

DOCKETED

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2015.07.20

Steve Uhler's comments on 15-IEPR-5: Energy Efficiency 2015.07.06

I endeavor to treat energy efficiency as a complete system.

I have made tools to help in finding the most efficient appliances for a given use.

I am using data is from CEC Appliance Database to make these reports.

Example for small electric water heaters:

<http://ugemrp.com/1066/0000/0-011/0000/0000/0004/0009/0013/0012/index.htm>

The screenshot shows a web browser window with the URL <http://ugemrp.com/1066/0000/0-011/0000/0000/0004/0009/0013/0012/index.htm>. The page content is as follows:

Water Heater Products

Small Electric Water Htrs.
Energy Source
Rated Volume
Annual Energy Consumption KBTU
Input KW

1,537 Record(s) for [Energy Source: ELECTRICITY](#) Annual Energy Consumption KBTU : 0 to 19,456

Energy Source: ELECTRICITY

87 Record(s) with 0 Rated Volume	Annual Energy Consumption KBTU : 15,133 to 15,138
40 Record(s) with 0 to 0.25 Rated Volume	Annual Energy Consumption KBTU : 0 to 0
33 Record(s) with 0.25 to 0.50 Rated Volume	Annual Energy Consumption KBTU : 4,451 to 15,287
1 Record(s) with 1 to 1.5 Rated Volume	Annual Energy Consumption KBTU : 3,395 to 3,395
1 Record(s) with 5 to 10 Rated Volume	Annual Energy Consumption KBTU : 14,607 to 14,607
3 Record(s) with 15 to 20 Rated Volume	Annual Energy Consumption KBTU : 15,119 to 15,801
230 Record(s) with 25 to 30 Rated Volume	Annual Energy Consumption KBTU : 15,770 to 16,833
375 Record(s) with 35 to 40 Rated Volume	Annual Energy Consumption KBTU : 15,770 to 17,030
340 Record(s) with 40 to 50 Rated Volume	Annual Energy Consumption KBTU : 15,775 to 17,420
169 Record(s) with 50 to 70 Rated Volume	Annual Energy Consumption KBTU : 15,770 to 17,420
183 Record(s) with 70 to 90 Rated Volume	Annual Energy Consumption KBTU : 15,770 to 17,625
5 Record(s) with 90 to 100 Rated Volume	Annual Energy Consumption KBTU : 16,646 to 18,496
69 Record(s) with 100 to 120 Rated Volume	Annual Energy Consumption KBTU : 16,463 to 19,456
1 Record(s) with 120 to 500 Rated Volume	Annual Energy Consumption KBTU : 0 to 0

