



# Evaluating Renewable Energy Options: Building-Integrated Solar and Biogas Energy, Day 2

Jay Paidipati, Navigant Consulting

# Agenda

- Team's goals, objectives, work to date and future projects – 15 minutes
- Prologis Solar PV Case Study – 30 minutes
- Dysart School District Case Study – 30 minutes

# Team Goals and Objectives

- **Background**
  - Based on interest from BBA members at the 2013 Efficiency Forum, as well as prior member requests, the DOE BBA plans to establish a pilot project team focused on integration of renewable energy technologies in buildings.
- **Project Team Lead: Jay Paidipati, Navigant Consulting**
- **Goals and Objectives**
  - Individual members often do not have the resources or expertise to address these very specialized issues, and vendors selling renewables projects have a vested interest in promoting their solutions.
  - Provide unbiased advice and shared experience to help BBA members navigate complex regulations, business models, and utility policies associated with distributed renewable energy systems.
  - Deliver projects based upon member interests and needs

# How to Get Involved

## ■ BBA Members

- If you are not currently part of BBA's RE Integration team, contact Jay Paidipati ([jpaidipati@navigant.com](mailto:jpaidipati@navigant.com), 303.728.2489) to become a member.
- We have quarterly team calls with speakers and members can help contribute to project ideas and to projects themselves by providing information, case studies, etc.

## ■ Stakeholders

- If you would like to contribute to a current or upcoming project, please contact Jay Paidipati to get involved.

# Current Work - Solar Decision Guide

## ■ Scope

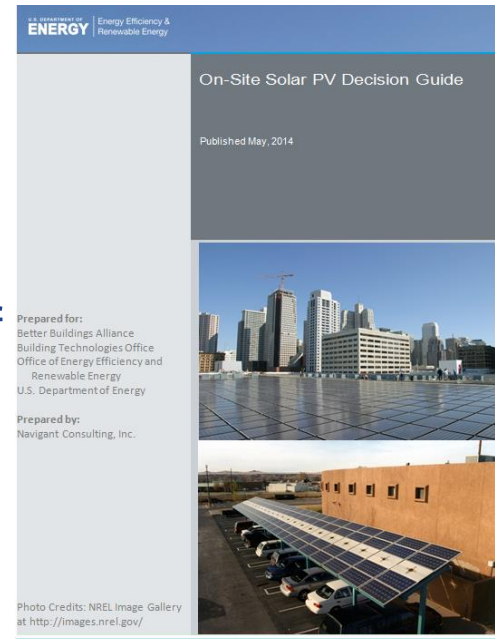
- Guidebook that contains information, tools, templates and references to help with the addition of solar PV on or at an existing building or buildings.
- Covers feasibility assessment, procurement, installation, and operation.
- The Guide's intent is to provide overviews and some level of detail, but it then points to highly detailed sources of information.

## ■ When to Use

- Designed for building energy, facility or property managers during investigation or implementation of on-site PV.

## ■ Status

- Final version in review



## ■ Scope

- Many great informational and program resources are available for biogas from wastewater treatment plants, landfills and farm waste, but not as much is available for biogas from food waste.
- This guide will focus technology decisions, feasibility assessments, financing, procurement and operations for implementing biogas from food waste at commercial buildings.

## ■ When to Use

- Designed for building energy, facility or property managers to assess the feasibility of on-side biogas from food waste and then implement a project if feasible.

## ■ Status

- Starting work in late May 2014, with September 2014 completion date.

# Future Work

- Yesterday we held a brainstorming session to discuss new project ideas that will help commercial building owners, operators and tenants to adopt renewable energy.
- We still need to prioritize these and develop a final list, but our initial ideas include:
  - Develop a renewable energy case study database that includes information on building type, sector, financing structure, technology, etc.
  - Create a best practices guide on how to make a business case for RE.
  - Assess what design guides and tools inform building design and construction and make sure RE is factored into design decisions.
  - Collect information (and conduct research if necessary) on how renewable energy systems impact asset values.
  - Create a guide or complement existing guide with information on folding RE into green leasing.
  - Build out Team website to include a comprehensive list of resources for broad list of RE technologies.
  - Work with OpenEI database to make sure they collect O&M cost data for benchmarking purposes.
- We welcome other ideas, so please contact us if you have them.

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# Presentations

- Prologis – presentation on solar strategy and results
- Dysart Unified School District – presentation on solar PV implementation



# Key Contacts

- Navigant
  - Jay Paidipati (project team lead) [jpaidipati@navigant.com](mailto:jpaidipati@navigant.com), 303-728-2489
  - William Goetzler, [wgoetzler@navigant.com](mailto:wgoetzler@navigant.com), 781-270-8351
- DOE
  - Amy Jiron, [amy.jiron@go.doe.gov](mailto:amy.jiron@go.doe.gov), 720-339-7475



