

IEEE East Bay



Charge Bliss
Intelligent Power.  Delivered.



Devising *YOUR* Emergency Power Strategy



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Electrical Engineer,
30 Years Experience



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We identify, partner and apply the most innovative Construction Technology to support the movement to industrialize construction

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Agenda

- Why do we need a Strategy?
- Definition
- Risk
- Evolving Regulation
- Maintenance and Modification
- Integrated Design
- Innovation and Evolution

Why do we need a Strategy?

A Small Outage Can Have Big Impact





IT Power Consumption Projected to Increase X 3 Between 2020 & 2035



EXPENSIVE

CHANGING E-POWER SYSTEM IS DIFFICULT



Chapter 1 General

ARTICLE 100 Definitions

Scope. This article contains only those definitions essential to the proper application of this *Code*. It is not intended to include commonly defined general terms or commonly defined technical terms from related codes and standards. In general, only those terms that are used in two or more articles are defined in **Article 100**. Other definitions are included in the article in which they are used but may be

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Emergency Power System

CEC 700

700.2 Definitions.

Emergency Systems. Those systems legally required and classed as emergency by municipal, state, federal, or other codes, or by any governmental agency having jurisdiction. These systems are intended to automatically supply illumination, power, or both, to designated areas and equipment in the event of failure of the normal supply or in the event of accident to elements of a system intended to supply, distribute, and control power and illumination essential for safety to human life. (See *Figure 700.2.*)

Emergency Power System

CEC 700 III. Sources of Power

- (A) Storage Battery
- (B) Generator Set
- (C) Uninterruptible Power Supplies
- (D) Separate Service
- (E) Fuel Cell System
- (F) Unit Equipment

Legally Required Standby Systems CEC 701

Those systems required and so classed as **legally required** standby by municipal, state, federal, or other codes or by any governmental agency having jurisdiction.

These systems are intended to automatically supply power to selected loads (other than those classed as emergency systems) in the event of failure of the normal source.

Legally Required Standby Systems CEC 701

- 1.heating and refrigeration systems,
- 2.communications systems,
- 3.ventilation and smoke removal systems,
- 4.sewage disposal,
- 5.lighting systems,
- 6.industrial processes

Optional Standby Systems

CEC 702

Those systems intended to supply power to public or private facilities or property where life safety does not depend on the performance of the system.

These systems are intended to supply on-site generated power to selected loads either automatically or manually

Optional Standby Systems

CEC 702

- 1.heating and refrigeration systems
- 2.*data processing and communications systems*
- 3.industrial processes, when stopped do not cause a hazard

Operation Need & Strategy

Operation Need & Strategy

- Owner
- AHJ
- Tenant
- Patient
- Member of Public

Risk

Climate Change

Seismic Event



Cyber Risk

Cyber Risk



SHODAN

38,114,231.45
Cogent Communications
Added on 2019-01-22 07:30:29 GMT
United States, Warsaw

Ubiquiti Networks Device
IP: 38.114.231.45
MAC: 98:94:3d:38:55:5f
Hostname: **Pleasant Hill-0be 3**
Product: AFS
Version: AF01.2e1908.v0.1.2854.151138.1438

204.185.93.162
PaxTideCo
Added on 2019-01-22 07:30:29 GMT
United States

HTTP/1.1 200 OK
Date: Tue, 21 Jan 2019 01:58:25 GMT
Server: Apache/2.4.18 (Ubuntu)
Last-Modified: Mon, 18 Nov 2014 23:24:19 GMT
ETag: "800-9400-4000-1"
Accept-Ranges: bytes
Content-Length: 3109
Vary: Accept-Encoding
Content-Type: text/html

Des Moines Apartments Grimes Apartments in Ankeny Johnston Iowa Apartments in Pleasant Hill area Apartments | Haverkamp Properties

SSL Certificate
Issued By: ...
Common Name: Pleasant
Organization: Paralels
Issued To: ...
Common Name: Pleasant
Organization: Paralels
Supported SSL Versions
SSLv3, TLSv1, TLSv1.1, TLSv1.2
Diffie-Hellman Parameters
Fingerprint: 8F0525/0525 Group 14

HTTP/1.1 302 Found
Date: Mon, 21 Jan 2019 01:29:26 GMT
Server: Apache
X-Backend: http://paxartemxpleasanthill.com/web.php
Location: http://paxartemxpleasanthill.com/pleasant-hill-apartments/sign-in/view/
X-Powered-By: Plesklin
Connection: close
Transfer-Encoding: chunked
Content-Type: ...

