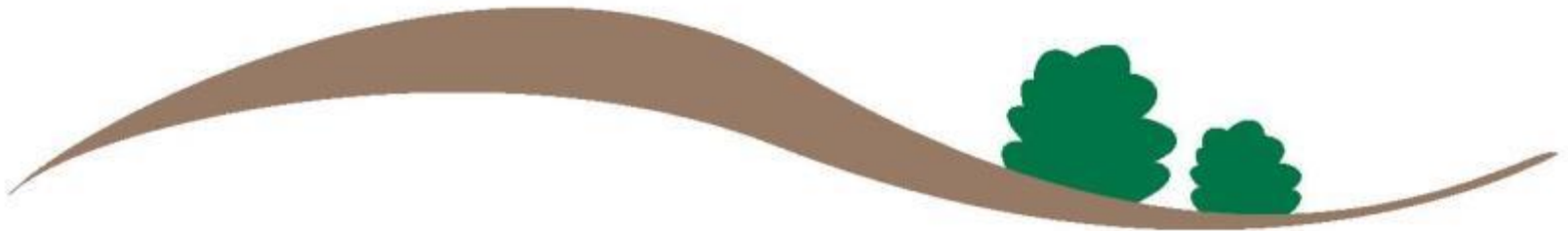


Inland Empire Regional  
Composting Facility



INLAND EMPIRE REGIONAL

COMPOSTING

A U T H O R I T Y

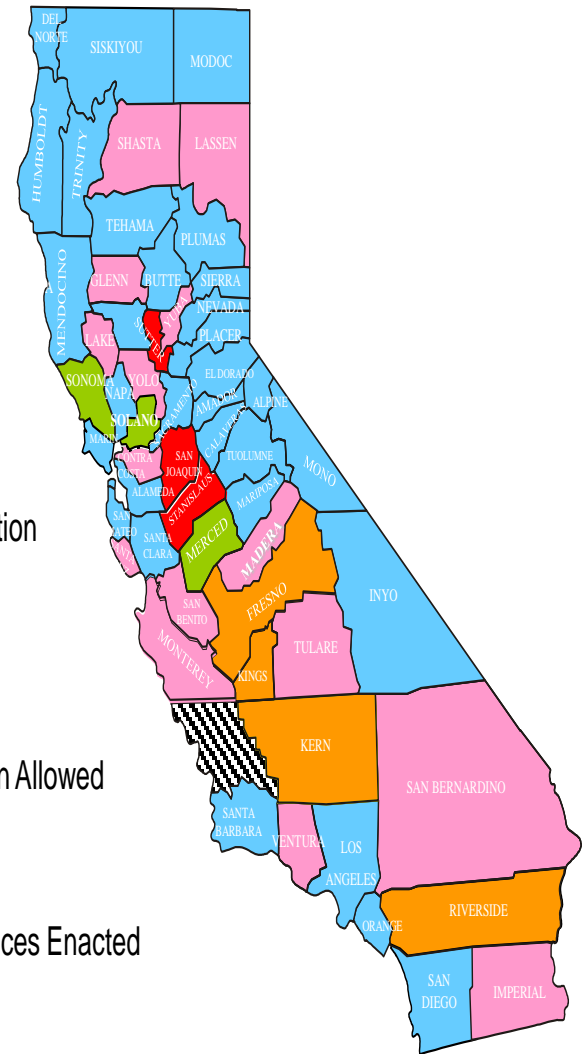
## Why Build It?

- Cost going Up
- Options going down
- Regulations
  - SCAQMD 1133.2
- Urban Encroachment

## Biosolids Land Application in California

### Status of County Ordinances

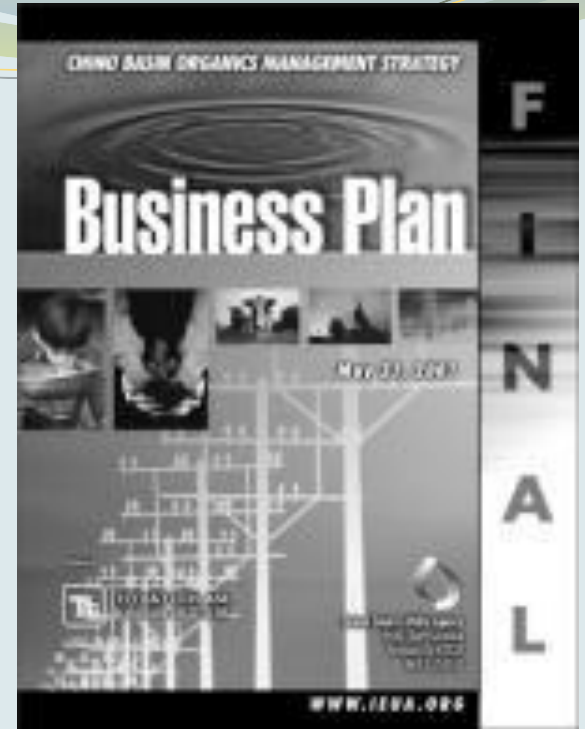
-  Ban on All Land Application
-  Practical Ban
-  Ban on Class B
-  Class B Land Application Allowed
-  Developing Ordinances
-  No Regulations/Ordinances Enacted





**Inland Empire**  
UTILITIES AGENCY \*

# The Organics Management Strategy Final Business Plan August 2002



“A comprehensive strategy for implementing a coordinated, cost-effective approach to managing organics in a phased incremental manner consistent with sound public works engineering principles”

# The Key Business Plan Policy Objectives

- Reduce biosolids handling and transportation costs
- Reduce reliance on out-of-agency solutions;
- Cost effectively recycle organic wastes using environmentally safe enclosed facilities;
- Local use of the fertilizer products will be a first priority;
- Reduce local air and water pollution;
- Implement strategies that minimize diesel truck trips

# Inland Empire Regional Composting Authority

- 50/50 partnership with IEUA/LACSD
- Formed to gain control of biosolids management
- Gain control of costs and options



# What is the IERCA?

- Joint Powers Agreement (JPA)
  - Between County Sanitation District No. 2 of Los Angeles County and the Inland Empire Utilities Agency
  - Ratified February 27, 2002
  - To acquire property and implement the [composting facility] project



# JPA cont.

- Board of Directors
  - 6 members (tie is possible), 2 alternates

IEUA	CSD No. 2
(2) IEUA Board Members	(2) District Board Members
(1) Agency GM or designated alternate	(1) District Chief Engineer or designated alternate
(1) Alternate Director	(1) Alternate Director

- Project Manager, Assistant Project Manager, Treasurer



**IERCF**

**Biofilter**



# Inland Empire Regional Composting Facility



Aerial View of IERCF



Biosolids Offloading

- *Existing Warehouse in Rancho Cucamonga*
- *>200,000 wet tons/year*
  - *Designed by Tetra Tech and CH2MHill*
  - *Construction 2004 to 2007*
  - *Started operations April 2007*
- *Total cost \$95m (\$15m for property and IKEA warehouse, \$80m for improvements)*

# Project Estimates v Reality

	Assumptions	Actual
Facility	\$44m	\$95m
Staffing	32-36 FTEs	25 FTEs
Biosolids/year	150,000 wt	150,000 wt
Tip fees	\$26 wt ('03)	\$55 wt ('16)
Startup	2005	2007
Compost Cust.	6-10	140

# Totals for 10 years

	2007 – 2017
<b>Biosolids Processed (wet tons)</b>	1,350,046
<b>Amendments Processed (wet tons)</b>	573,865
<b>Total Feedstocks Processed (wet tons)</b> 80,000 Trucks	1,923,911
<b>Compost Sold (cubic yards)</b> 36,000 Trucks	2,171,562

# IKEA Before and After



# Construction Started 2004





# Receiving Building





Clockwise from top left, Building interior, screw conveyors, pug mill mixer in receiving pit, exhaust fan, exhaust system piping, and construction of biofilters.