# Prologis Renewable Energy Group



**Drew Torbin**

*Vice President – Renewable Energy*

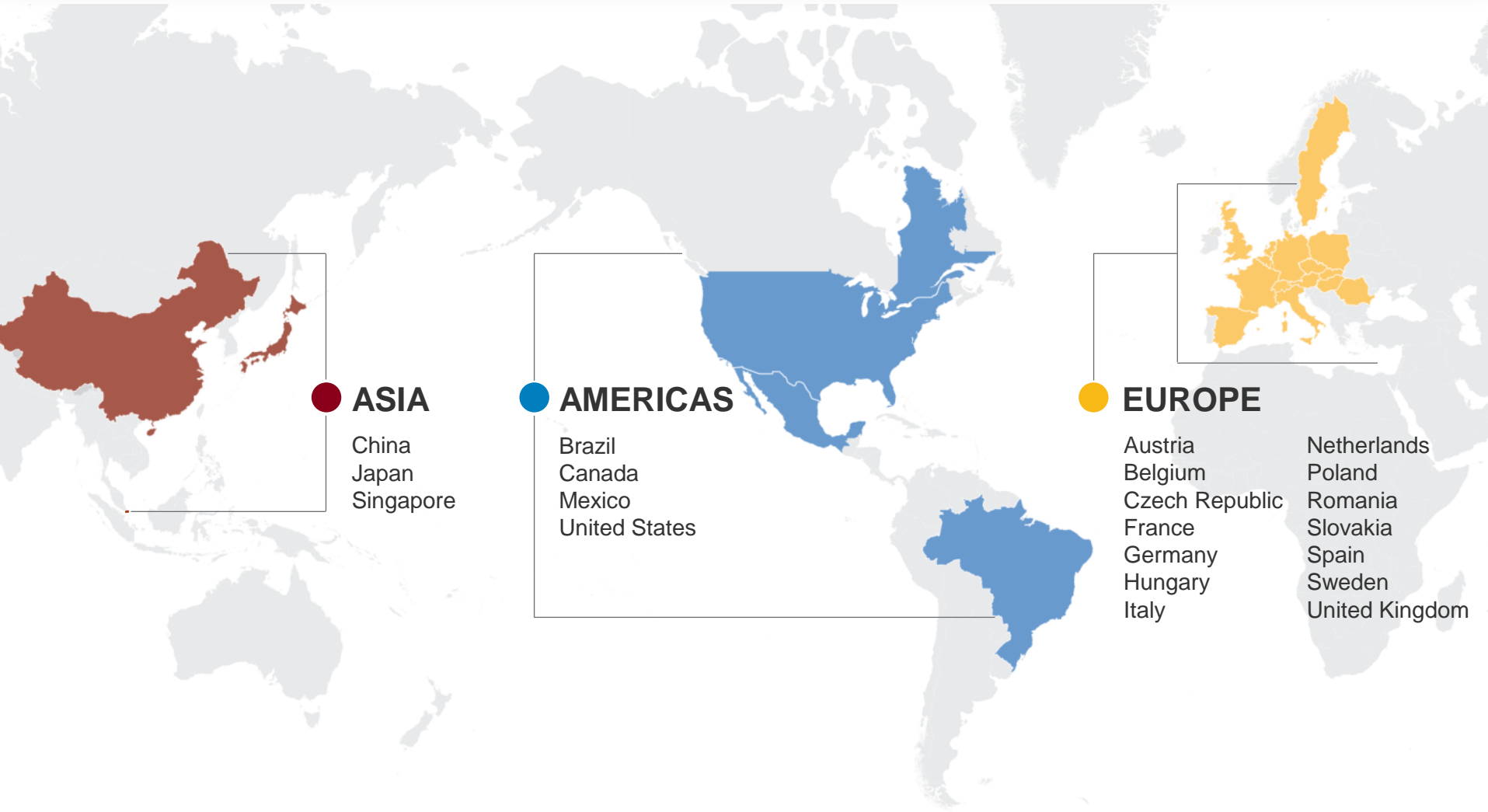
# Who We Are

*The leading global owner, operator and developer of industrial real estate*

- \$51.1 billion in assets under management
- 3,000 buildings
- Land bank of over 10,000 acres
- 574 million square feet total platform
- 21 countries / 4 continents
- 1,400+ professionals
- 94.5% global occupancy  
with 84.6% customer retention