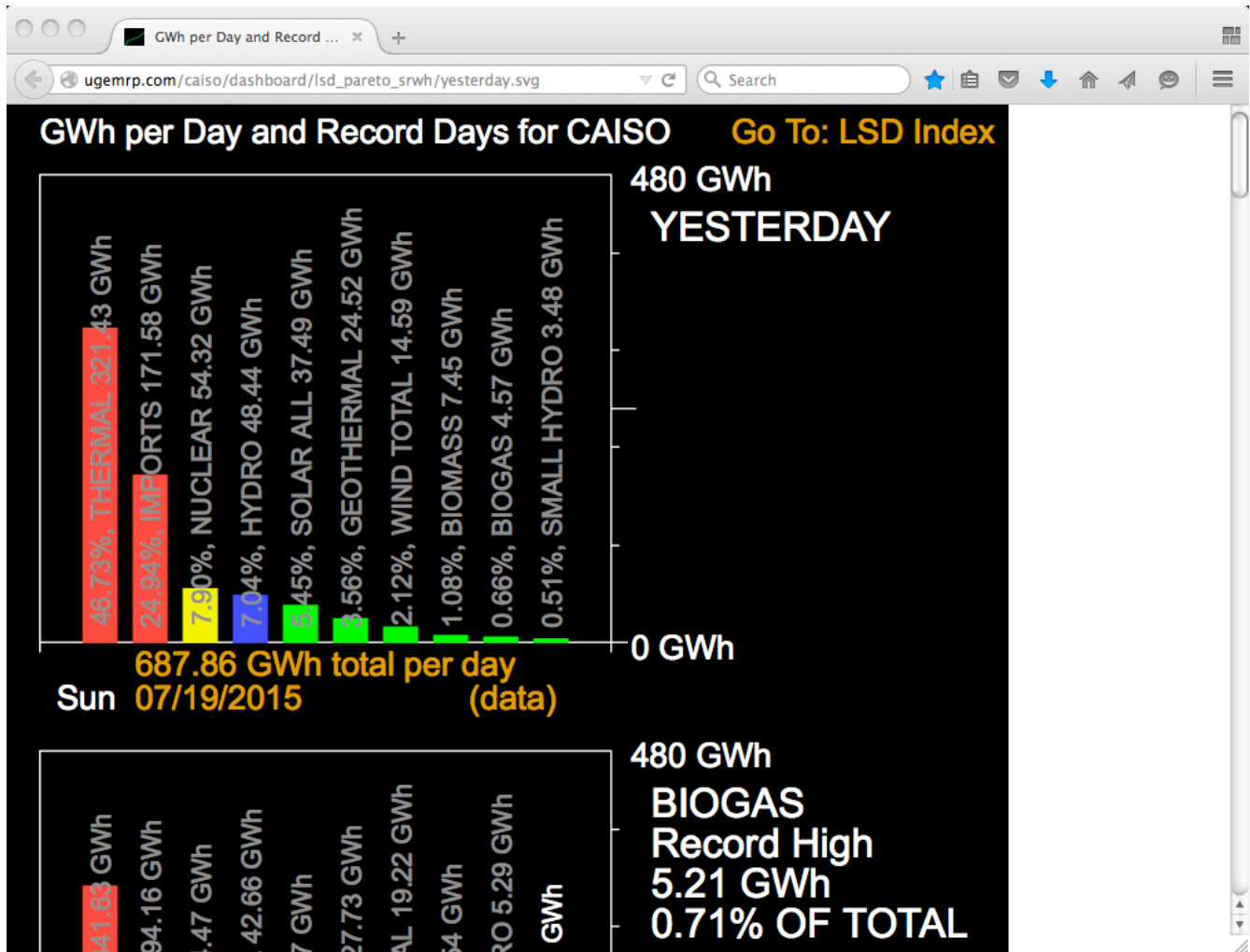
I like to eat healthy and fresh and local, I like to use low or no carbon electricity that is locally produced.

I look to see what is in season, I try to put off large uses on days where renewables aren't as available.

Here are Pareto charts of power sources for yesterday and record days:

http://ugemrp.com/caiso/dashboard/lsd_pareto_srwh/yesterday.svg

Html5 web browser is required to view the chart.



I like to know how much carbon my electric utility produces in their power generation. They may buy most of their power from someone else, I like to know if they are reducing the carbon in what they generate.

Here are tables of Generators for CO² per kWh based on CEC QFER, EPA and EIA data, a living document that I will endeavor to improve its accuracy as better data becomes available.

The graph bars in red are for those who produce electricity with more than 1.5 pounds of CO² per kWh.

I would like to know a CO² per kWh value for the 2050 carbon goal and the goals for each year in the past and future. If anyone knows a good source, let me know.

I would use these carbon goal numbers to plan my improvements and help others do the same.

http://ugemrp.com/1066/0001/0-003/1_2014.htm

Home
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14:25 Tuesday, 2015-June-30

California Power Content: CO₂

Electricity Generating Companies Sorted by CO₂ and Net kWh

2014

161,653,632,595 Pounds of CO₂

[2013](#)

Item	CO ₂	Company Name	CO ₂ lbs	CO ₂ lbs, %	Net kWh	Net kWh, %	Capacity, kW	Capacity, kW, %	CO ₂ lbs per kWh	CO ₂ lbs per kWh Graph
1	Yes	Los Angeles Department of Water & Power (LADWP)	31,661,506,243	19.59	18,713,415,540	8.27	7,695,100	8.85	1.69	
2	"	Calpine Corporation - West Region	9,340,627,356	5.78	10,936,780,140	4.83	2,800,470	3.22	0.85	
3	"	La Paloma Generating Co. LLC	5,486,811,755	3.39	6,558,023,020	2.90	1,200,000	1.38	0.84	
4	"	Southern California Edison (SCE)	5,330,466,687	3.30	8,038,925,000	3.55	2,532,860	2.91	0.66	
5	"	Pacific Gas & Electric (PG&E)	5,164,925,653	3.20	28,798,001,210	12.72	7,834,690	9.01	0.18	
6	"	Sacramento Municipal Utility District (SMUD)	4,646,189,403	2.87	6,291,862,030	2.78	1,687,560	1.94	0.74	
7	"	Delta Energy Center LLC	4,522,660,520	2.80	5,208,410,000	2.20	860,000	0.90	0.87	