Wildcat Trommel Screen



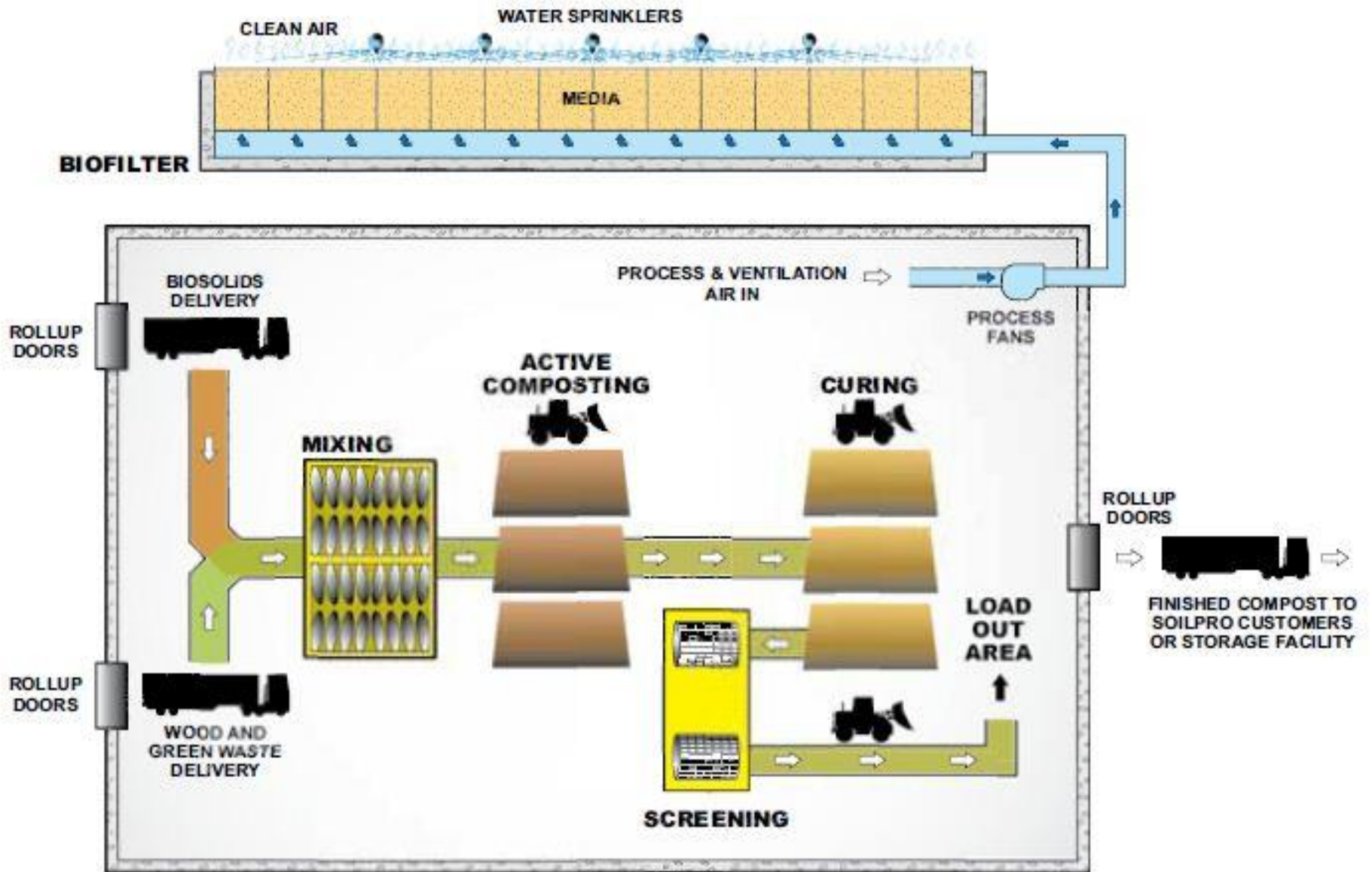
Biofilter



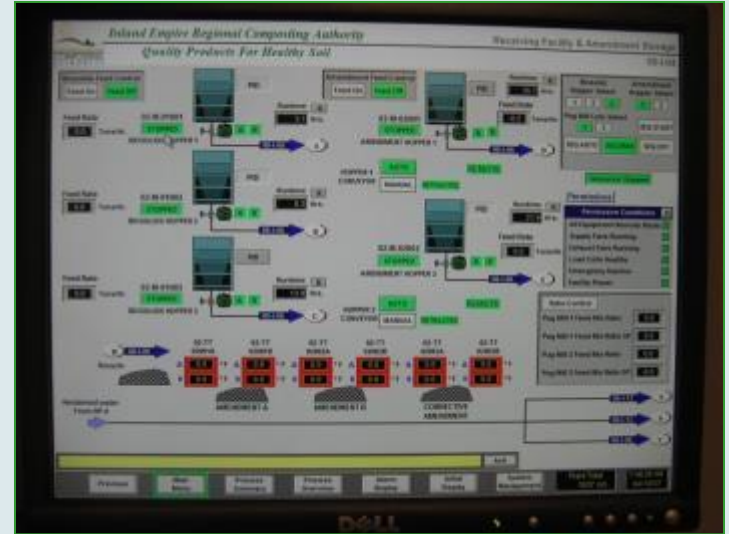
Truck Scales

# Started Operations April 2007

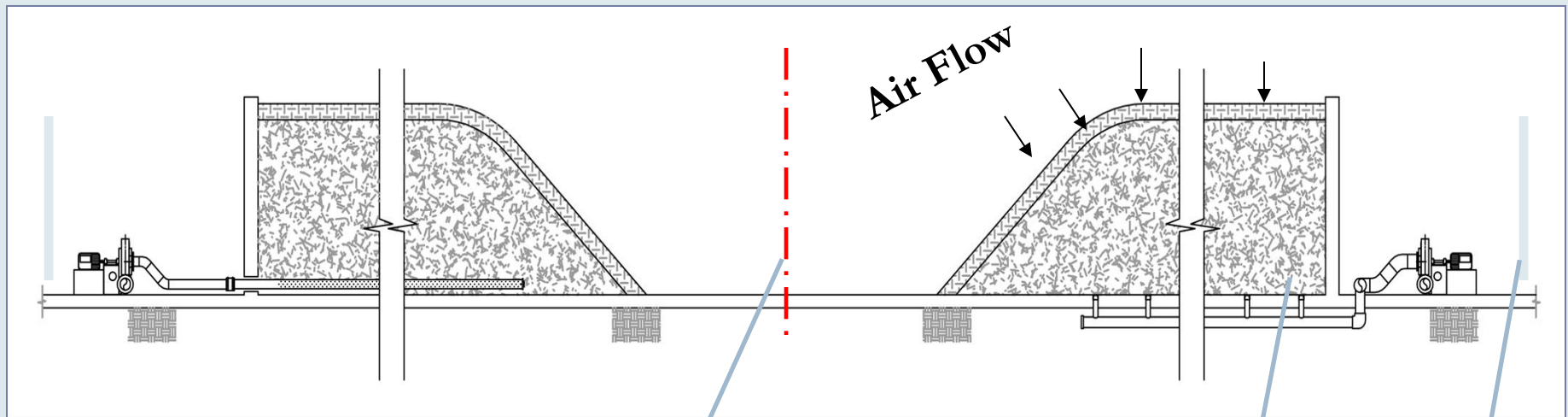




# SCADA Controls



# Aerated Static Pile Composting



Air Flow

Interior wall

Building centerline  
and equipment  
corridor

Exterior wall

# Ops Activities



# Housekeeping



# Biofilter Maintenance

- Screening existing media to blend with new media