# The Leading Global Logistics Real Estate Platform

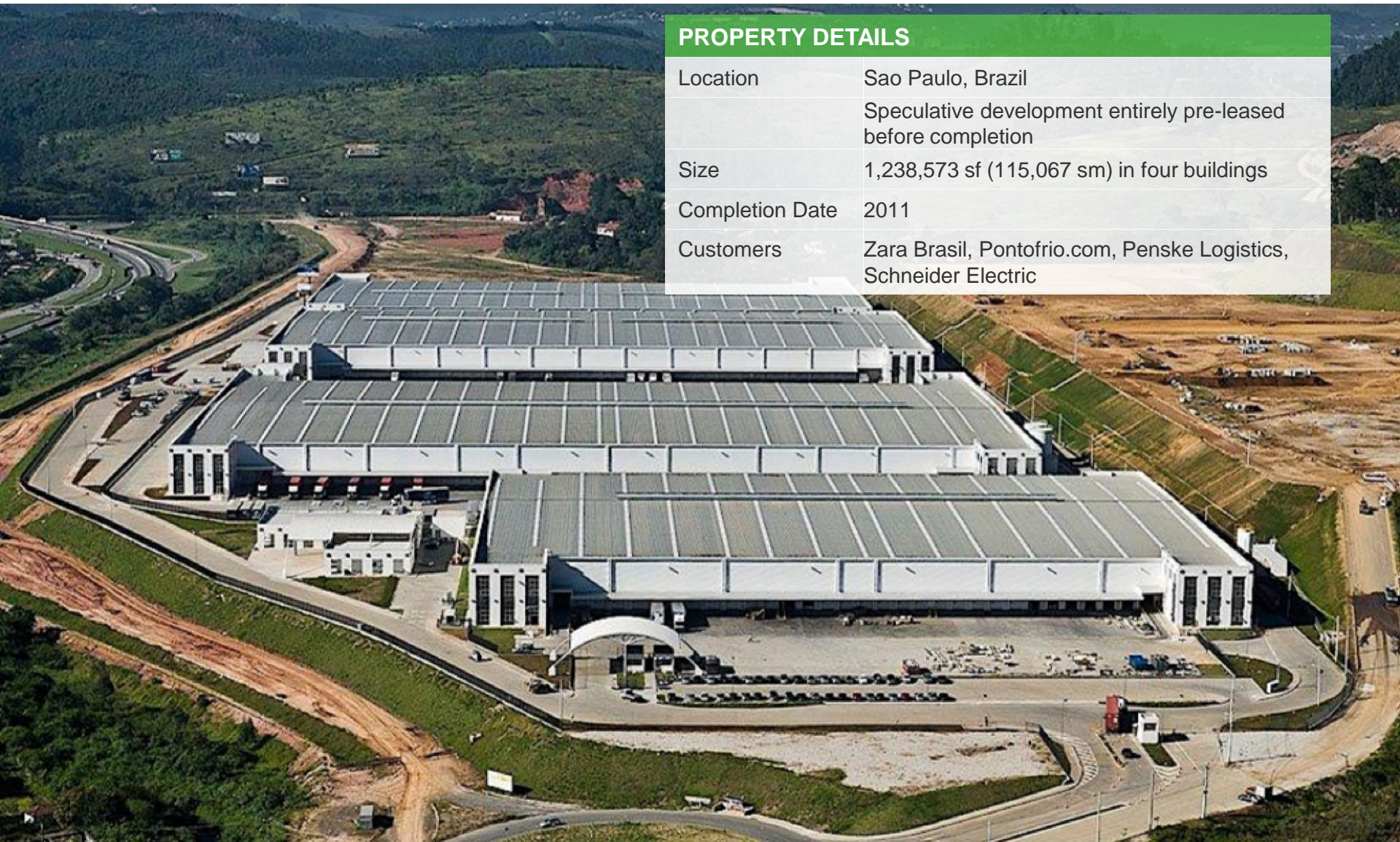


Platform covers more than 70% of the world's GDP

# Prologis CCP Cajamar I 100-400

## PROPERTY DETAILS

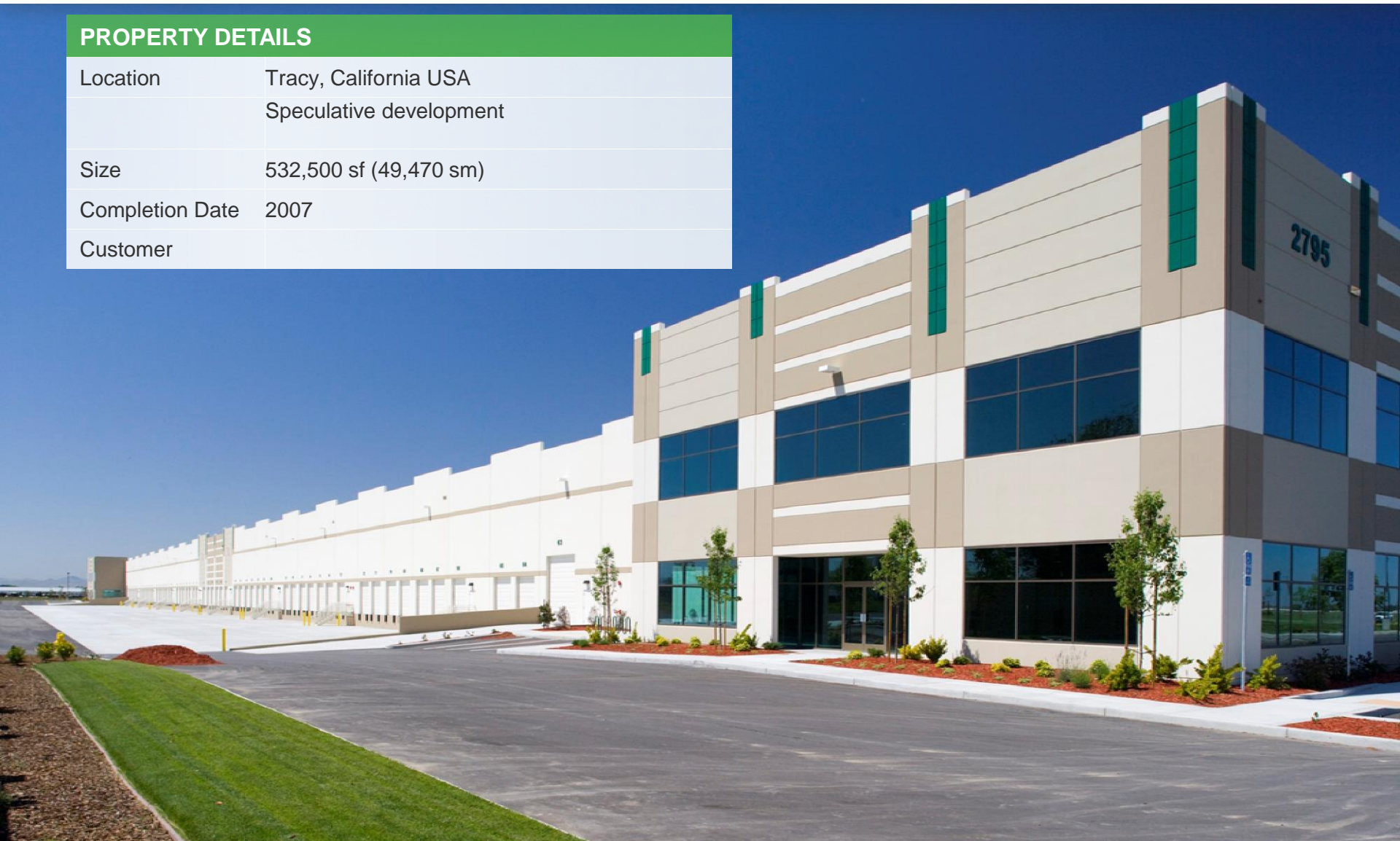
Location	Sao Paulo, Brazil
	Speculative development entirely pre-leased before completion
Size	1,238,573 sf (115,067 sm) in four buildings
Completion Date	2011
Customers	Zara Brasil, Pontofrio.com, Penske Logistics, Schneider Electric