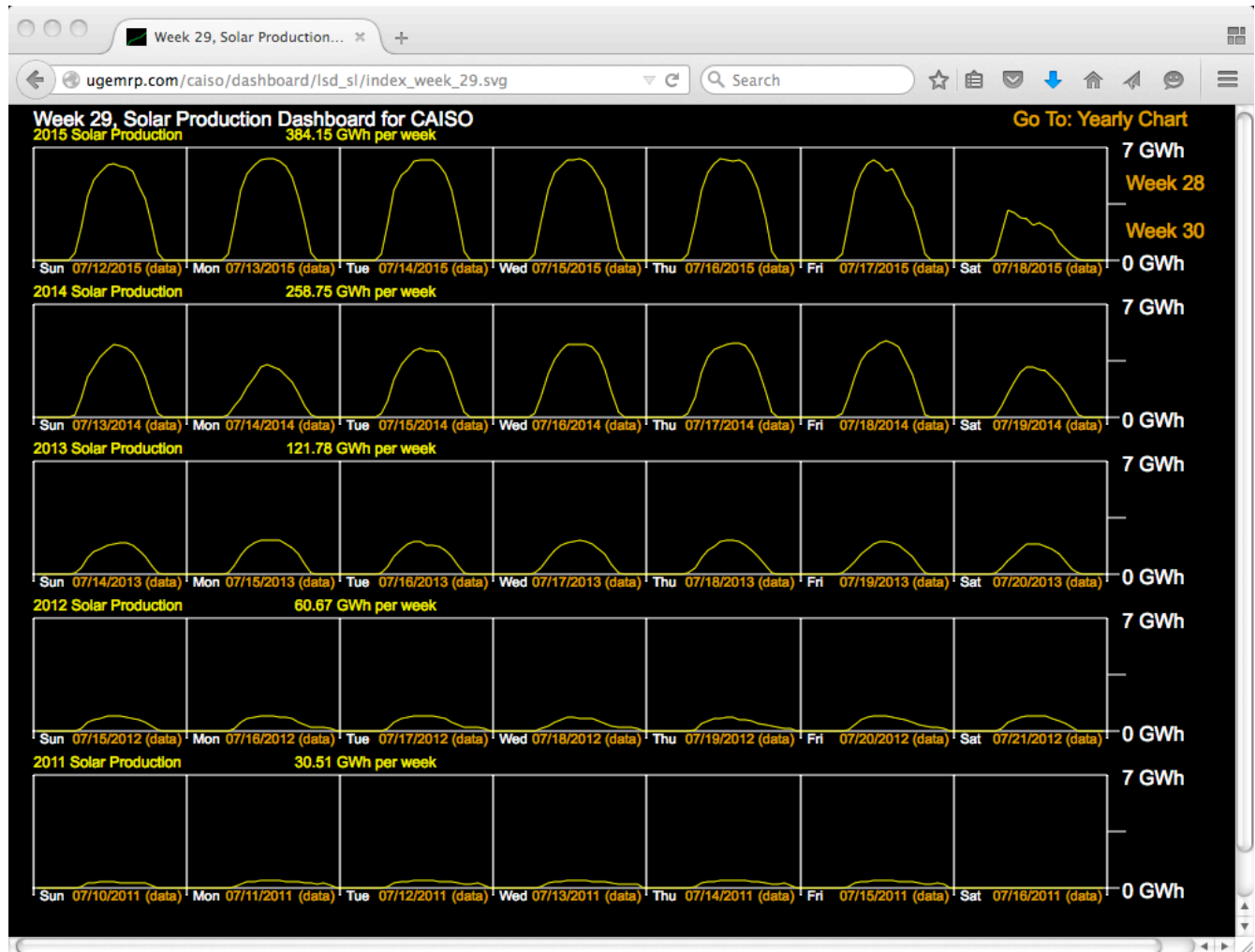
I like to see the solar production. As it increases during the day, I increase my electricity use to take advantage of the cleaner power.

That is what I mean by using electricity when it is "in season".

A look at total solar by week and year:

http://ugemp.com/caiso/dashboard/lsd_sl/index_week_29.svg

Html5 web browser is required to view the chart.