- Every 14 months

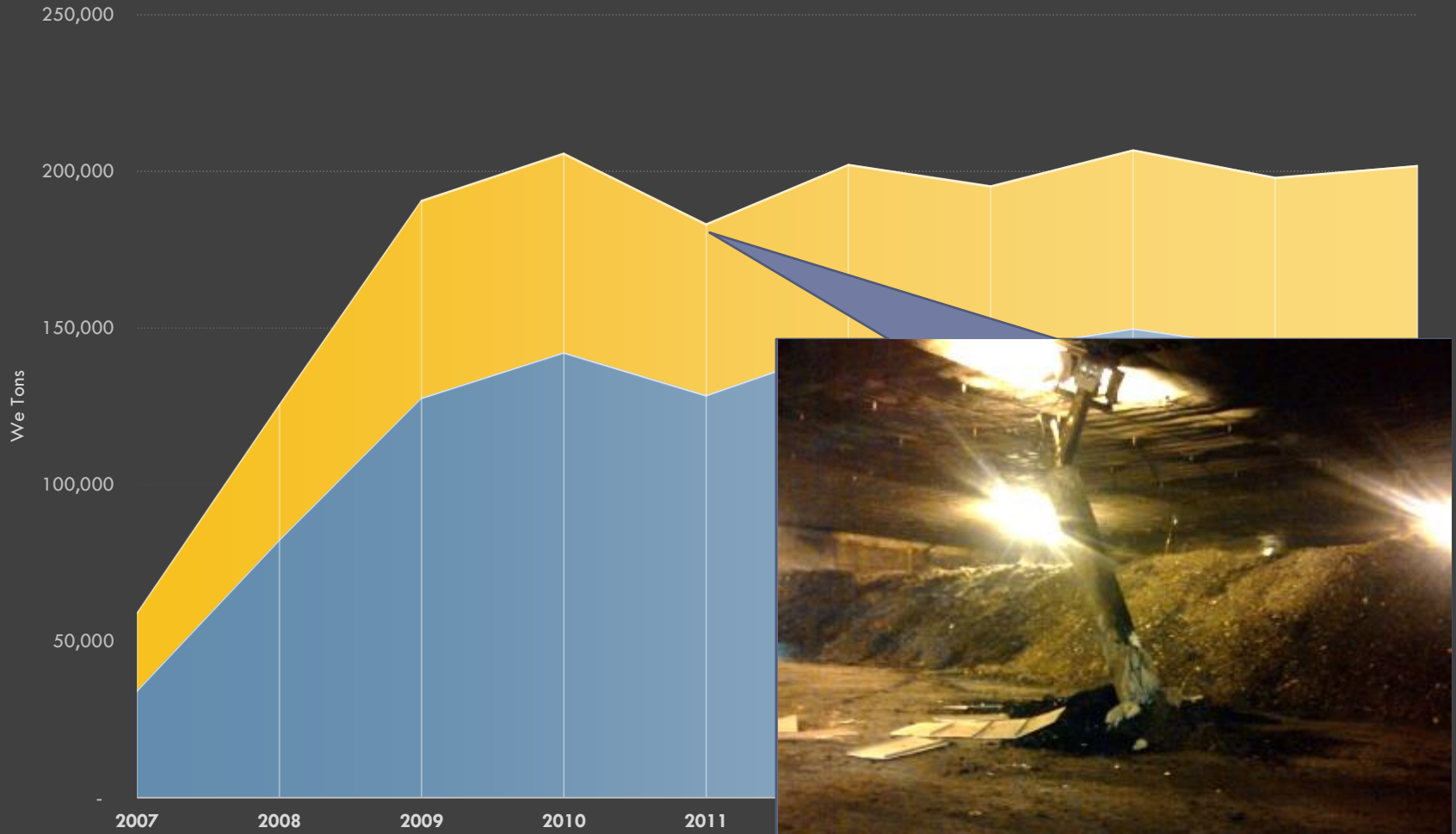






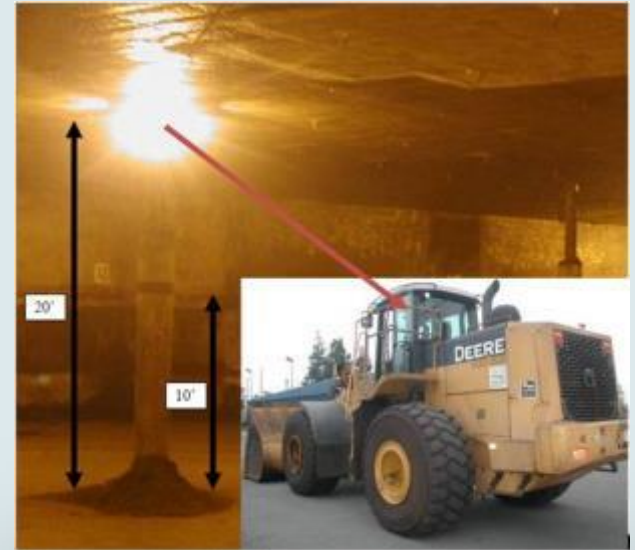
# Throughput

biosolids Amendments



# Column Protection

- Evaluated Structure
- Loader Improvements: LED, cameras, etc.
- Staff Training Protocol, Safety Award Program
- Visited Davenport Compost Facility, Iowa
- Evaluated Lighting Options(Metal Halide & LED)
- No Major Repeated Incidents

