Zero Net Energy Case Study Buildings

by Edward Dean, FAIA

Getting to Zero National Forum 2016

Peter Turnbull
# Zero Net Energy Case Study Buildings

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Location</th>
<th>Climate Zone</th>
<th>Floor Area (sf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPR Construction San Francisco Office</td>
<td>Office</td>
<td>San Francisco, CA</td>
<td>20,020</td>
</tr>
<tr>
<td>435 Indio Way Speculative Office Building</td>
<td>Office</td>
<td>Sunnyvale, CA</td>
<td>31,759</td>
</tr>
<tr>
<td>IBEW-NECA JTAC Training Facility</td>
<td>Classroom / Office</td>
<td>San Leandro, CA</td>
<td>45,000</td>
</tr>
</tbody>
</table>

DPR Construction Office Building
San Francisco, CA

Photo: Drew Kelly
DPR Construction Office Building
May 2014 – April 2015

Measured Site Energy kBtu/sf/yr
Consumption 22.4
Production 26.8

Modeled Performance
Modeled EUI: 25.8 kBtu/sf/yr

Measured Performance
Measured EUI: 22.4 kBtu/sf/yr
435 Indio Way Speculative Office Building
San Leandro, CA

Photo: RMW Architects

Photo: Bruce Damonte

435 Indio Way Speculative Office Building
San Leandro, CA

Photo: Bruce Damonte
435 Indio Way Speculative Office Building
San Leandro, CA

October 2014 – September 2015

Energy Use
(Building)

Energy Production (PV System)

Measured Site Energy kBtu/sf/yr

<table>
<thead>
<tr>
<th>Consumption</th>
<th>13.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>15.2</td>
</tr>
</tbody>
</table>

Cumulative Net Energy Performance
### 435 Indio Way Speculative Office Building
**October 2014 – September 2015**

**Modeled Performance**
- Modeled EUI: 21.2 kBTU/sf/yr

**Measured Performance**
- Measured EUI: 13.5 kBTU/sf/yr

**IBEW Joint Apprenticeship and Training Facility**
**Hayward, CA**

Photo: FCGA Architects
IBEW Joint Apprenticeship and Training Facility
Hayward, CA

Photo: Chad Ziemendorf

IBEW Joint Apprenticeship and Training Facility
Hayward, CA

Photo: FCGA Architects
IBEW-NECA JATC Training Facility
July 2014 – June 2015

Measured Site Energy kW/h

| Consumption | 16.3 |
| Production  | 20.3 |

Cumulative Net Energy Performance

Energy Production (Flat Panel PV System)
Energy Production (Wind Turbines)
Energy Production (Tracking Solar Tree®)
Total Energy Production (All Renewable Systems)

Energy Use (Building)
Consumption: 16.3 kW/h
Production: 20.3 kW/h

Modeled Performance
Measured Performance

Modeled EUI: 18.0 kBtu/sf/yr
Measured EUI: 16.5 kBtu/sf/yr
Zero Net Energy Case Study Buildings by Edward Dean, FAIA

Case Studies in Volume 1:

- Packard Foundation Office Building
- Stevens Library at Sacred Heart Schools
- IDeAS Office Building
- Watsonville Water Resources Center
- Science and Engineering Building at UC Merced
- Classroom and Office Building at UC Merced

FREE to download at http://bit.ly/2a6J6v4
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Case Studies in Volume 2:

- DPR Construction Office Building
- IBEW-NECA JATC Training Facility
- Speculative Office Building at 435 Indio Way
- West Berkeley Branch Library
- The Exploratorium Science Museum

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Thank you
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