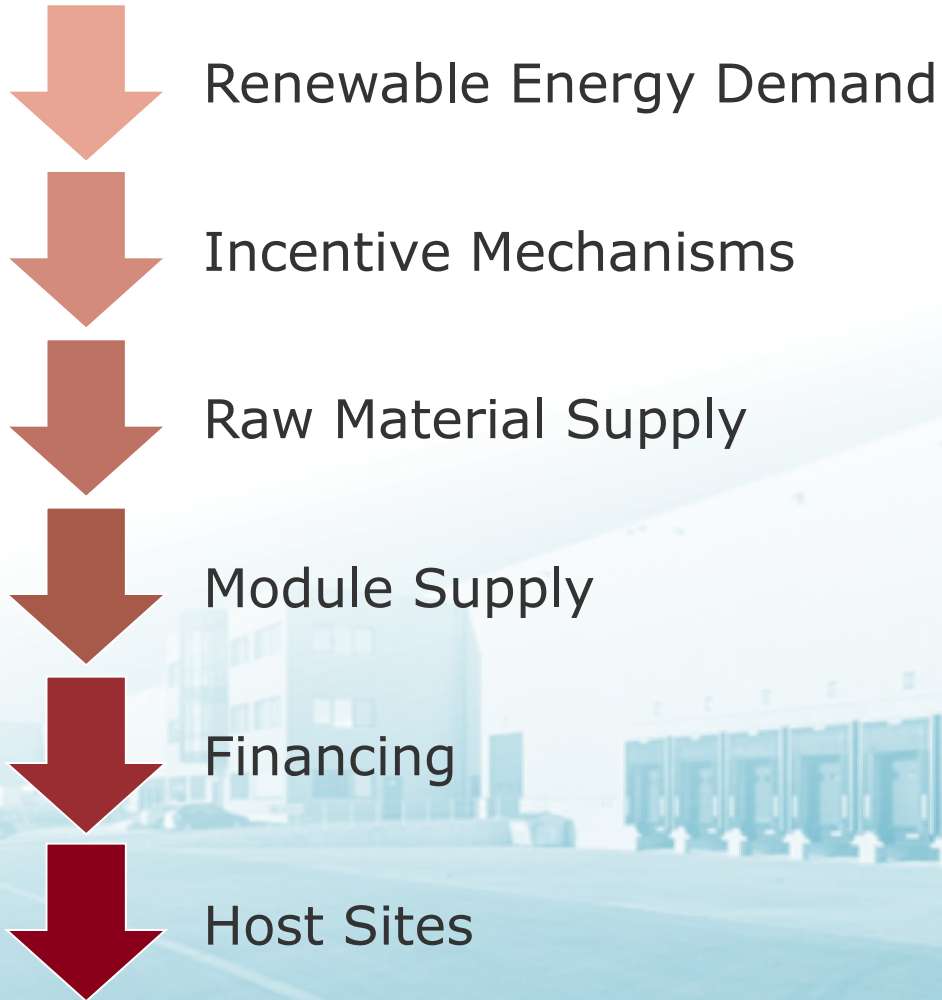
# Prologis Park Tracy I

## PROPERTY DETAILS

Location	Tracy, California USA Speculative development
Size	532,500 sf (49,470 sm)
Completion Date	2007
Customer	

