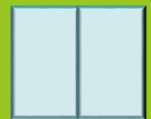
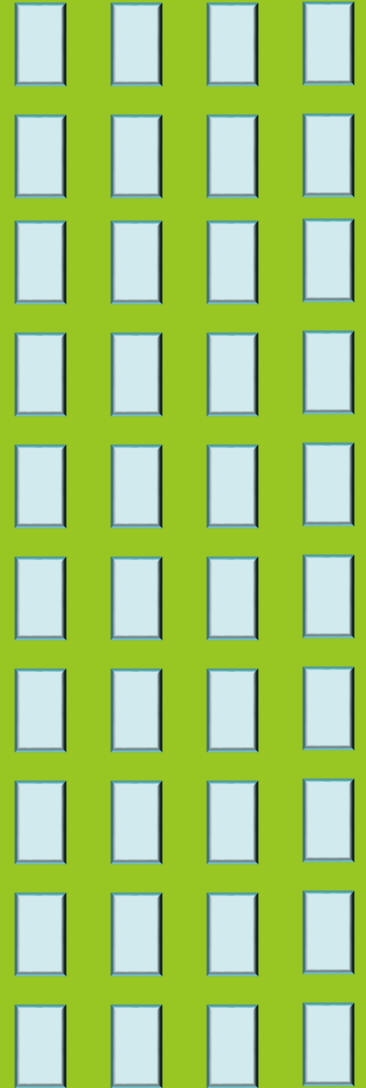


GREEN BUILDING



HOME INNOVATION: NGBS

- National Association of Home Builders (NAHB) established National Green Building Standards (NGBS) in 2008
- Certifies single family, multifamily, remodeling, and land development
- Over 425,425 homes certified
- Gets points in 6 categories and earn: bronze, silver, gold, or emerald certification
 - Site Design
 - Resource Efficiency
 - Water Efficiency
 - Energy Efficiency
 - Indoor Environmental Quality
 - Operation and Maintenance
- Projects can also earn badges: Net Zero Energy, Resilience, Smart Home, Universal Design, Wellness, and Zero Water



GREEN GLOBES

- Green Globes was developed in the UK in the 1980s and was adapted for the US in 2004 (also adapted for Canada in 2000)
- In the US the Green Globes Certification is offered through the Green Building Initiative (GBI)
- Certifies: new construction (NC), multifamily (NC), core and shell (NC), existing buildings (EB), multifamily (EB), and sustainable interiors (SI).
- Over 2,250 projects certified under new construction in the US
- Gets points in 7 categories (1000 total)
 - Project Management (100)
 - Site (150)
 - Energy (260)
 - Water Efficiency (190)
 - Materials (150)
 - Indoor Environment (150)





BUILD IT GREEN



- Build it Green is a non profit that was founded in 2005 in the bay area to certify homes, they now certifies homes all over California
- Certifies single and multifamily homes in both new construction and existing (used for remodels or for homes with existing green features)
- Over 89,444 homes certified (9,221 in 2021)
- Gets points in 5 categories
 - Community
 - Energy Efficiency
 - Indoor Air Quality
 - Resource Conservation
 - Water Conservation



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LEED CERTIFICATION

■ LEED CERTIFICATION

- United States Green Building Council (USGBC) came up with a rating system for how “Green” buildings are.

■ LEED vs. 4.1 for Residential BD+C (Building, Design, and Construction) Checklist

- Integrative Process (2)
- Location and Transportation (10)
- Sustainable Sites (5)
- Water Efficiency (15)
- Energy and Atmosphere (40)
- Materials and Resources (12)
- Indoor Environmental Air Quality (16)
- Innovation (6)
- Regional Priority Credits (4)

■ Rating:

- Certified: 40-49
- Silver: 50-59
- Gold: 60-79
- Platinum: 80-110



REGIONAL CREDITS

■ Santa Barbara (Homes)

■ Rainwater management

- Having at least 50% of your lot made up of permeable area, set square feet for number of bedrooms (ex: 3 bedrooms, floor area 2,200 ft²)

■ Annual energy use

- Design a building that is lower than LEED's energy budget.

■ Advance utility tracking

- Track utilities by the hour and give data for analysis

■ Access to transit

■ Outdoor water use

- Have less lawn and plant native plants.