I hear folks talking about the "duck chart" and daily ramping. I wanted to know what caused the ramping and how often the duck shows its belly and how upright its breast is.

I have made my "Little Red Hen Chart". It combines the total and net load curves with a Pareto chart with white bars with the ramp helpers to the left (blue lettering) and those not helping (red lettering) to the right.

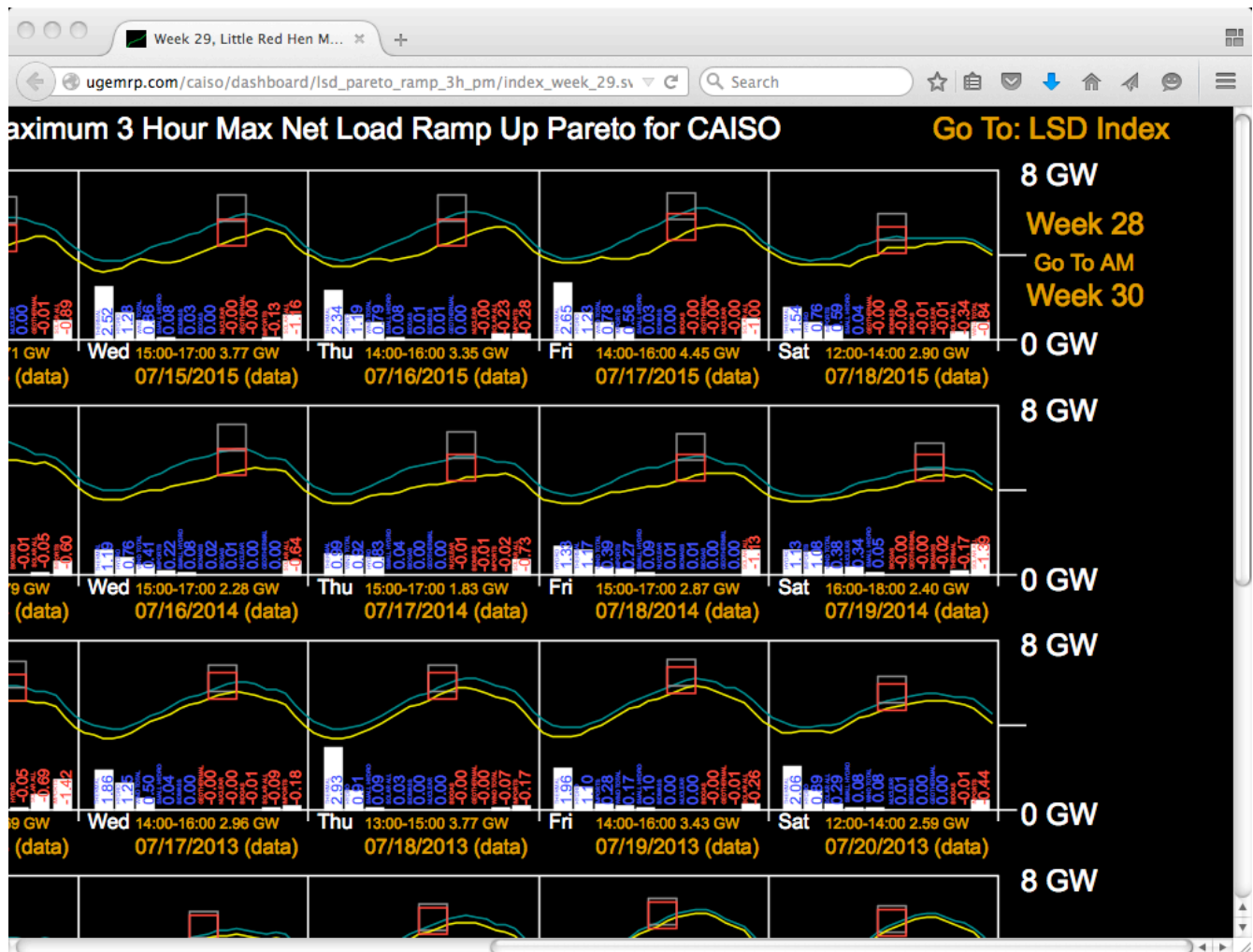
The squares on the load line are where the largest three hour ramp is.

The time of the ramp is shown by the day of the week label.

