



"The Oakland EcoBlock project was born out of a simple question: How is it possible to green our cities, not in the academic abstract, but in painstaking, concrete detail? What are the essential steps necessary that must be undertaken in tandem or sequence to [accelerate change towards a resilient future]?"

> - From the Report: The EPIC Challenge: Accelerating the Deployment of Advanced Energy Communities: The Oakland EcoBlock, 2018

# OPPORTUNITY SOM



- **SB 350:** Clean Energy and Pollution Control Act of 2015
- **AB 32**: California's Global Warming Solutions Act of 2006
- **SB 375:** Sustainable Communities and Climate Protection Act of 2008
- **SB 1275:** Vehicle retirement and replacement: Charge Ahead California Initiative of 2014
- Executive Order B-30-15: Greenhouse Gas Emissions Targets from 2005
- **Executive Order B-29-15:** State of Emergency in State of California due to Severe Drought Conditions from 2014



How can cities model the path forward to deep decarbonization, by radically decreasing the resource and CO<sub>2</sub> footprint of buildings and vehicles?

#### $\bigcirc$ WHEN DID YOU FIRST HEAR 2015 **2016 MARCH** 2017 **2018 MARCH** DECEMBER California Energy Commission DECEMBER California Energy ABOUT THE CONCEPT AND Grant Electric Program Investment Charge **Final Report** Commission (EPIC) Grant 15-312. **Electric Program** Submitted WHEN DID YOU JOIN THE Notice of Proposed Award. Investment Charge (EPIC) **OEB TEAM?** Grant 15-312 Concludes. 2014 2015 2016 2017 2018 ............ ............ UC Berkeley College of Environmental Design & Energy Resources Group Sherwood Design Engineers Kearns & West Lawrence Berkeley National Laboratory Pacific Gas & Electric **Perkins Coie Ramboll Environ Morgan Lewis** UC Berkeley Civil and Environmental Engineering **City of Oakland** Integral Group **UC Berkeley Center for Green Chemistry East Bay Municipal Utility District Arnold & Porter** Skidmore, Owings & Merrill





# CASE STUDIES SOM







### SCALE COMPARISON



(surrounding area shown with dashed line)

1/2/1986 1.to-Be

# OFF-GRID VILLAGE



**Constructed Natural Systems** Natural principles are used and celebrated in environment occupied by people.

**Productive landscapes** Natural systems are preserved and enhanced to provide for all community elements.

## **REGEN VILLAGES** ALMERE, THE NETHERLANDS

#### NEW CONSTRUCTION

- Design Completion: 2016 (on-going)
- Site Area: 3.8 acres
- 25 pilot homes
- off-grid, integrated, "regenerative", resilient eco villages that can power and feed self-reliant families around the world.
- Agreements to develop ReGen villages in Sweden, Denmark, Norway, Germany, and Belgium.
- Each completed village will house 100 families on about 50 acres



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HOUSING UNITS 25 housing units organised in a circle



GLASS ENVELOPE The housing units are encaded in a glass envelope to extent the growing and living seasons in the food production facilities and the housing units.



Social spaces are created between the buildings, to ensure a complete integration between the food production and the housing units



Food production facilities are places in the center of the housing units



INFRASTRUCTURE 8 squares are connected to ensure an efficient infrastructure. The squares work as electric car charging station and drop off zones



BIODIVERSITY AND SEASONAL GARDENS By minimizing the footprint of the food production and housing units, we free up space to create biodiversity/permaculture and seasonal gardens. A village that doesn't deplete nature but restores it.

# VITAL EXISTING PLACES SOM



**Complete Neighborhoods** Multi-story buildings provide homes for people adjacent to attractive parks. **District Renewal** A street car will serve the compact district with density that supports transit ridership.

## PARKMERCED SAN FRANCISCO, CA, USA

- 60% Carbon reduction
- 56% Reduction of Calif Grid
- 60% Potable water consumption reduction
- 60% Waste water reduction
- 100% Storm water reduction







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# LIVABLE NEW DISTRICTS



#### Walkable Streets

Pedestrian priority and lively shop fronts create a pleasing experience for residents and visitors.

Natural Spaces for Living Nature and residences are in close proximity to allow for outdoor play and connection with natural communities.