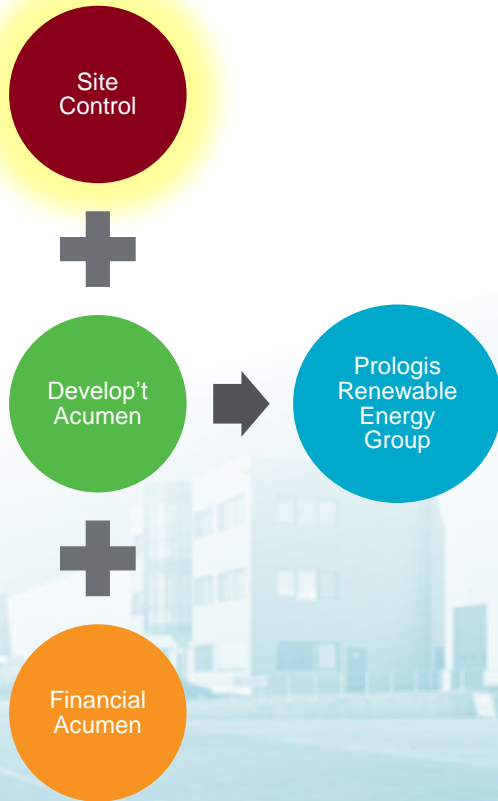


# 2008 Epiphany

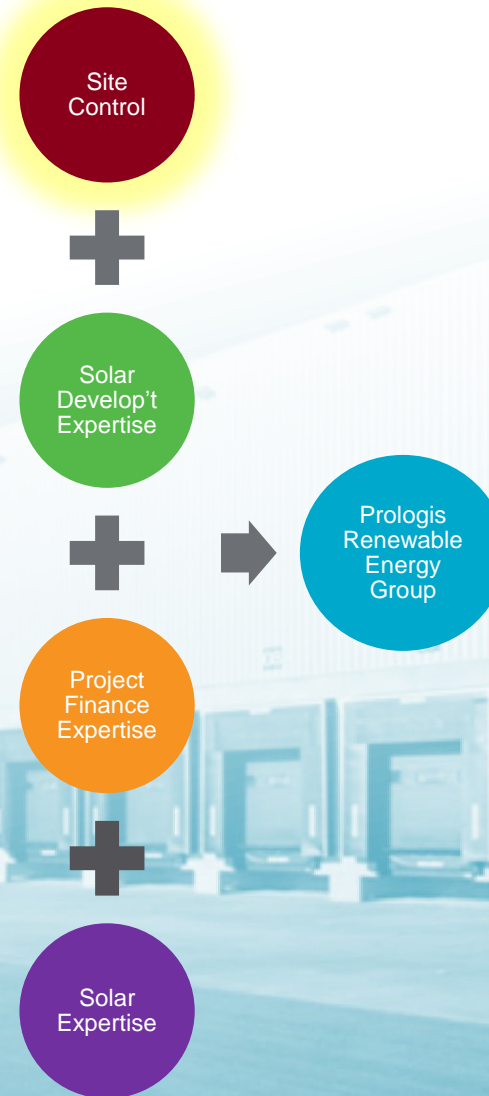


**real estate is emerging as the predominant bottleneck in the solar value chain**

# Initial Solar Strategy

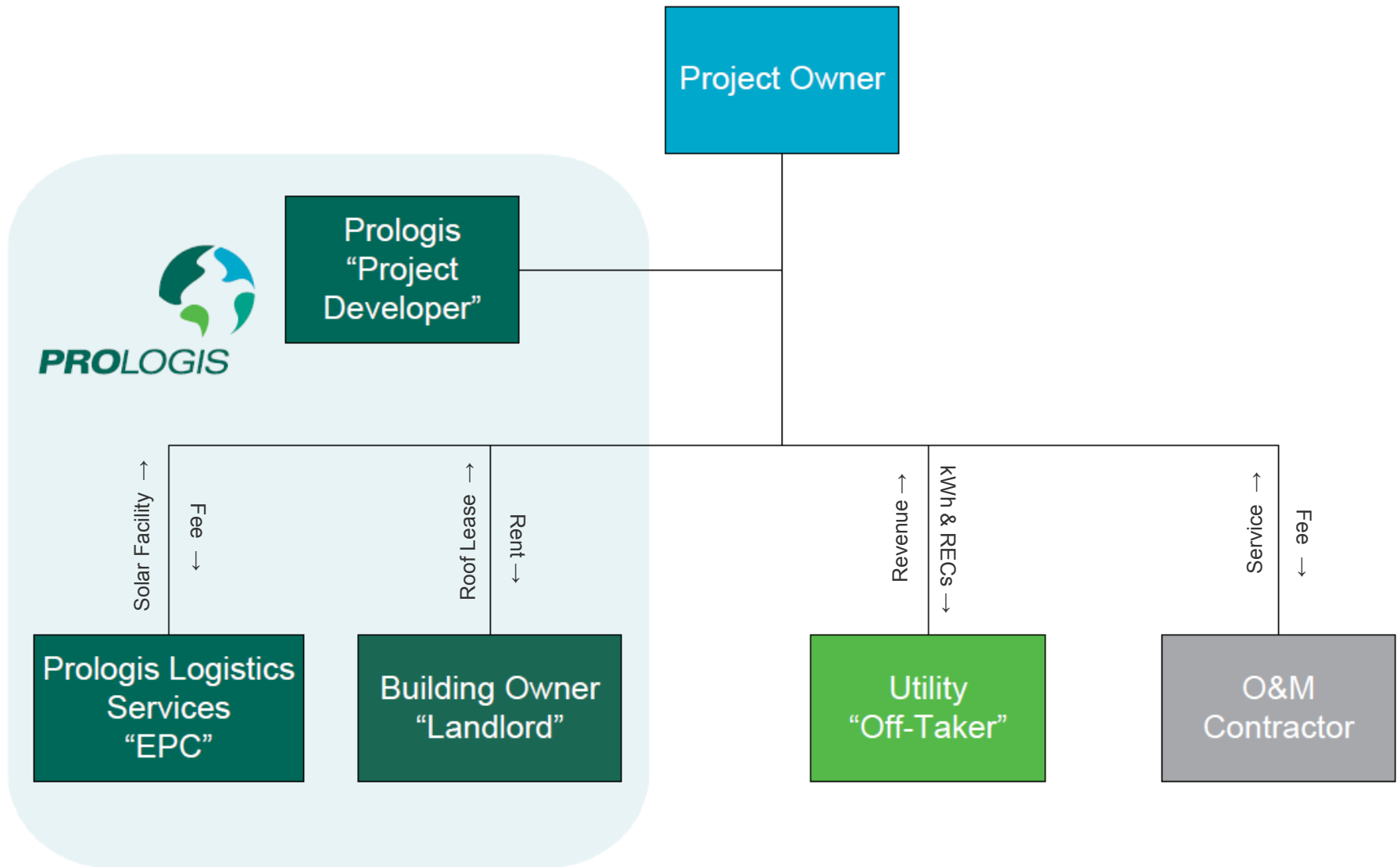


# Current Solar Strategy



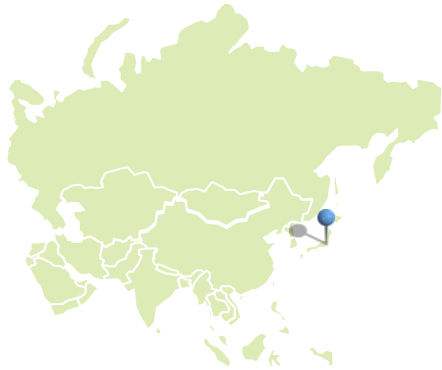
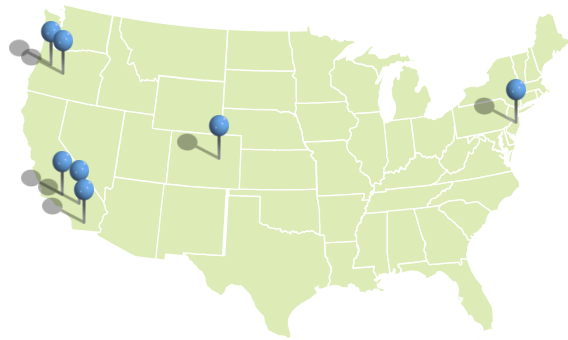


