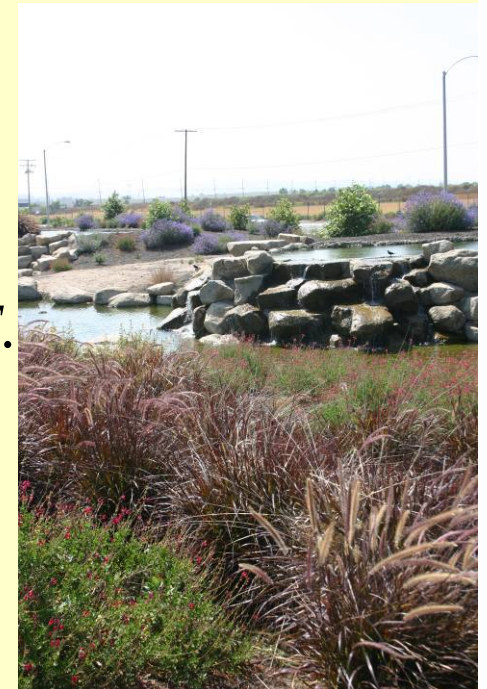


# ***INLAND EMPIRE UTILITIES AGENCY***

## ***Building a Platinum Facility With Recycled Materials***



*Eliza Jane Whitman, P.E.  
Project Manager, IEUA*



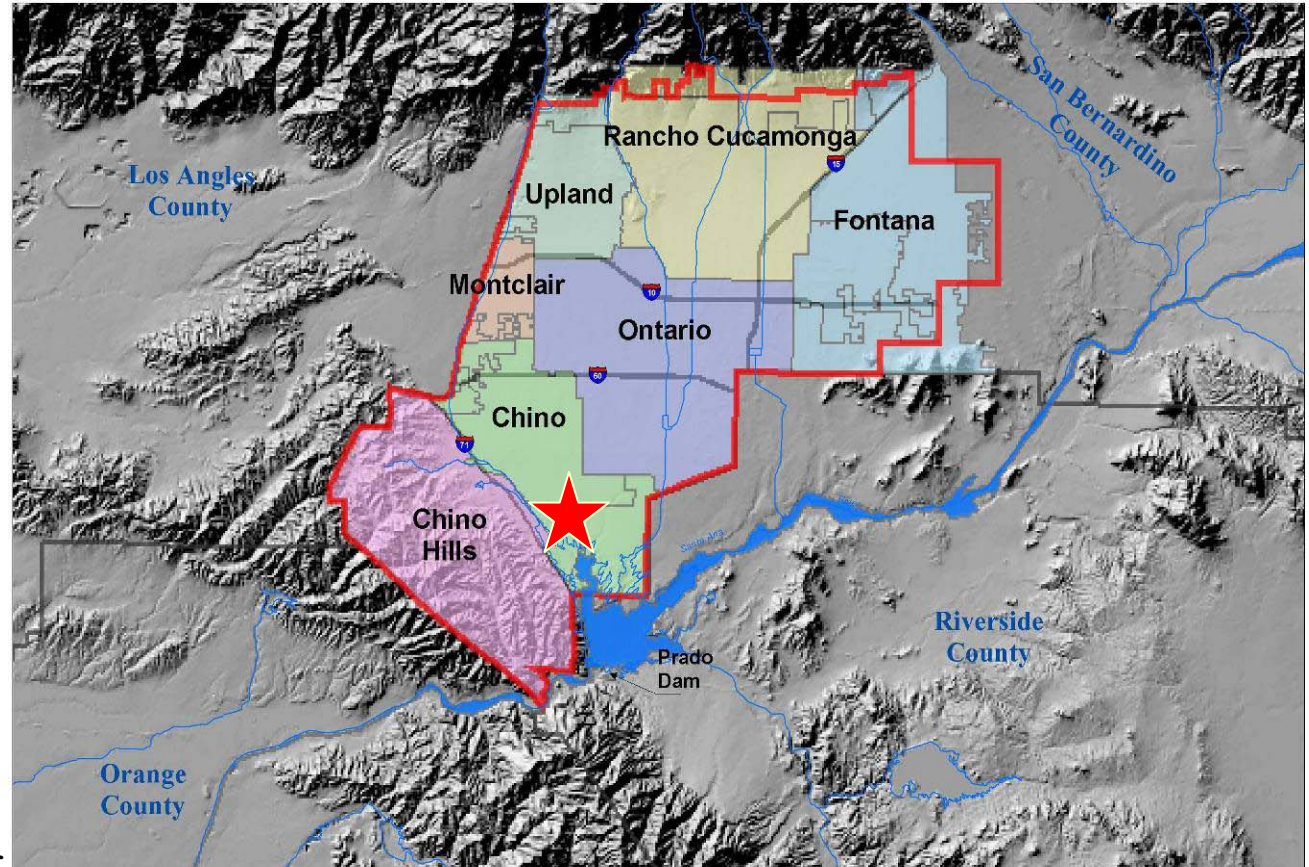
*An Energy Efficient and Environmentally Sound Building*

