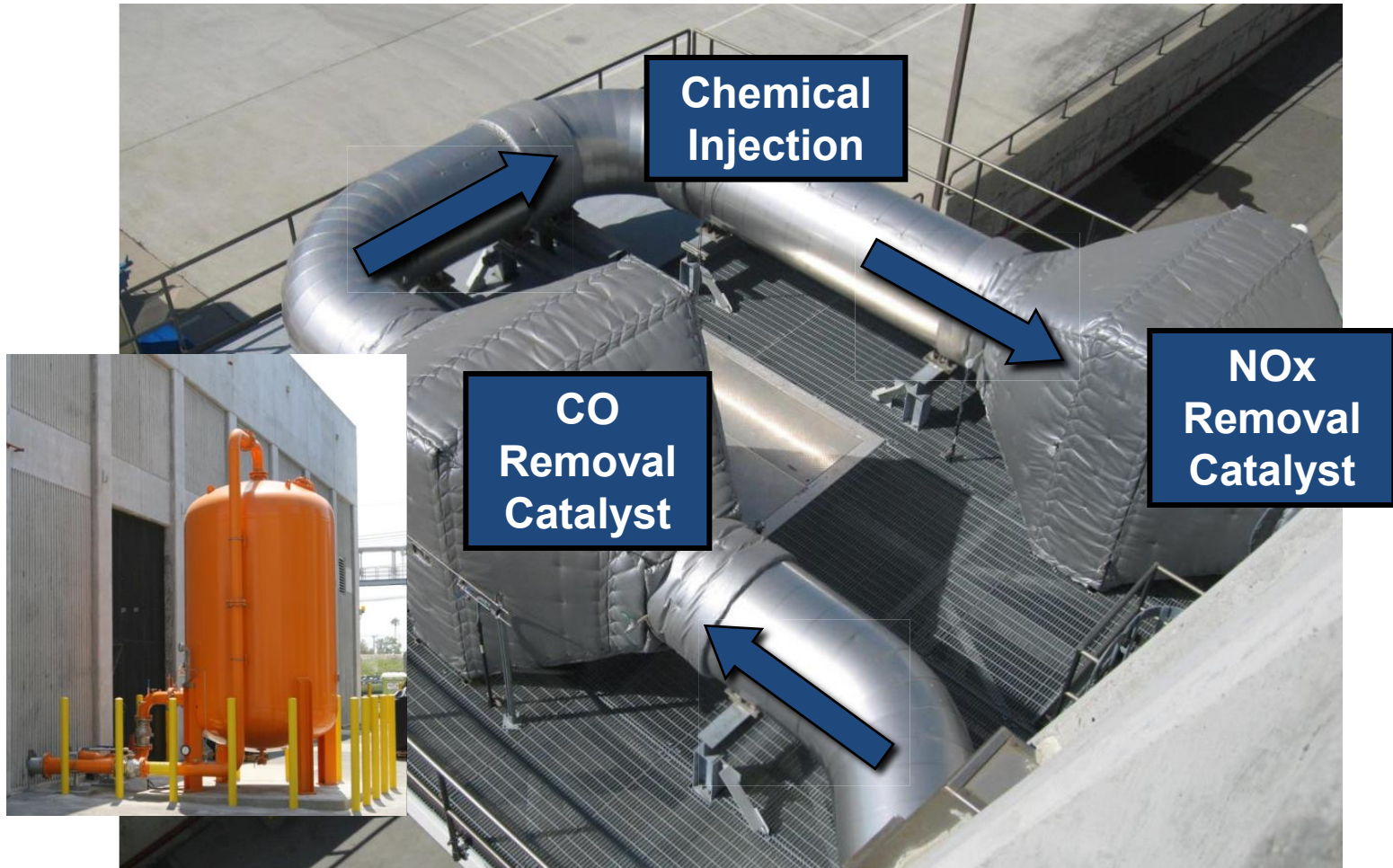
“Emissions from Gaseous and Liquid Fueled Engines”

- Rule requires significant reduction of NO_x, CO and VOC concentrations
- 55 biogas engines in South Coast basin
- 27 are digester gas fueled
- OCSD operates 8 of those 27



Our Research: Emissions Reduction

2-Step Catalytic System



Emissions Levels Achieved

Pollutant	Engine Exhaust w/o Catalysts (ppmv)	Engine Exhaust With Catalysts (ppmv)	Rule 1110.2 limit (ppmv)
NOx	31	7.2	11
CO	452	7.5	250
VOC	97	3.6	30