# Typical Solar Project Structure



# Completed Solar Projects

## Geographic Diversification of Projects



Over 100+ megawatts of solar capacity installed globally



Jennifer DC – Oregon



PP Chanteloup – France



PP Sant Boi – Spain



PP Malsch – Germany



PP Zama – Japan



Rialto I-210 #2 – S. California



PDX Corp Ctr East 1 & 2 – Oregon



PP Kaiser – S. California



Boom DC 1 – Belgium

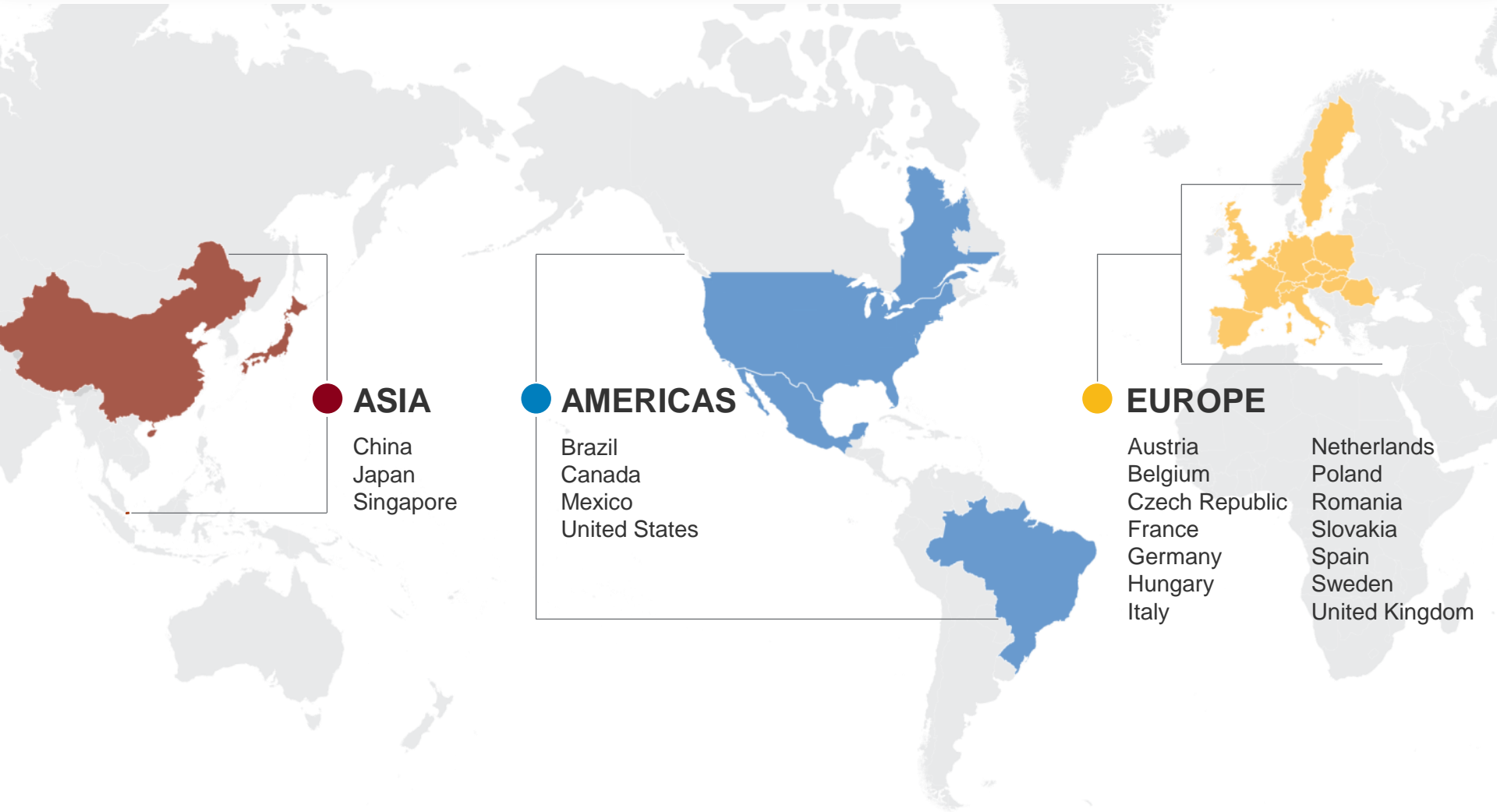
# Prologis Park I-210 #2 & 3



## PROPERTY DETAILS

Location	Inland Empire, CA
Size	1,740,451 SF
Solar Capacity	11.22 MWp dc
Customer	Southern California Edison

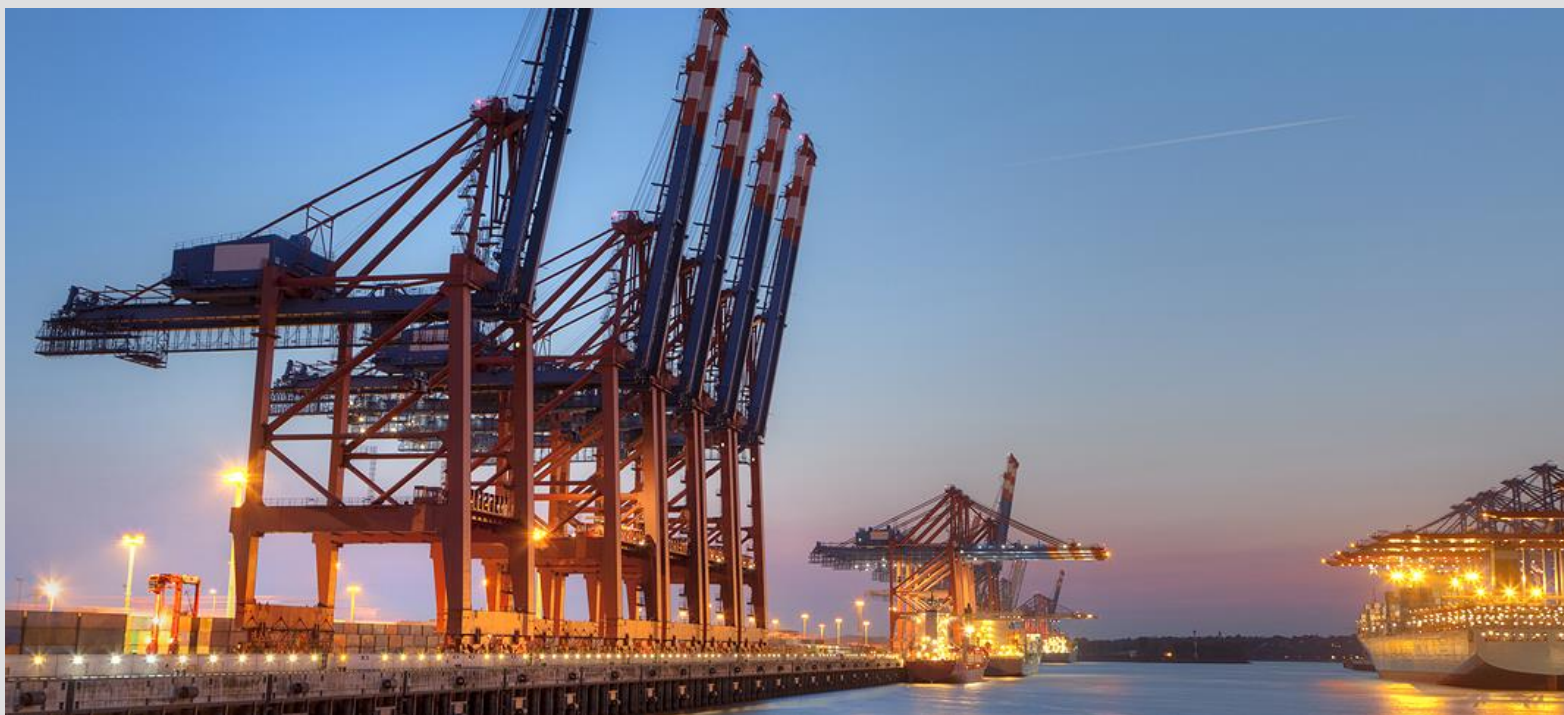
# The Leading [Global Logistics Real Estate] Platform



# Prologis [Renewable] Energy Group

- Mission: **Maximize asset utilization**
  - Create value for real estate assets through the deployment of energy projects
- **Dedicated team** formed in late 2008
  - Based out of Denver and Los Angeles
  - Share resources with development services
- Primary area of **concentration is solar**
  - **100+ MW** of rooftop photovoltaic projects deployed across 6 countries
- Secondary areas of concentration are **opportunistic**
  - Ex. battery storage, natural gas plants, etc.