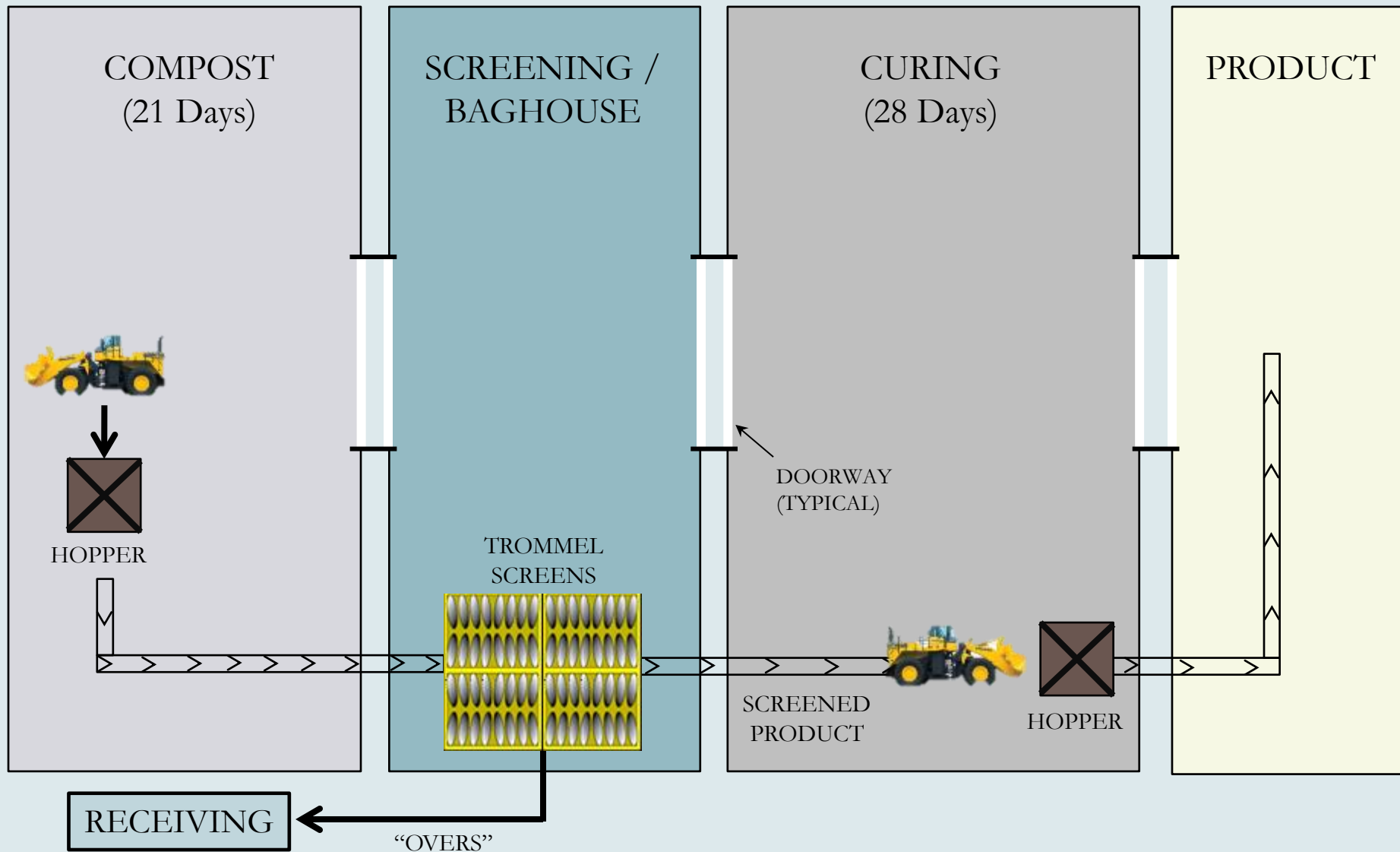


Indoor Lighting

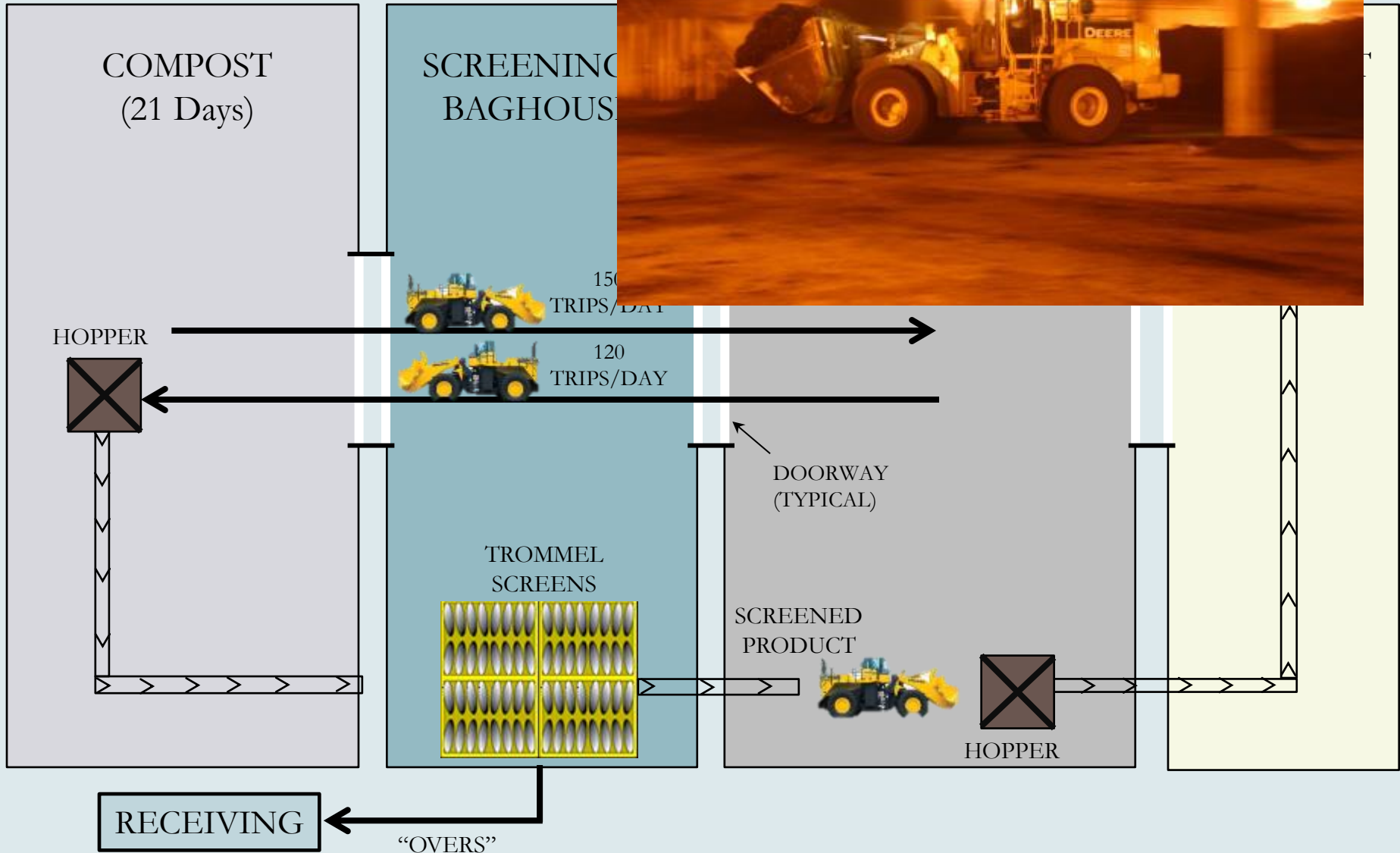


Indoor Columns

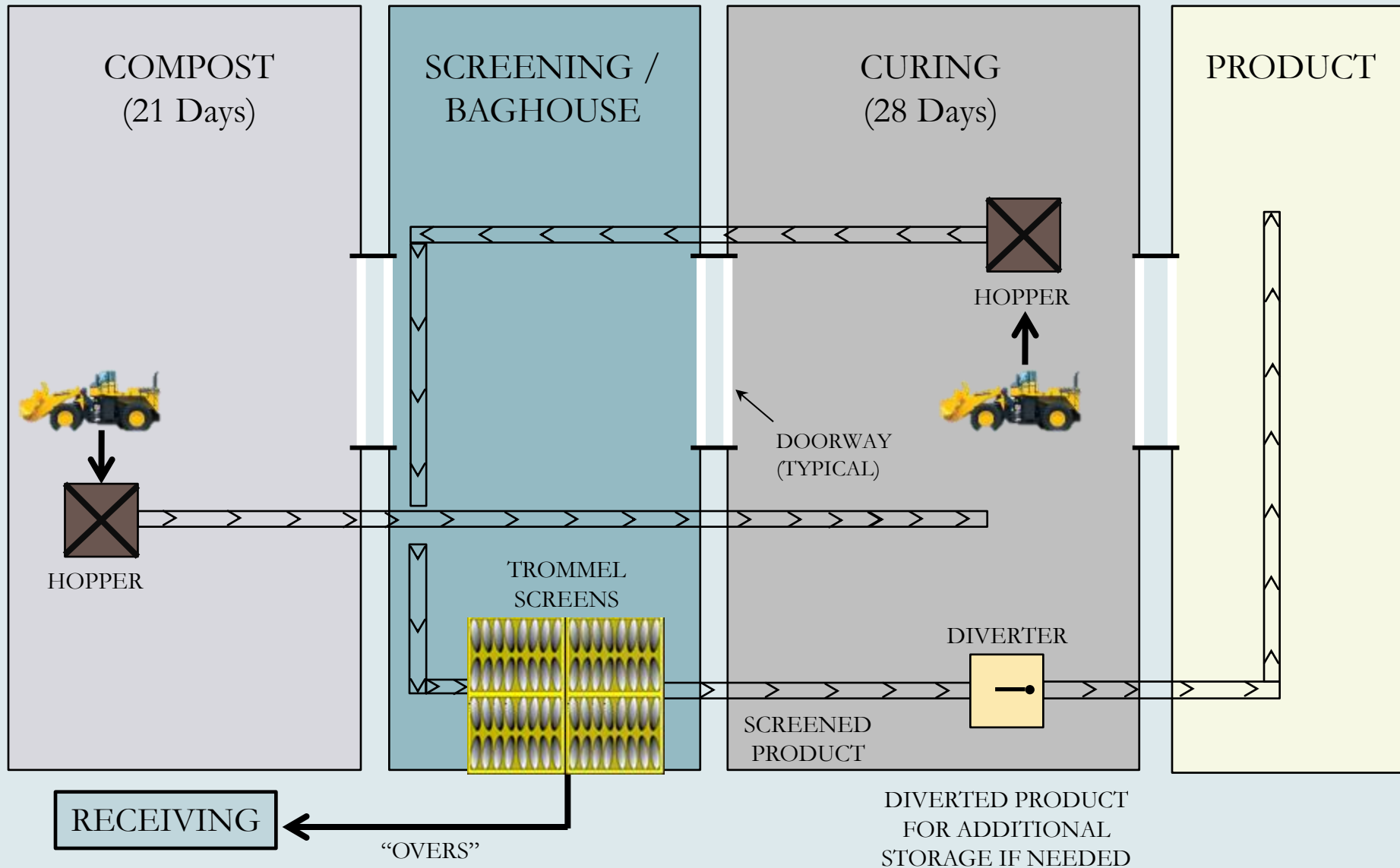
# Original Design Flow Process



# Current



# Proposed Flow Process



# Conveyor Project



*#24 Electromagnet Installed*



*#24 Gravity Take-Up (GTU), Closer View*



*#23 / 24 Feeding Hopper Installation*