## INDIA BASIN SAN FRANCISCO, CA, USA



# APPROACH & CONCLUSIONS SOM

# $\bigcirc$ WHEN DID YOU JOIN THE OEB TEAM?

2014

(ERG)

spring.

Kearns & West

Sherwood Design

Early 2015.

UC Berkeley College of

proposal; Award 2015 late

In the process of the grant

application. End of 2014 or

2015 **2016 MARCH** 2017 **2018 MARCH** DECEMBER California Energy Commission DECEMBER California Energy Grant Electric Program Investment Charge **Final Report** Commission (EPIC) Grant 15-312. Submitted Electric Program Notice of Proposed Award. Investment Charge (EPIC) Grant 15-312 Concludes. 2015 2016 2017 2018 Pacific Gas & Electric (PG&E) UC Berkeley Center for Green Skidmore, Owings & Merrill Environmental Design (CED) Feels like it has been going Chemistry (CGC) September 2017 & Energy Resources Group I didn't really join. Stepped down on forever, 2015. We were from Berkeley Center for Green approached before the CEC Developed idea 2014; Fall 2015 Chemistry in January 2016; close grant. We participated pre-grant. to kick-off for OEB, Tom McKeag Perkins Coie was the new director. April 2015: April 2016 East Bay Municipal Utility **Ramboll Environ** District (EBMUD) May 2015 First engaged on the first quarter Morgan Lewis proposed/received funding. June 2015 Ramboll Environ LBNL September 2016 Fall 2015 UC Berkeley Civil and Arnold & Porter **Environmental Engineering** December 2016 (CEE) September 2015 City of Oakland 2015 Later summer/fall. Integral Group LBNL October 13, 2015 Rick Diamond, C. Kurcha, Leo Rain, Norm Bourassa, Tony Nahas. LBNL Not part of team. I have been to meetings and encouraged the team, I advised and did some

Engineers (SDE) We had a class going in 2015 or 2014.

Lawrence Berkeley National Laboratory (LBNL) At that time at beginning.

early brainstorming.

## OAKLAND ECOBLOCK WORKSHOP

SOM led a full-day workshop to identify three alternatives that could be evaluated on a variety of performance indicators.



## OAKLAND ECOBLOCK WORKSHOP

SOM, LBNL, Faculty from the UC Berkeley and others work together to develop a framework to categorize alternatives according to different levels of performance.



California Energy Commission STAFF REPORT

# Style Manual: Third Edition

Used for California Energy Commission Staff, Lead Commissioner, and Commission Reports, Presentations, and Papers.

ENERGY COMMISSION

California Energy Commission Educated G. Brown Jr., Governor

August 2015 | CEC-180-2015-002

Figure 2: Example of a Graphic Property Used in a Report



SOLARA is the free apartment community in California to be fully powered by the sum and is the first project delivered under the California Energy Commission New Solar Homes Pathership Program. Phase Deat Committy inscriptivity, averagement of SOLARA.

#### Use of Colors in Graphs and Figures, Size of Fonts, and Other Graphic Elements

Many times the Inergy Commission's reports are photocopied in black and white. Therefore, it is important to use colors in charits, graphs, and figures that will reproduce well on a photocopy machine. Plan your therament for future readers who may see your chart as a black-and-white photocopy. You want the information to be clear and easy to understand; the numbers should be large and clear enough to be read.

Moreover, graphs, and figures may need to be reduced in size to fit on a page within the test. Make sure the font size in the graphic is large enough to be read if the graphic is abrunk in size.

Graphics or figures should be created at a minimum of 300 dots per inch-

#### Footnotes

Use footnotes that endnotes) in Energy Commission reports 2 the them sparingly inbriefly (darity terms or convepts that the average resider may not understand. Place footnotes at the bottom of the page on which they appear. Do not place footnotes at the end of a section.

2 the bounds manher appears in the tori as a superscript. The formate is at the bottom of the page

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- How can cities model the path forward to deep decarbonization, by radically decreasing the resource and CO<sub>2</sub> footprint of buildings and vehicles?
- How can they provide for essential services even when the electric grid is disrupted?
- And how can such an immense energy transition unfold in a modular, economic way that promotes the inclusion of all communities?