15-minute averages

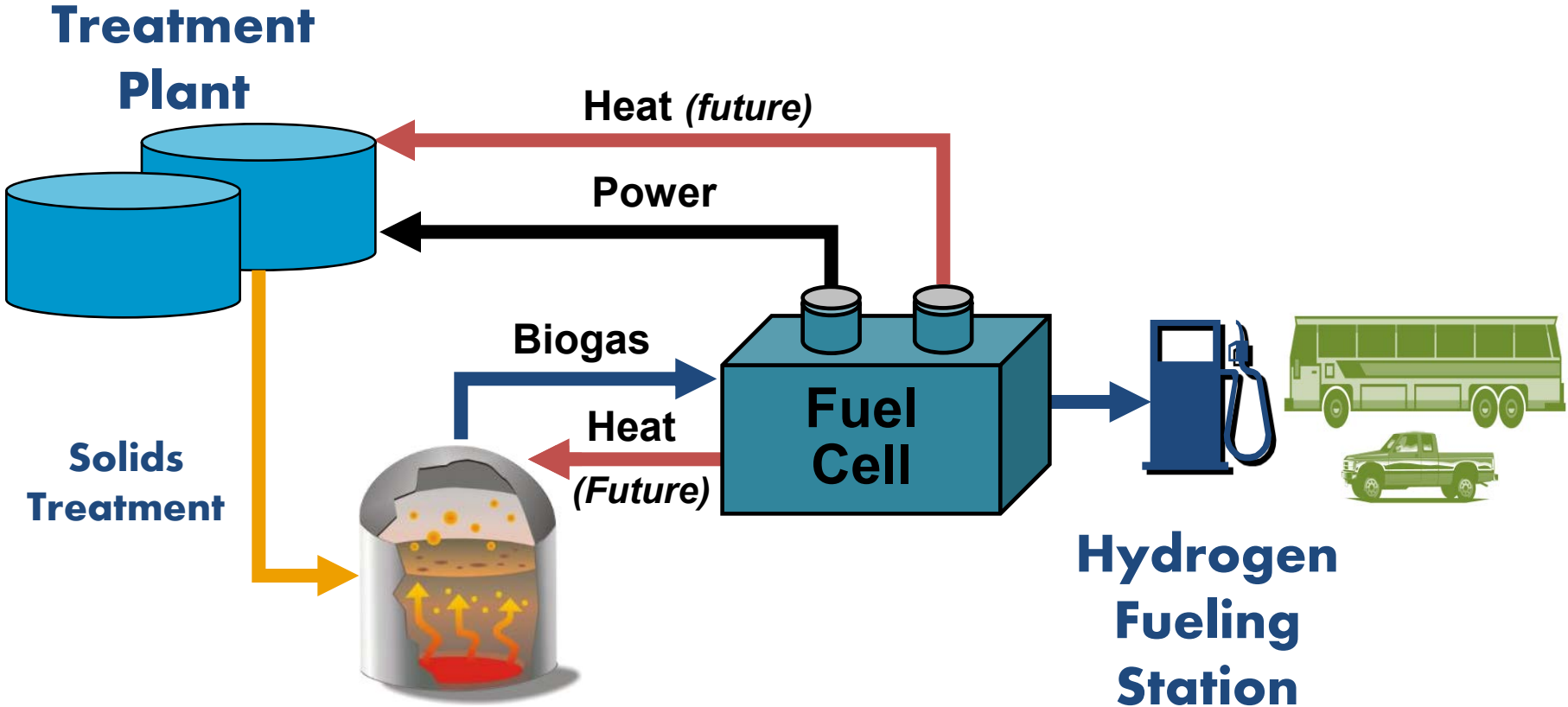


“Trigen” Full-scale Hydrogen Fueling Station



- 300kW molten carbonate fuel cell
- From digester gas
- Co-produce electric power, hydrogen and thermal energy