TOTAL RESULTS
16

TOP COUNTRIES

United States 14
Netherlands 1
Bangladesh 1

TOP SERVICES

HTTPS 4
Automated Task Gauge 3
HTTP 2
Telnet 2
SSH 1

TOP ORGANIZATIONS

Cogent Communications 4
Rockspace Hosting 2
Sonic.net 1
Rockspace Ltd. 1
PaxTideCo 1

TOP PRODUCTS

Apache HTTPD 9
AFS 3
VIX Controller 1

SOLUTIONS

SOLUTIONS

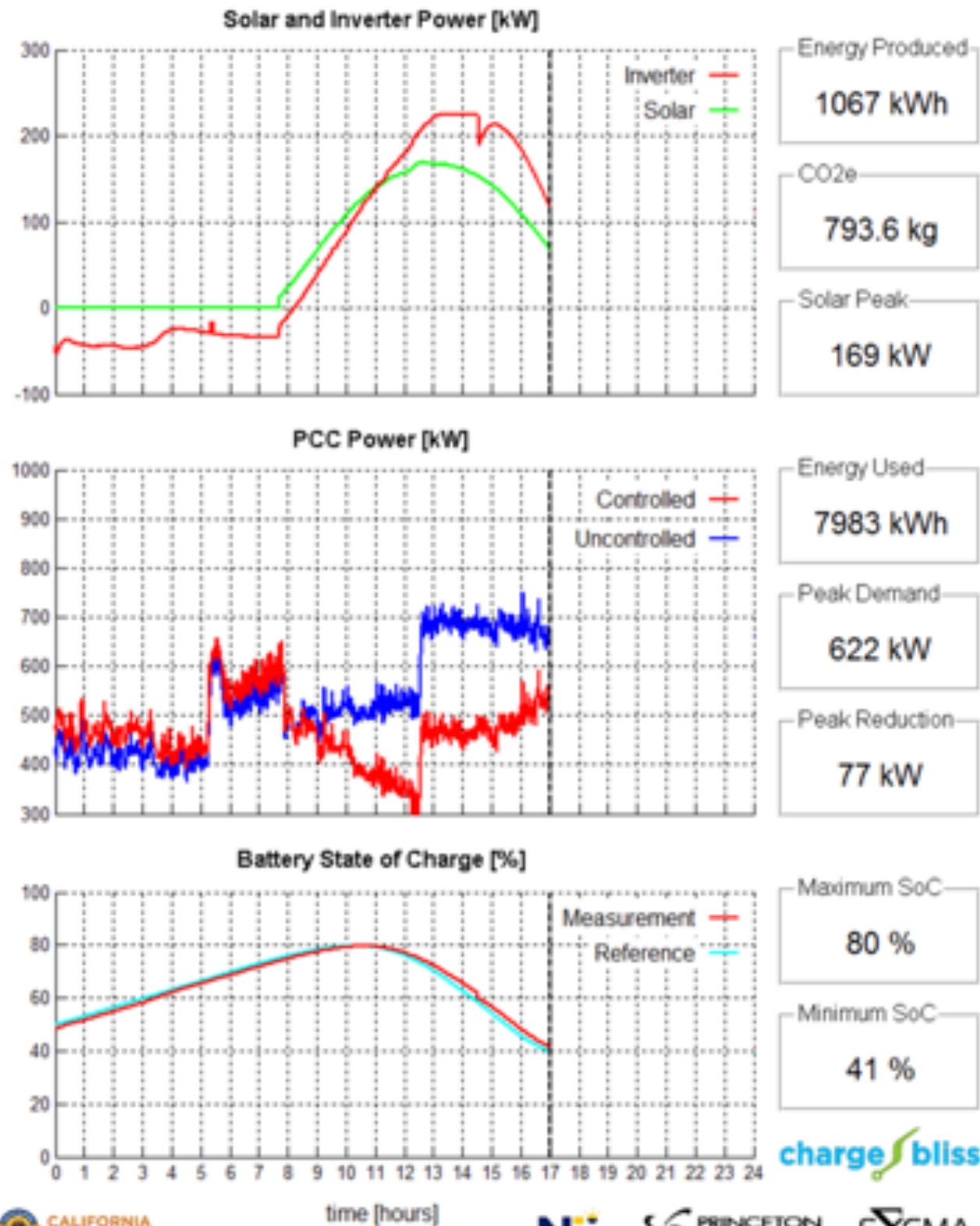
- Generators
- UPS
- Battery
- V2B?