*#24 Truss Rail Mod's For Electromagnet*

# Project Benefits

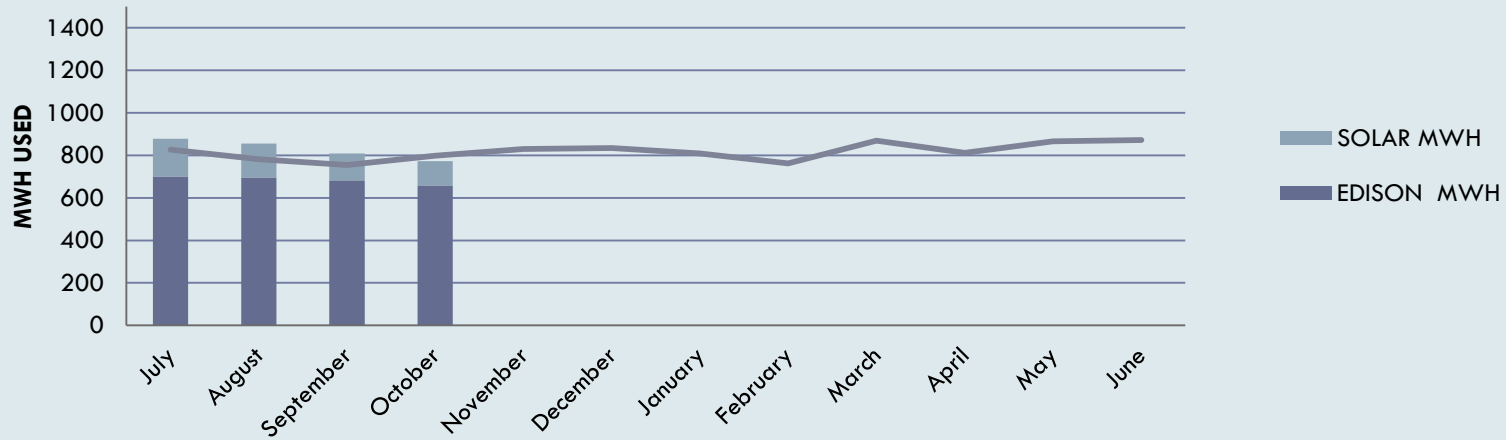
- Reduced Loader Traffic
  - Wear and tear, safety etc
- Solid Waste
  - Reduced by 93%
- Faster Processing
  - Reduced to 5 days
  - 13 hours less ops/wk

Tons/ Yr	Solid Waste
520	historical
39	after changes in 2015
481	Reduction
93%	percent reduction