# Inland Empire Utilities Agency-

“We Own and Operate Wastewater Treatment Plants”

## IEUA

- 7 member Agencies
- 242 square miles
- Population 700,000  
(Chino Basin expected to double to 1.4 million by 2020)
- Wastewater treatment services
- Recycled water program
- Provide wholesale water (30% imported water supplies)





# The Headquarters Building RFP

- D/B – time was of the essence
- LEED Conference: ‘To have a successful project you need to get the Contractor on board’
- Established three bid prices (base, gold, and platinum)
- Matrix of points provided flexibility for Contractor/Architect to select building elements to design and construct
- LD’s and Incentives associated with LEED activities and schedule

# LEED 'Extras'

- Recycled materials (carpets, partitions, furniture, etc.)
- Low VOC paints, glues, etc.
- PV
- 'Cool' roof
- Stormwater treatment
- Porous concrete and other permeable pavements
- Bus stop
- Hybrid & electric vehicles

# Why We Were Successful: An Engineering Approach – Estimate Economic Benefits First

- Addressed technical issues – held a stormwater charrette with experts
- Hired an experienced Energy Consultant (CTG Energetics) to evaluate savings/lifecycle costs: *Photovoltaics (PV); Absorption chillers; Lighting and skylights* - Energy savings could result in up to 60% better than Title 24 requirements
- Compared typical costs for administration buildings across the Country - \$180 to \$280/ sf
- Researched productivity claims and benefits –to quantify and put a value to it - Productivity can increase by 26% (1999 California Board for Energy Efficiency Program Report -CPUC funded)

# Why We Were Successful: Fully Coordinated Design-Build

- Determine LEED Certification goals
- Decide which points achievable
- Decide who will be responsible
- Establish comprehensive schedule