■ Material-efficient framing

- Structural Insulated Panel System (SIPS)

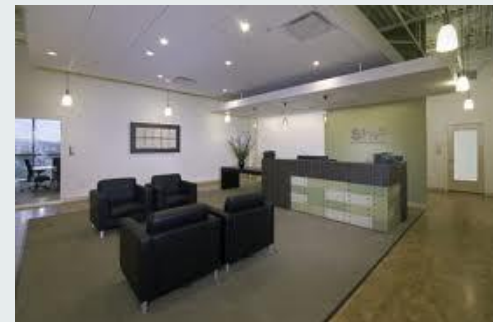
■ Total water use

- Design a building that uses lower than LEED's water budget

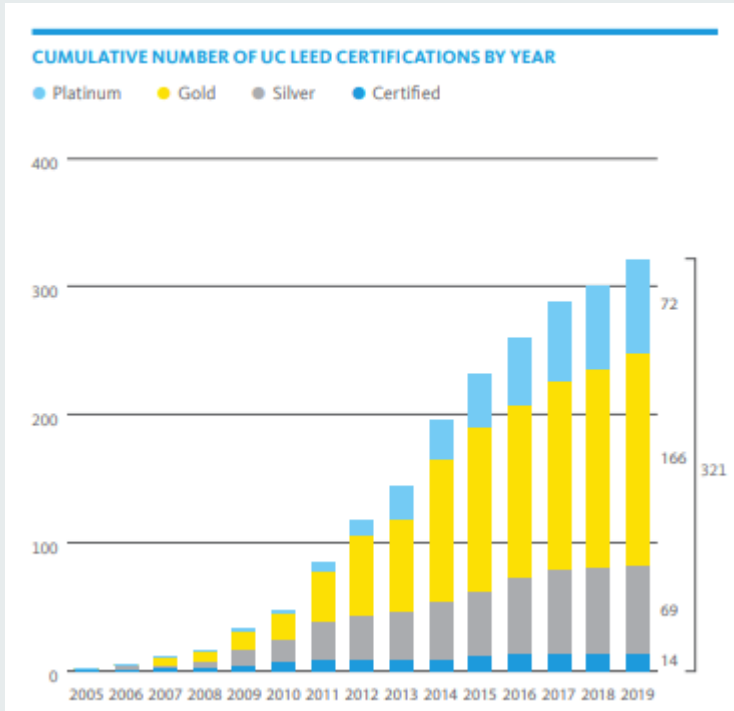


LEED CERTIFICATION

- What can be LEED certified?
- LEED Building Design and Construction
 - Residential (includes Single Family Homes, Multifamily Homes, and Multifamily Homes Core and Shell), Core and Shell, New Construction, School, Healthcare, Retail, Data Centers, Warehouse & Distribution Center, and Hospitality
- LEED Interior Design and Construction
 - Commercial Interiors, Hospitality, Retail
- LEED Operations and Maintenance
 - Existing Building, Retail, Data Centers, Warehouse and Distribution Center, and Hospitality, Schools
- Neighborhood Development



UC LEED CERTIFICATION



18% of LEED certified building at UCSB

ELECTRICAL CYCLING



ELECTRICAL CYCLING

Summer Discount Plan: Energy Cycling

Option		Earn up to*	 A/C Shutoff	 Push-Button Override**
Maximum Savings		\$180	Continuously, up to 6 hours per event.	
Comfort		\$90	15 minutes of each half-hour, up to 6 hours per event.	
Savings with Override Control		\$90	Continuously, up to 6 hours per event.	
Maximum Comfort with Override Control		\$45	15 minutes of each half-hour, up to 6 hours per event.	

Smart Energy Program: Adjust the temperature up on your thermostat by up to four degrees higher