## Power Usage 2016/2017



- Solar = 1.3m kwh/year
- Battery Project
  - Offset peak
  - Expand Solar



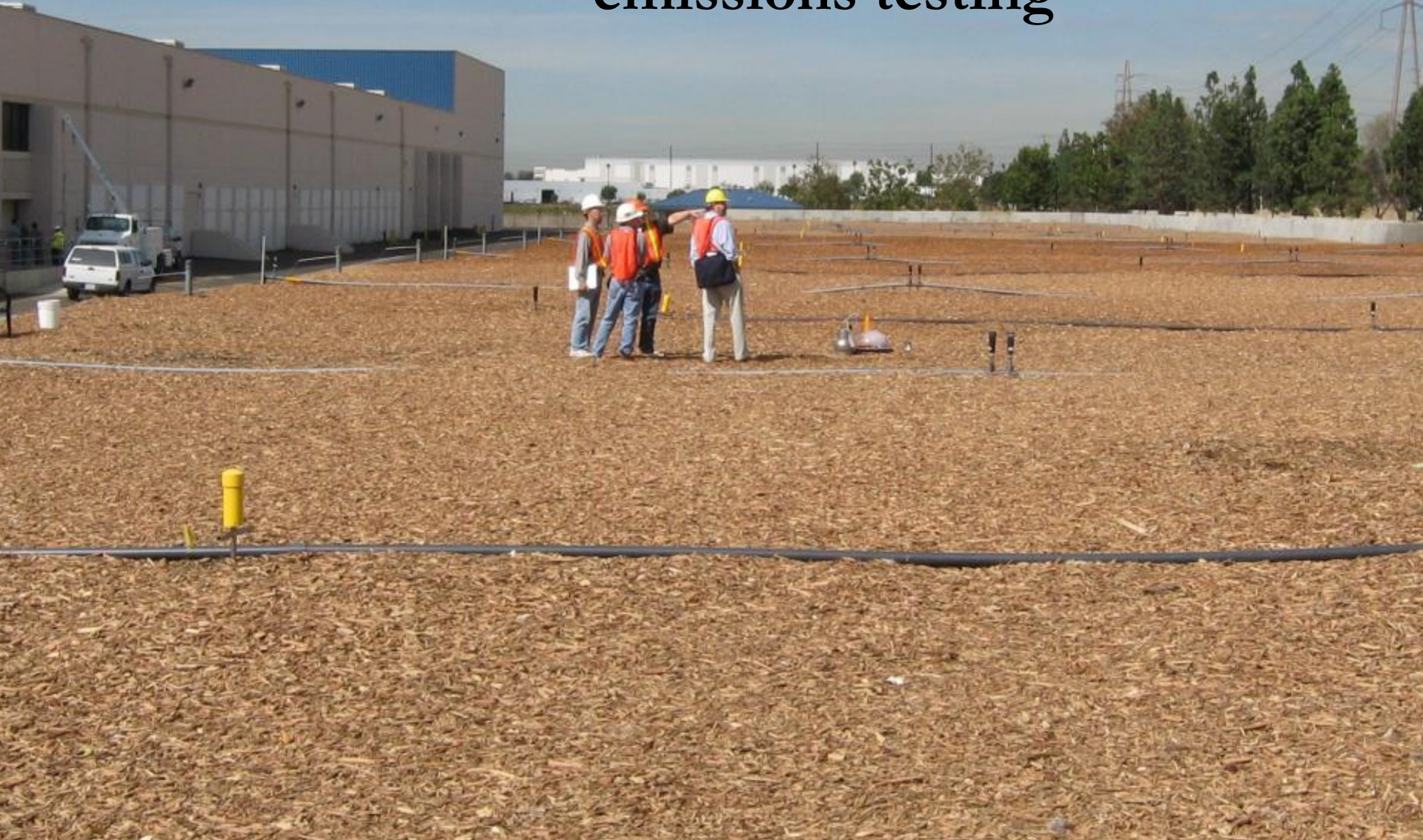
# Energy

- Solar installed 2008
- Wind power installed 2011 (RP-4)
- Participate in EnerNOC load shed program



RP-4 Wind Turbine and IERCF Solar Panels

# IERCF Biofilter emissions testing



# Source Test

- Biofilter Sampling
  - 150+ Samples Collected
  - Testing Over 5-days
  - High & Low Flow
- Testing Methods
  - Ammonia – Method 207.1
  - VOC – Method 25.3
    - Complicated & Timely Test Process

>97% Reduction VOCs and Ammonia



# Branding

- IERCA's SoilPro™ brand has been filed for trademark
- Launched website [www.ierca.org](http://www.ierca.org)





## PREMIUM COMPOST BENEFITS

- Adds valuable organic matter - improving soil structure
- Improves the moisture holding capacity of light, sandy soils
- Reduces the bulk density of heavy, clay soils – increasing moisture infiltration and aeration, slowing soil compaction
- Reduces soil erosion and nutrient leaching
- Provides plant nutrition, improving plant vigor

### HOW MUCH PREMIUM COMPOST DO I NEED?

#### ONE CUBIC YARD OF COMPOST COVERS:



648 sq. ft.	↔	1/2" depth
324 sq. ft.	↔	1" depth
162 sq. ft.	↔	2" depth
108 sq. ft.	↔	3" depth

#### CUBIC YARDS REQUIRED TO COVER 1,000 SQUARE FEET

1/2" layer	↔	1.5 yd <sup>3</sup>
1" layer	↔	3 yd <sup>3</sup>
2" layer	↔	6 yd <sup>3</sup>
3" layer	↔	9 yd <sup>3</sup>

### GUARANTEED MINIMUM NUTRIENT ANALYSIS

Total Nitrogen (N)	.....	0.75%
Water Insoluble Nitrogen*	.....	0.75%
Available Phosphate (P2O5)	.....	1.0%
Soluble Potash (K2O)	.....	0.25%
Iron (Fe)	.....	1.0%

Nutrients are derived from composted biosolids (treated sewage sludge).

\*Slow release nitrogen

Soil Amendment Ingredient List  
Composted biosolids (treated sewage sludge), forestry products, yard trimmings, and stable bedding.

Information regarding the contents and levels of trace elements in this product is available on the internet at <http://www.aapfco.org/metals.htm>.

SoilPro Products Premium Compost is sold in bulk form, by the cubic yard or ton.



### MANUFACTURED BY:



12645 Sixth Street, Rancho Cucamonga,  
CA 91739 Telephone (909) 993-1500  
[www.ierca.org](http://www.ierca.org)

# Quality Products for A Healthy Soil

## COMPOSTING PROCESS

The Inland Empire Regional Composting Authority (IERCA) manufactures SoilPro Products Premium Compost at its indoor state-of-the-art composting facility. At this high tech facility, advanced engineering principles are used to accelerate the natural degradation process – enabling a finished product to be produced in just 2 to 3 months. Ongoing monitoring of the system allows for a consistently high quality soil amendment to be produced.



SoilPro Products Compost Products are rich in organic matter and nutrients, both of which are essential components of productive soils. SoilPro™ Products Compost Products are excellent for amending depleted soils, enriching planting mixes, and enhancing the growth of turf and ornamental plant species.

The enclosed composting process, essentially “pasteurizes” the product, allowing SoilPro Products Premium Compost to boast that it is free of viable weed seeds and plant pathogens.

## DIRECTIONS FOR USE:

**Flower and Ornamental Garden Beds:** Apply a 1 to 2 inch layer of SoilPro Products Premium Compost to the soil and incorporate it to a depth of 6 to 8 inches. Plant flowers and water. Condition the soil this way every year 2 to 3 years.

**Trees & Shrubs:** Dig a hole to the approximate depth of the root ball and two to three times as wide. Mix 1 part SoilPro Products Premium Compost with 3 parts soil obtained from the planting hole. Place the tree or shrub in the planting hole and apply amended soil around the root ball. Firm the soil occasionally and water.



**New Turf Areas:** Apply 1 to 2 inches of SoilPro Products Premium Compost to the soil and incorporate it to depth of 6 to 8 inches, apply seed, then rake and water.

**Topsoil Manufacturing / Upgrading:** Mix 1 part SoilPro Products Premium Compost with 3 parts existing or purchased soil and blend uniformly.

**Mulching:** Spread a 2 to 3 inch layer around trees, shrubs, and flowers.

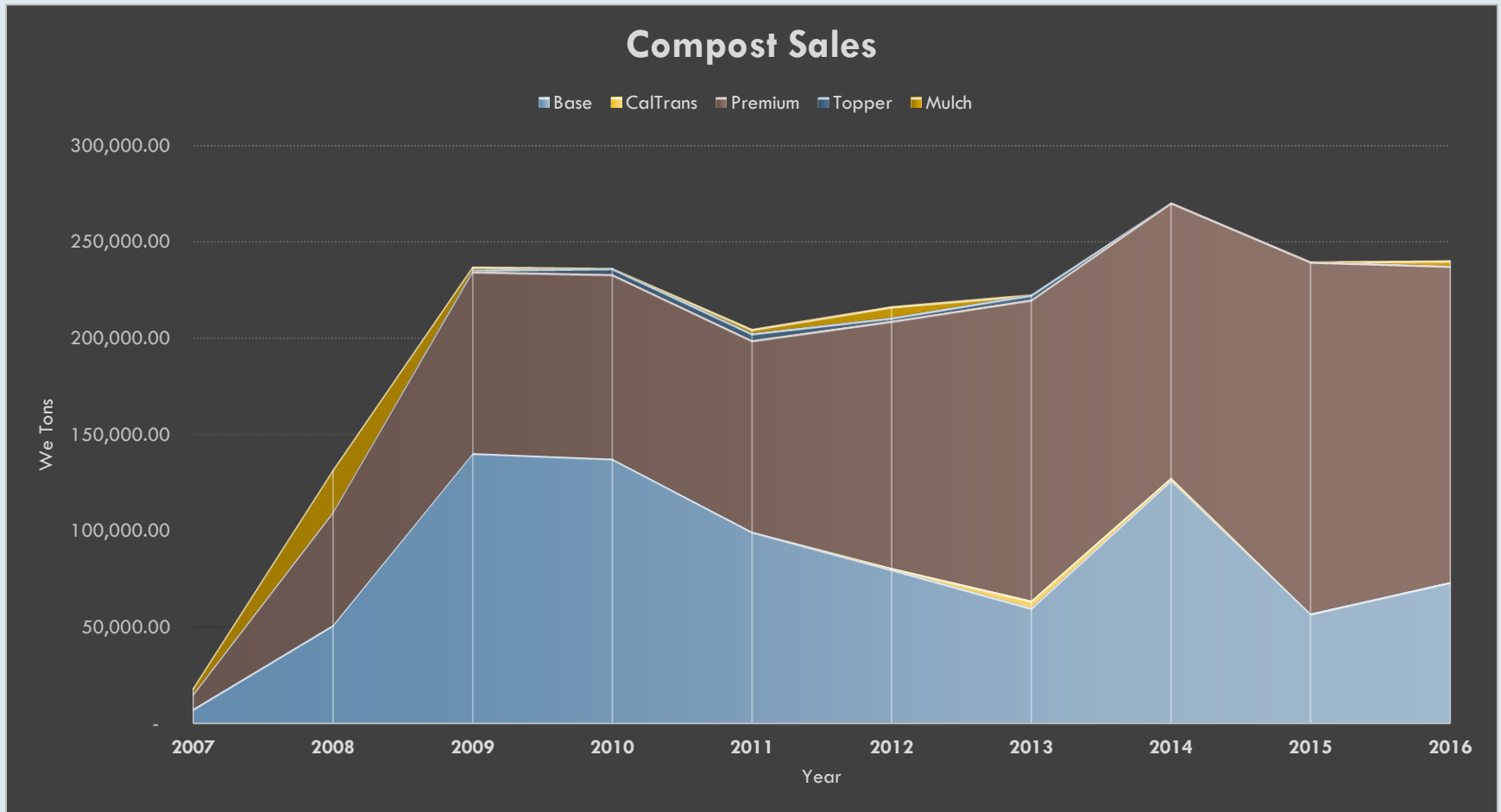
**NUTRIENT RICH, WEED-FREE,  
CONSISTENT, EASY TO USE...**