## Discussion

### Contact Information

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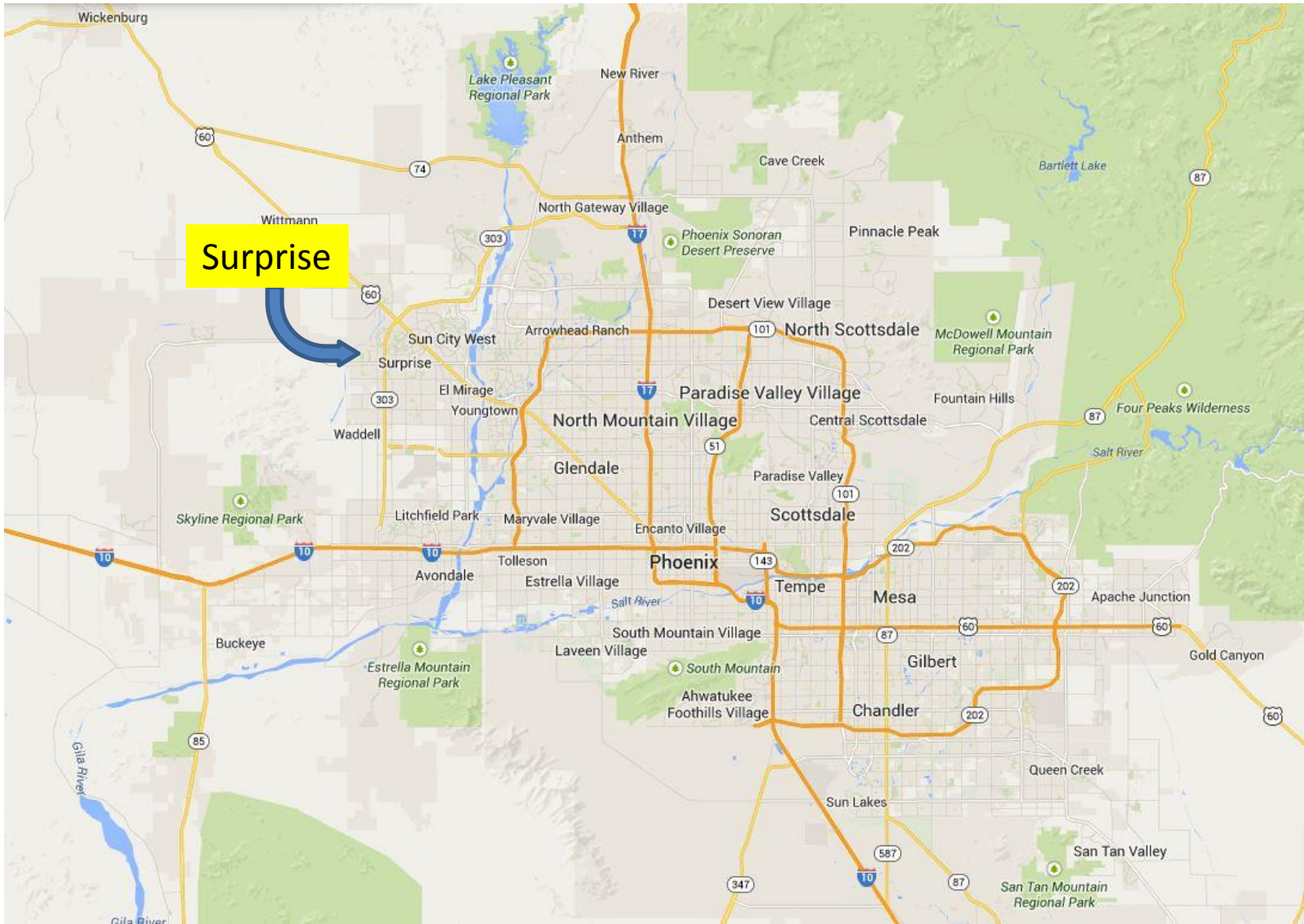