LEED Green Building Rating System v2.0											
Project Name: Inland Empire Utilities Agency - Design Build											
Credit ID	Credit Title	Available Credits	PLATINUM	M Score	REQUIRED	QUALIFIES	LIKELY	UNCERTAIN	NOT APPLICABLE		
<b>TOTAL</b>		Platinum 52 :: Gold 39 :: Silver 33 :: Certified 26			69	52	8	1	39	15	14
<b>LEGEND: Light Gray Background = Primary Credits. BLACK Background = Secondary or Optional Credits</b>											
<b>MATERIALS AND RESOURCES (MR)</b>				<b>13</b>	<b>6</b>						
MR.P01	Storage and Collection of Recyclables		PRE	PRE	X					LEE com be p poin	
MR.C01.1	Building Reuse, Maintain 75% of Existing Shell	1	n/a						X	For	
MR.C01.2	Building Reuse, Maintain 100% of Existing Shell	1	n/a						X	For	
MR.C01.3	Building Reuse, Maintain 100% of Existing Shell and 50% of Non-Shell	1	n/a						X	For	
MR.C02.1	Construction Waste Management, Salvage/Recycle 50%	1	1				X			IEU, Build	
MR.C02.2	Construction Waste Management, Salvage/Recycle 75%	1	1				X			IEU, Build	
MR.C03.1	Resource Reuse, Specify 5%	1	n/a						X		
MR.C03.2	Resource Reuse, Specify 10%	1	n/a						X		
MR.C04.1	Recycled Content, Specify 25%	1	1				X			TG of S	
MR.C04.2	Recycled Content, Specify 50%	1	1				X			TG of S	
MR.C05.1	Local/Regional Materials, 20% Manufactured Locally	1	1				X			TG of si	
MR.C05.2	Local/Regional Materials, 50% Harvested/Extracted/Recovered Locally	1	n/a						X	Unk	
MR.C06	Rapidly Renewable Materials	1	n/a					X		Req TG,	
MR.C07	Certified Wood	1	1				X			50% Mat	
<b>INDOOR ENVIRONMENTAL QUALITY (EQ)</b>				<b>15</b>	<b>9</b>						
EQ.P01	Minimum IAQ Performance		PRE	PRE	X					ASH	
EQ.P02	Environmental Tobacco Smoke (ETS) Control		PRE	PRE	X					Law	
EQ.C01	Carbon Dioxide (CO2) Monitoring	1	n/a					X		Pro	
EQ.C02	Increased Ventilation Effectiveness	1	n/a						X	CFD	
EQ.C03.1	Construction IAQ Management Plan, During Construction	1	1				X			Con	
EQ.C03.2	Construction IAQ Management Plan, After Construction	1	1				X			IAQ	

*By giving the Contractor the flexibility to evaluate various recycled material content, the Contractor was able to find the best cost for points.*

# Why We Were Successful “Nothing Fancy”



- Tilt-up concrete (low technology) building type - 30% fly ash was added to concrete foundation and 10% to the walls
- Off the shelf items/ standard sizes – nothing special made
- Most economical building envelope
- Panelized building system

# Why We Were Successful

## Construction Phase Had a LEED Action Plan

*Contractor Constantly Kept Track of Recycled Materials Content*

- Contractor/subcontractor pre-construction meetings
- Keep *green material tracking sheets* current
- Mid project audit of LEED progress
- *Photographs*: required for USGBC submittal Submittal review for LEED conformance
- Material staging and pre-installation approvals for green products



*Covered HVAC ducts in conformance with EQ credit 3.1.*

# Daylighting & Views – Recycled Materials

- Window placement & view opportunities
- Lighting systems
  - Lighting (fluorescent) dimming systems
  - Finish materials reflectance

walls	75%
floors	30%
ceiling	89%



# Natural Resource Management



- Recycled content (bathroom tiles, bathroom stall partitions)
- Local / regional materials
- Rapidly renewable materials

# Low-Emitting Materials – Recycled Materials



- Carpet – work with appropriate adhesives
- Furniture (chairs)
- Glue-laminated structural beams



# Landscape Highlights – Recycled Materials

*Decomposed granite, car stops, mulch*

- Ultimately 80% shade for parking lots
- No mounds (concave not convex)
- No curb and gutter
- Surface flow roof drains (demonstration)
- Detain 25-yr storm event
- Parking lot as a demonstration site for paving materials
- No plants greater than 15 gallons in size
- All native or drought tolerant plants



# RECYCLED CONTENT SUMMARY

Our site has achieved a 90 % recycled content value overall



- ◆ Bathroom partitions and tire stops are made from recycled milk containers
- ◆ Crushed toilets (the high-water consumption type) are used instead of rock under the building foundation
- ◆ Bathroom tiles are made from car windshields



- ◆ Fly-ash (a waste material from ground or powdered coal ) is used in the building concrete (10% in the walls and 30 % in the foundation)



- ◆ Recycled tire materials as crumbled rubber were used in the landscaped areas,
- ◆ Car stops were made of 100% post-consumer recycled tire rubber
- ◆ Recycled carpet, countertops, and linoleum were used within the New Headquarters Buildings.



- ◆ Picnic benches and tables are made of 40% rubber.



*Partially funded by the California Integrated Waste Management Board*