**...COMPOST PERFECT  
FOR YOUR LANDSCAPE,  
GARDEN, OR TURF**



# Compost Production and Sales





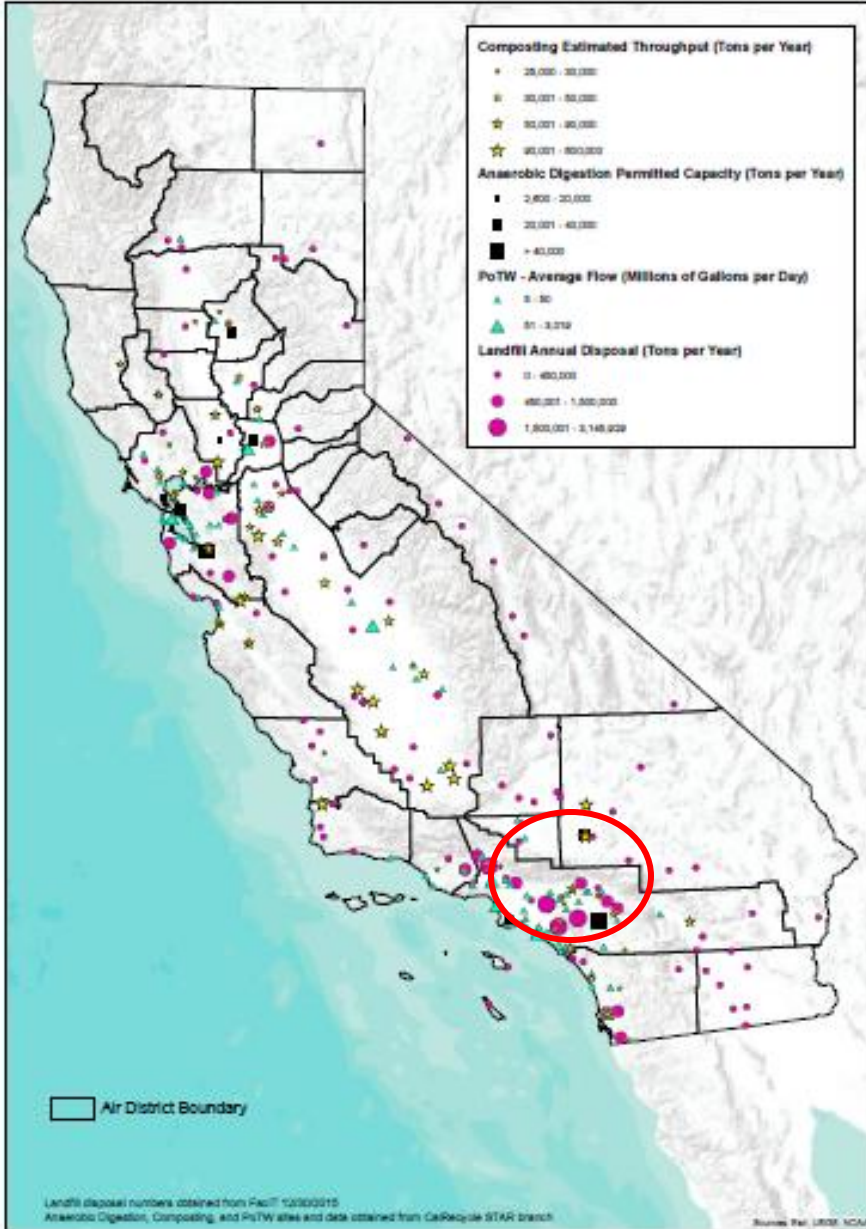


- CalRecycle's Regions
  1. Northern California
  2. Extended Bay Area
  3. Central California
  4. Southern California

- Urban areas clustered more in the south coast
- Proximity to high quality ag land less in the south
- More supply requires increased demand or more truck miles