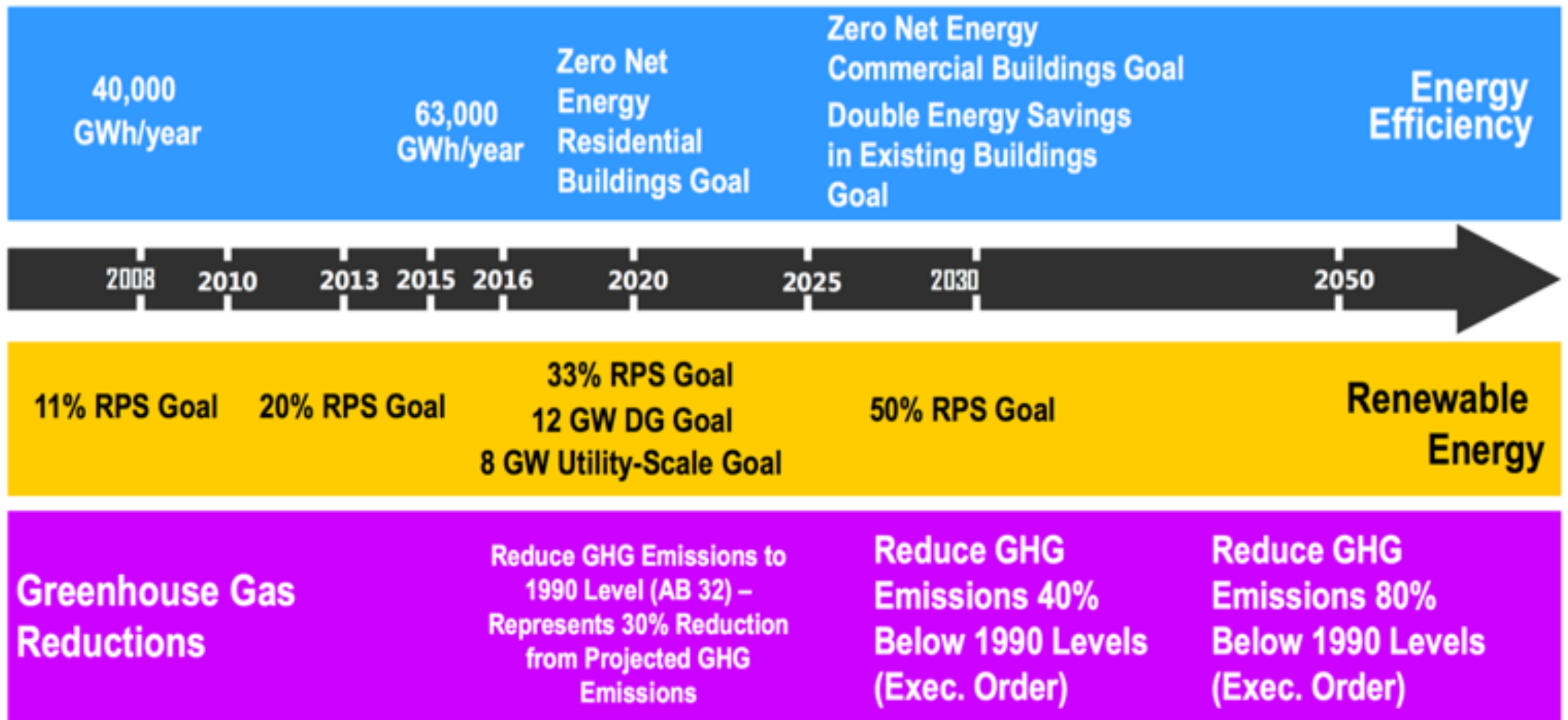
I-Occupancy Microgrid, Kaiser Richmond







Evolving Regulation



Maintenance and Modification



Summary

- Why do we need a Strategy?
- Definition
- Risk
- Evolving Regulation
- Maintenance and Modification
- Integrated Design
- Innovation and Evolution