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Building  
Solar Schools

In

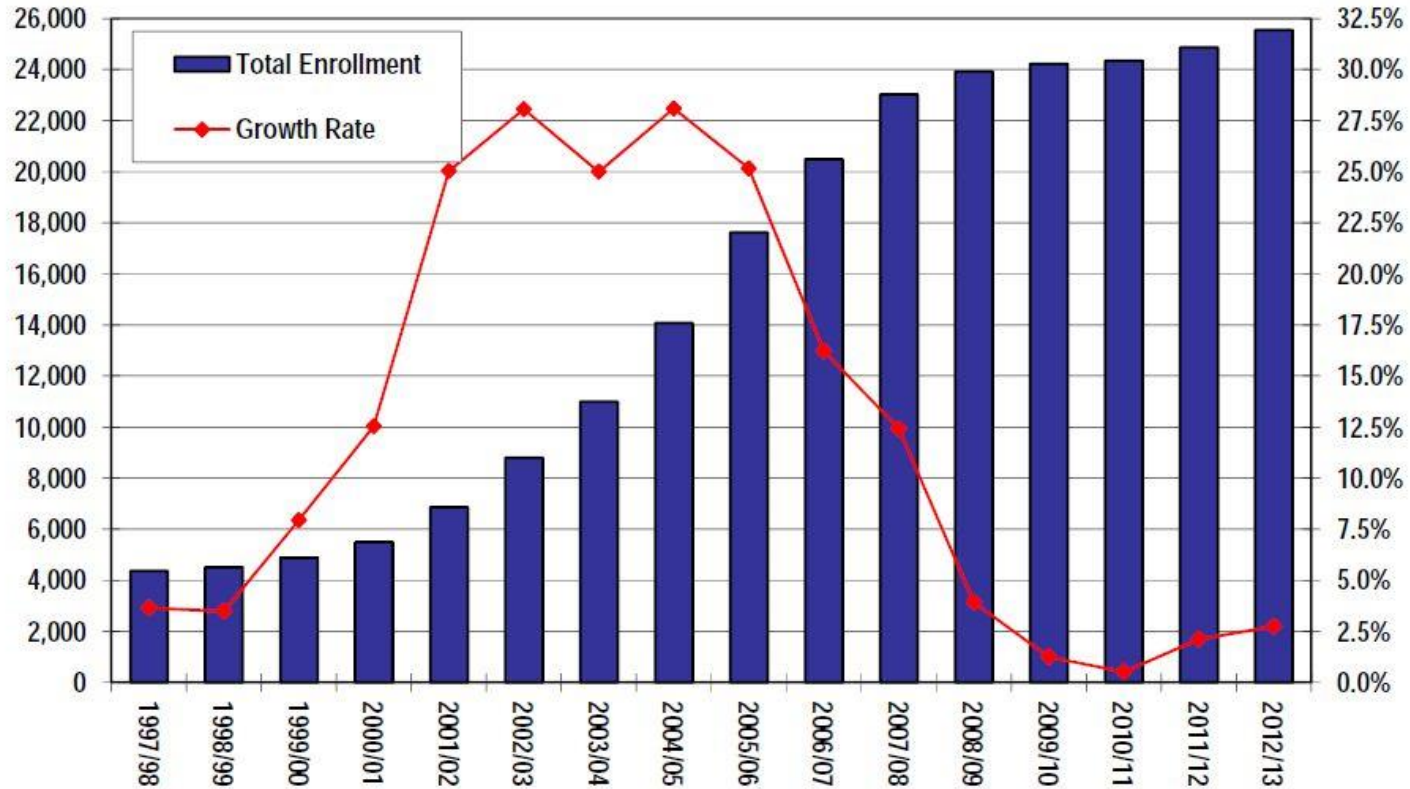






## Who Are We?

FIGURE 1  
HISTORIC K-12 ENROLLMENT GROWTH





20 Elementary Schools  
4 High School  
3 Special Programs





## System-Wide Energy Saving Projects:



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## Solar Energy:





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## How We Got Here?





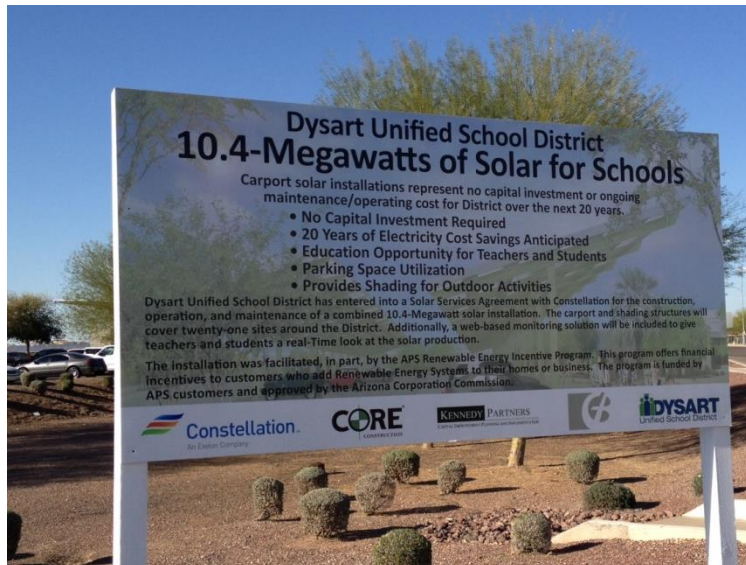


## How We Got Here?

# KENNEDY PARTNERS

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## CAPITAL IMPROVEMENT PLANNING AND IMPLEMENTATION

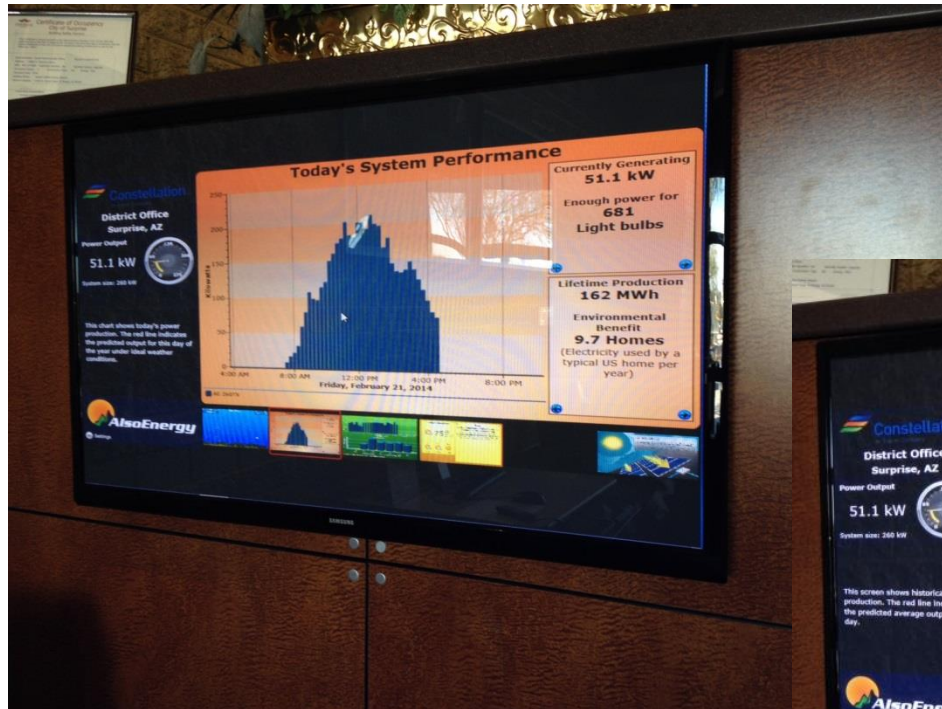


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# iDYSART

## Unified School District





## Environmental Impact?

Annual greenhouse gas emissions from 2,684 passenger vehicles *(click to read more about this calculation)*

CO<sub>2</sub> emissions from 1,444,418 gallons of gasoline consumed

CO<sub>2</sub> emissions from 29,963 barrels of oil consumed

CO<sub>2</sub> emissions from 170 tanker trucks' worth of gasoline

CO<sub>2</sub> emissions from the *electricity* use of 1,929 homes for one year

CO<sub>2</sub> emissions from the *energy* use of 663 homes for one year

Carbon sequestered by 330,364 tree seedlings grown for 10 years

Carbon sequestered annually by 10,561 acres of U.S. forests

<http://www.epa.gov/cleanenergy/energy-resources/calculator.html>

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## WHAT'S NEXT?





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# THANK YOU!

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