# Existing Facilities Handling Organic Materials, By Type (with Air Pollution Control District Boundaries)



# Transitioning Into a New Market

## Drought and Turf Removal

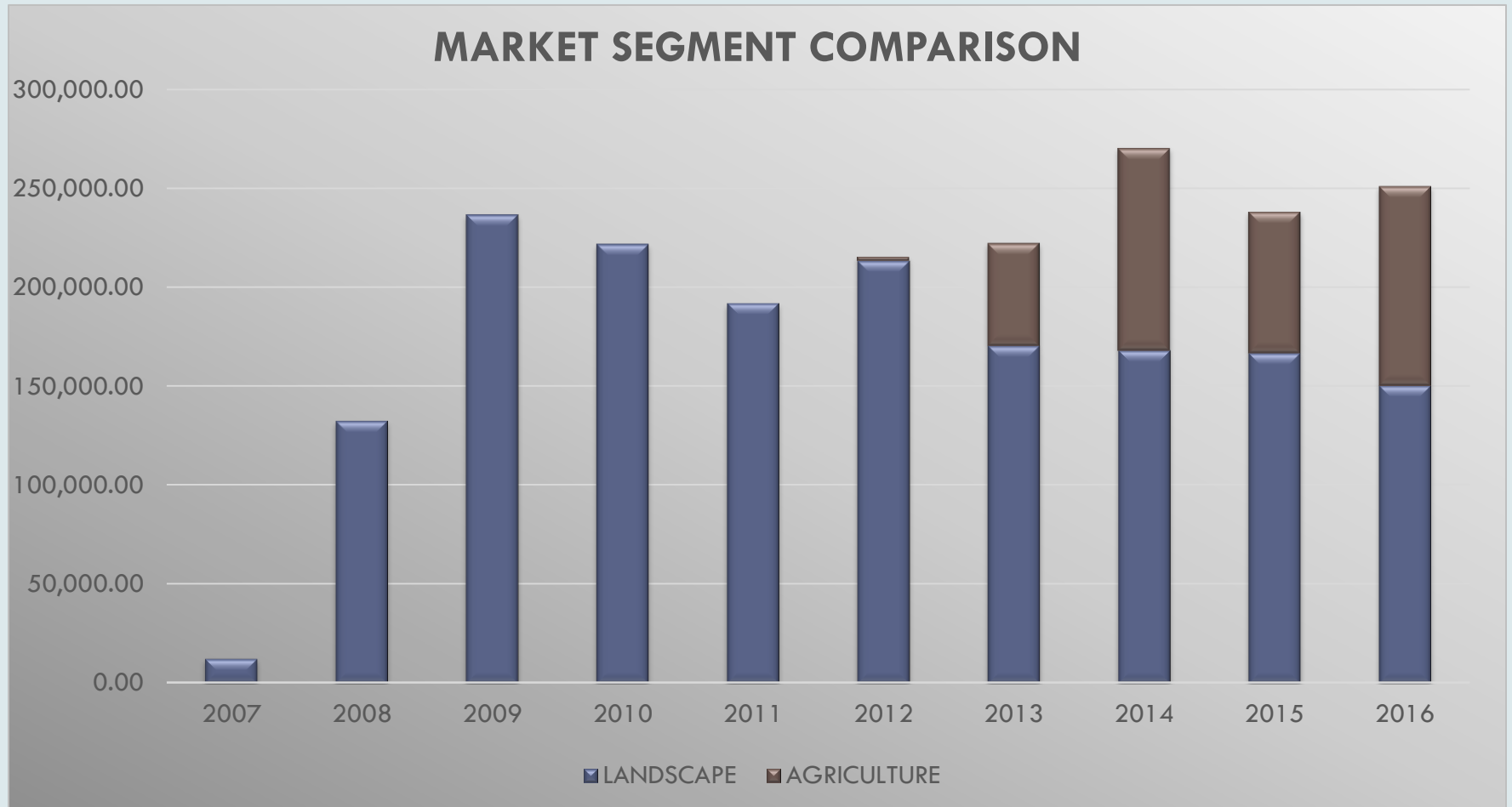


**SoilPro Compost spreading on turf grass at a city park.**



**SoilPro Compost spreading onto a corn field.**

# Transitioning into Agriculture



# Vs. Chemical Nitrogen (N) - Urea

## Buying SoilPro Products

Urea is a synthetic source of (N) and has a commercial cost of around \$0.50 per lb. depending on the volume purchased.

The drawback to using just urea is the results are short-term and crop soils need more than just (N) for long-term health.

When you buy **SoilPro Products**, you get 48 lbs. of (N) content per ton, 2/3 of which is slow release, PLUS rich amounts of Phosphorus, Potassium, Organic Matter, as well as Iron and other essential micronutrients.

## SoilPro Products Delivered Cost

<u>Load</u>	<u>per Ton</u>	<u>\$ l/b N</u>
\$350.00	\$14.00	\$0.29
\$400.00	\$16.00	\$0.33
\$450.00	\$18.00	\$0.38
\$500.00	\$20.00	\$0.42
\$550.00	\$22.00	\$0.46
\$600.00	\$24.00	\$0.50
\$650.00	\$26.00	\$0.54
\$700.00	\$28.00	\$0.58

\*Load cost includes material  
 And transportation.

A large green combine harvester is shown in the middle ground, moving through a vast field of golden wheat. The harvester is leaving a distinct path of harvested grain behind it. The field extends to the horizon under a clear, light blue sky. The overall scene is bright and sunny, typical of a harvest season.

# Agriculture Market Benefits

- High volumes
- Winter demand –  
Steadier outbound  
flow throughout year
- Inventory relief
- Surge availability

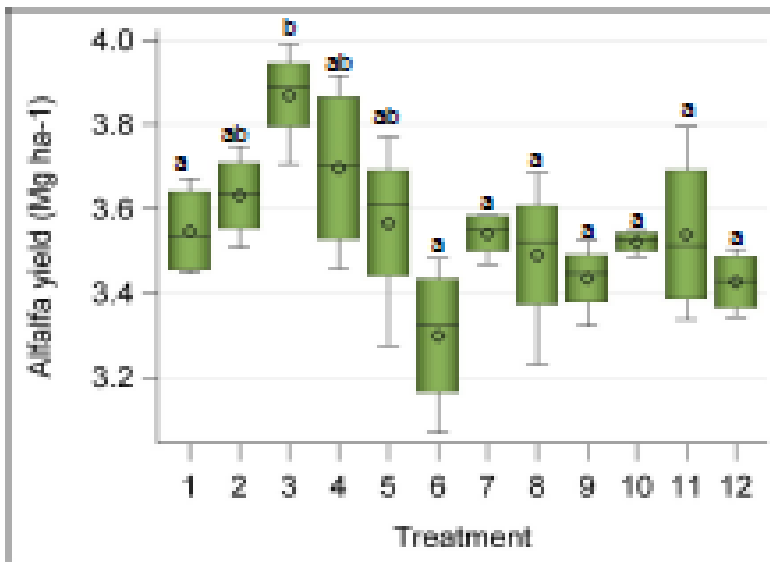
# Agriculture Market Cons

- Low price
- Timing constraints –  
Windows of  
opportunity between  
planting/harvest
- Cyclical – Not  
regular
- Location – Distance  
from facility to AG



# IMPACT OF BIOSOLID COMPOST ON ALFALFA YEILD

## RESULTS AND DISCUSSION



➤ Yields increased with increasing compost rate: 3.55, 3.63 and 3.87 Mg ha<sup>-1</sup>, for treatments 1, 2 and 3, respectively

➤ The highest compost rate was the only treatment (#3) that yielded significantly higher ( $P \leq 0.1$ ) than all mineral fertilizer and control treatments

➤ Patterns of treatments effect on yield were consistent among all cuttings (data not shown)



# IMPACT OF BIOSOLID COMPOST ON ALFALFA YIELD Cont'd

## CONCLUSION

- ✓ Broadcasting 11.2, 22.5 and 33.7 Mg ha<sup>-1</sup> of biosolid-compost increased alfalfa yield compared with the untreated control by 3.5, 6.0 and 12.9%, respectively
- ✓ Sufficient nutrient levels in soil nutrient analyses and no yield response to applied mineral P and K fertilizers suggest that the yield increase with the highest rate of biosolid-compost is most likely not due to correction of a nutrient deficiency but rather some other factor such as improved water retention with compost.
- ✓ Heavy metal content in the plant and soil due to the highest rate of biosolid-compost were similar to the control treatment or slightly higher and well within acceptable levels.

# SoilPro Premium on a Park in the City of Paramount



# Fontana







04/02/2008 14:18

# Professional Associations

- Association of Compost Producers
  - State Chapter – 100 company members
    - Increase the value and volume of compost used in the state
    - Promote education
    - Help with AB341 goals
- United States Composting Council
  - National organization
  - Federal and state legislation
  - Compost promotional programs
  - Education and training



# Awards

- **Governor Brown – California**
  - Governor's Environmental and Economic Leadership Award
- **American Academy of Environmental Engineers**
  - Leadership in Engineering
- **United States Composting Council**
  - Composter of the Year
  - Excellence in Marketing Program Presentation
- **California Resource and Recycling Association**
  - Dave Hardy Leadership in Organics
- **Environmental Protection Agency – Pacific Region**
  - Environmental Award
- **California Association of Sanitation Agencies**
  - Technological Innovation Achievement
- **Solid Waste Association of North America**
  - Excellence in Composting Systems
- **California Water Environment Association**





Questions or Comments?