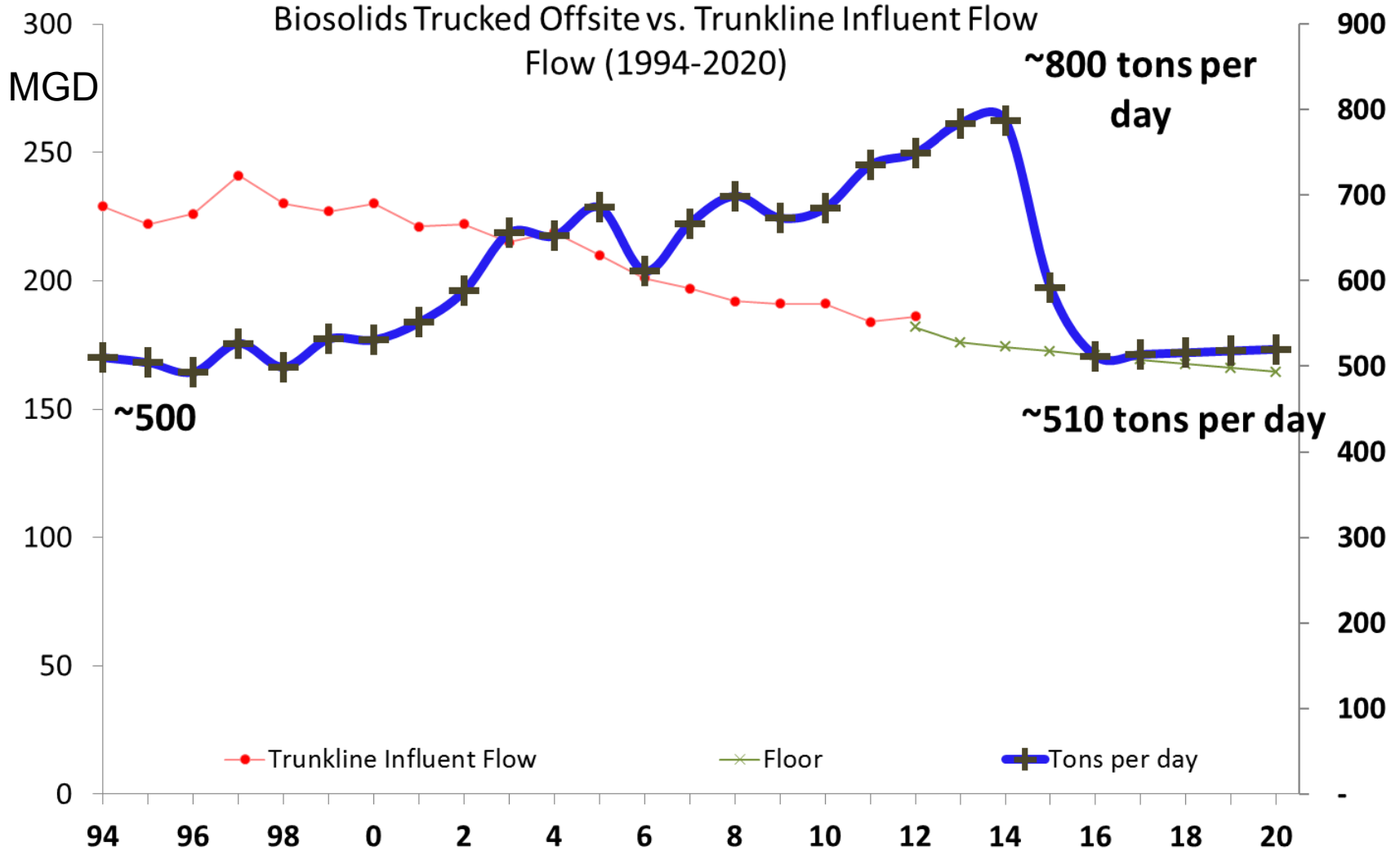
Renewable H₂ Energy Station



Efficiency:

- Target (electricity + H₂) 50%
- Measured (electricity + H₂) 53.2%
- Measured (incl. heat value) >70%

Our Products: Biosolids



OCSD Biosolids Program

Policy: OCSD strives to recycle our biosolids using sustainable options while protecting public health and the environment.



1980's Source Control
Program significantly improves water and biosolids quality.

1988: OCSD starts **farming with biosolids.**

2000-2003 Three planning efforts to look at various biosolids options including final **Long Range Biosolids Management Plan**. Recommended diversity, letting contractors take on risk for building facilities. South Kern compost and EnerTech contracts result.

2004-2012 Long Range Plan Implementation: South Kern Compost facility built; EnerTech built and fails commissioning.

2012-13 Construction begins on 3 CIP projects to rehab and reduce solids hauled out of plants.

2015 Study new biosolids options to develop new RFP

2016 RFP for biosolids options since Synagro contract expiring at end of 2016.

2016 OCSD will stop processing **IRWD solids**

By 2017: Biosolids will be reduced by **one-third** with completion of 3 CIP projects and IRWD solids removal.

Annual biosolids produced: **1985** 120,000 tons



Landfilling

50% recycling biosolids

1991-Future: >90%* recycling of biosolids

* 2005-2007; 2013: few trucks per day to landfill to increase diversity



By 2003: Rural counties adjacent to the densely populated areas in So. Cal banned biosolids land application, coinciding with urban sprawl and the housing boom. Some bans were spawned by biosolids industry competitors in attempts to kill rival projects.

Research: AquaCritox

Overall Conversion of Wet Waste to Energy



Commercial Sized
Reactor

- AquaCritox - oxidizes all sludge to carbon dioxide and nitrogen gas; could replace digesters, gas compression & storage, dewatering, and offsite biosolids management.
 - 97% sludge volume reduction
 - 90% recoverable energy from bio-mass

Thank You
www.ocsewers.com