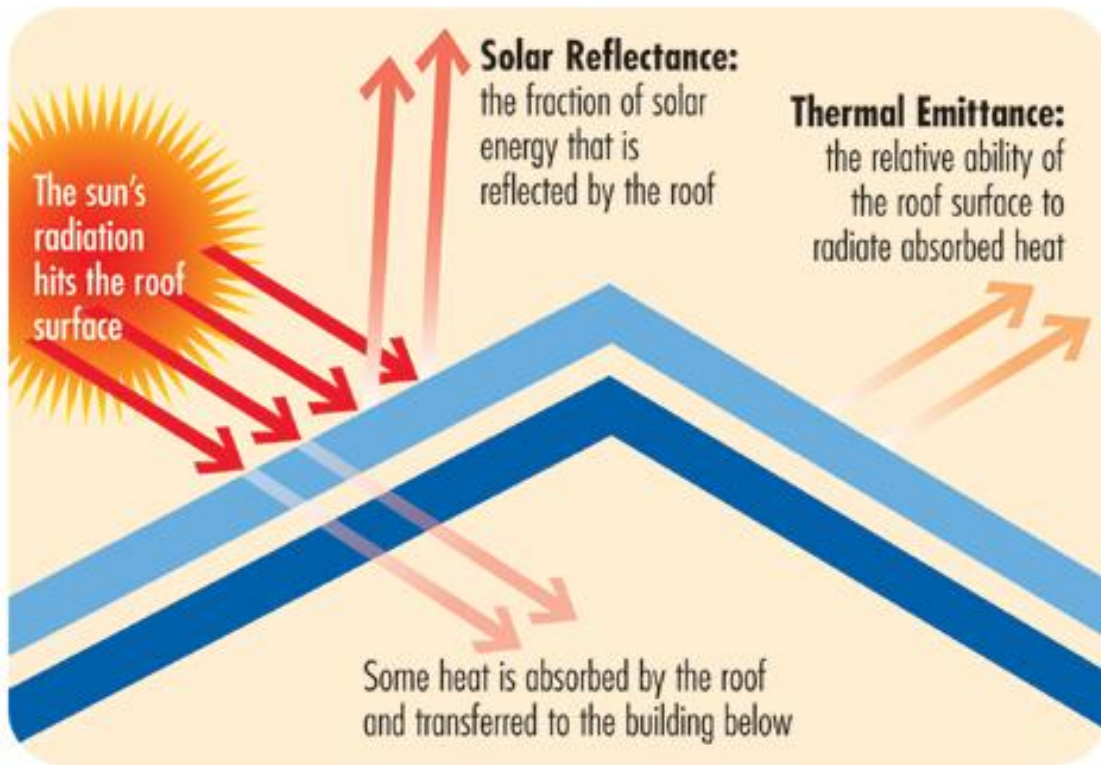
- \$75 for signing up for the program or you can get a free PCT from Edison
- \$0.3275 per summer season day (June 1 – September 30)

ELECTRICAL CYCLING

■ Smart Energy Electrical Cycling Times 2022 (12 events, ~26 hours)

Start Date	End Date	Start Time	End Time
06/28/2022	06/28/2022	05:00PM	07:00PM
07/15/2022	07/15/2022	06:00PM	08:00 PM
07/18/2023	07/18/2023	07:00PM	09:00PM
07/28/2023	07/28/2023	04:00PM	05:00PM
08/10/2022	08/10/2022	05:00PM	07:00PM
08/16/2022	08/16/2022	06:00PM	08:00PM
08/31/2022	08/31/2022	06:00PM	08:00PM
09/02/2022	09/02/2022	06:00PM	08:00PM
09/05/2022	09/05/2022	06:46PM	08:48PM
09/06/2022	09/06/2022	05:17PM	09:00PM
09/07/2022	09/07/2022	05:17PM	08:22PM

GREEN BUILDING CHOICES



- **Solar Reflectance Index (SRI):**
Indicates the roof's ability to reject solar heat, and is the combined value of reflectivity and emittance.
- **Standard Black: 0**
- **Standard White: 100**

GREEN BUILDING CHOICES

- What factors effect green building choices?
 - Looks
 - Cost
 - Convenience
 - Environmental Impacts
 - Laws
 - Control
 - Education



GREEN BUILDING CHOICES



GREEN CITIES/DEVELOPMENTS

- **Masdar City, Abu Dhabi, United Arab Emirates**
 - Started construction in 2008
 - 2.3 mi² (IV 1.9 m²)
 - Zero carbon
 - Zero waste
 - Population of 50,000 (IV 15,000)
 - 1,500 small businesses
 - 60,000 workers
 - Completed in 2015



GREEN CITIES/DEVELOPMENTS



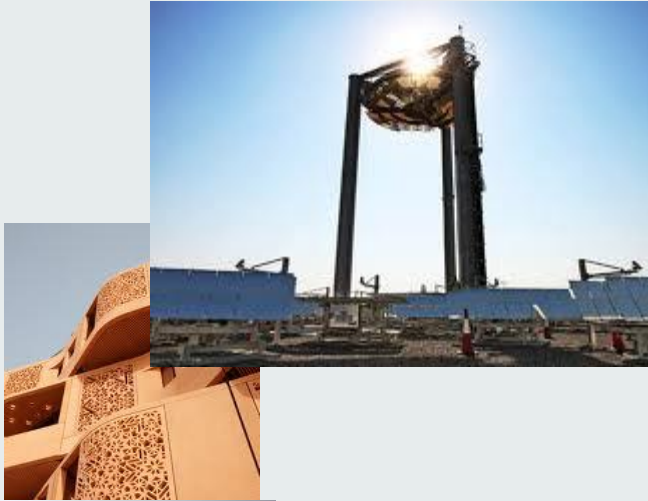
- Residential
- Community Facilities
- Offices and Retail
- Research and Development
- Light Industrial
- Hotel
- Institutional
- Mosque
- Parks and open spaces
- Utilities



GREEN CITIES/DEVELOPMENTS



GREEN CITIES/DEVELOPMENTS



What Makes Masdar Green?



GREEN CITIES/DEVELOPMENTS

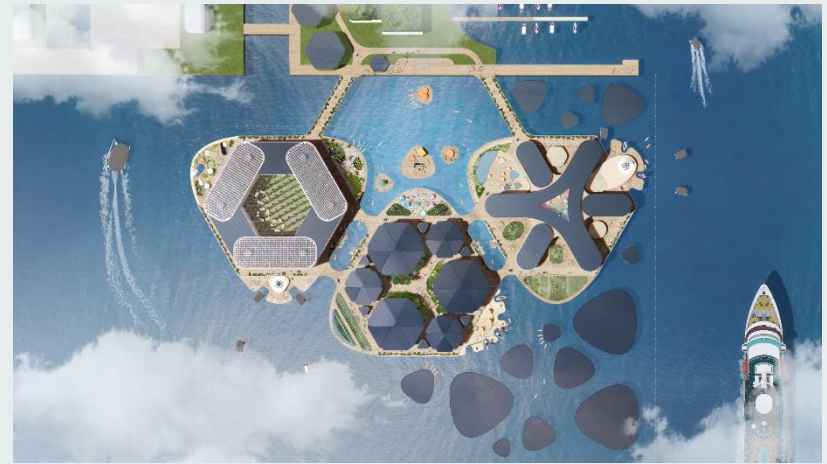
■ The Line, Saudi Arabia

- First Announced in 2017
- Construction started in 2021
- 170 km long (93 miles)
 - 200 m (0.12 miles wide)
- Population of 1 million by 2030
 - Final population 9 million
- Three levels
 - Above ground
 - living
 - Below ground
 - Infrastructure
 - Transportation
- 5-minute walk from every point of the line to mass transit allowing it to be car free
- 95% of the land will be preserved for Nature
- Powered by renewable energy.
- City operations will be optimized with AI.



GREEN CITIES/DEVELOPMENTS

- **The Floating City, South Korea**
 - Conceived 2019 by the UN
 - Have not started building.
 - 15.5 acres
 - Population of 12,000
 - Three interconnected platforms
 - Living
 - Research
 - Public spaces (school, hospitals, etc.)
 - Rooftop PV produce 100% of operational energy
 - Replenish its own water
 - Urban farm area
 - Can expand from 3 to 20 platform
 - Zero waste environment
 - No cars or public transit



GREEN CITIES/DEVELOPMENTS

Original Vision



SOM/Ratto Design Associates / Gerald Ratto Photography

Current Vision



Treasure Island, CA

- 8,000 housing units in serial varying height high-rise buildings (25% low income)
- restaurants
- ferry terminal facing San Francisco
- ~~organic farm~~ (25 acre urban farm with community gardens)
- ~~a wind farm~~ (will have demonstration wind turbines)
- parkland and tidal marshes.
- ~~as car independent as possible~~, with the ferry terminal and basic goods within a 10-minute walk of the residences
- 110 of 404 acres will be urbanized



■ How far along is the project

- Initial idea conceived in 2005
- City Council gave preliminary approval 2011
- Ground Breaking scheduled in 2012
- Estimate time for completion 20-30 years
- April 2013 Chinese pulled funding.
- New investment companies took over the project (Stockbridge, Wilson, and Kenwood)
- July of 2014 an agreement was made to transfer the title from the Navy to the new investors
- March 1216 the Navy has put forth a proposal to clean up hazardous waste (still doing some clean up)
- Construction started 2021, First building finished in 2022.
- 2023 the three development are suing each other unclear if this will slow down construction.

GREEN CITIES/DEVELOPMENTS

Star View Court
Low Income Housing
Concrete to 3rd floor (7 floors total)

Maceo May Apartments
Veteran Housing
Almost Complete

250 Apartments
Concrete to 4th floor (22 floors total)



Old World Fair Building
Treasure Island Administration