View more than four years of CAISO load and net load curves with power sources:

http://ugemrp.com/caiso/dashboard/lsd_pareto_ramp_3h_pm/index_week_29.svg

Html5 web browser is required to view the chart, use your browser's zoom feature to get a closeup view of each day.



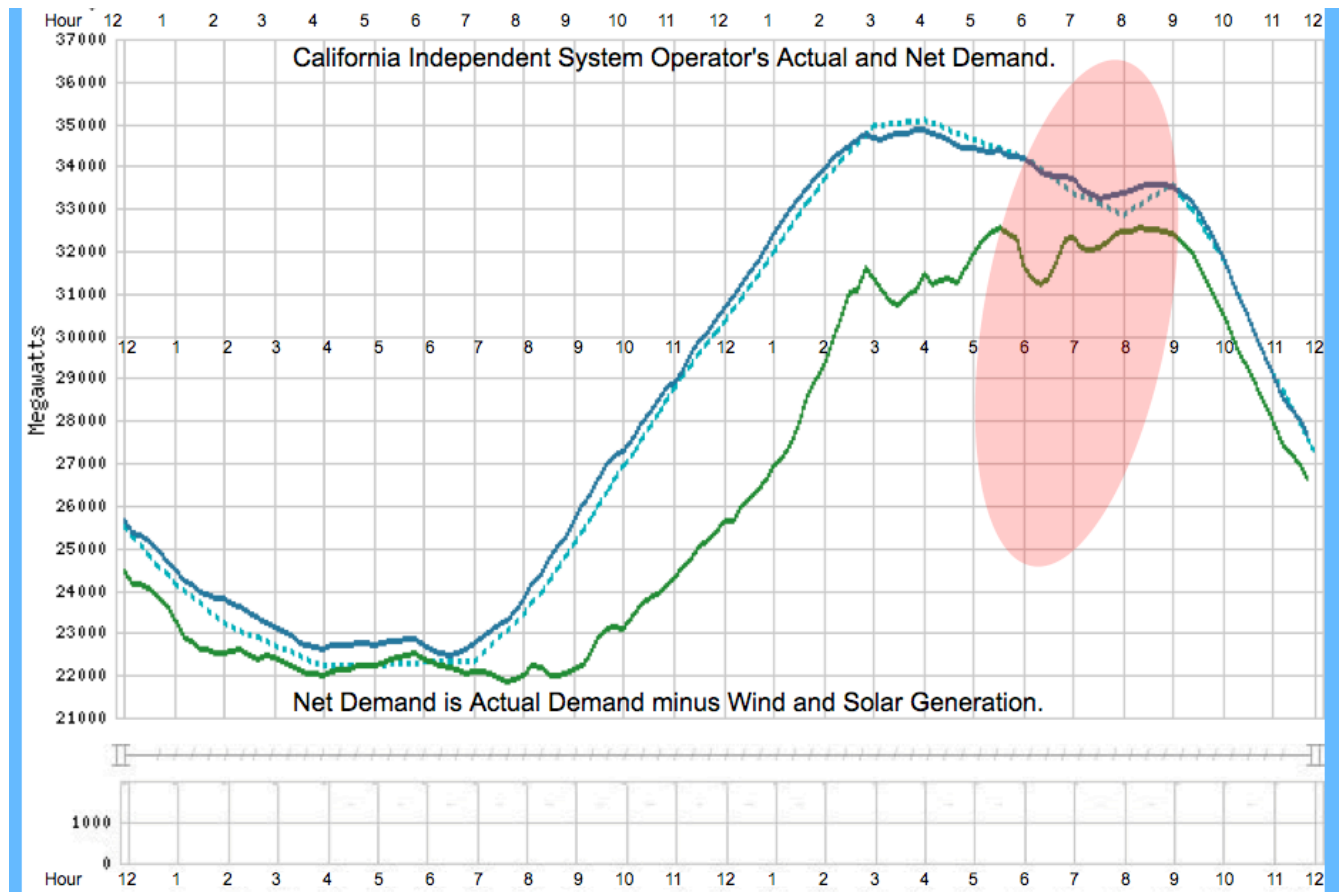
I made this web page <http://wwmpd.com/index.svg> for use on small screens such as phones. It allows a quick look to see what low or no carbon power sources are in season so I can plan my usage.

After using the system for a while, I have come to know when low or no carbon power sources are in season, so looking daily is not necessary to achieve my carbon goals.

This image taken from 7/19/2015 CAISO net load chart I placed on <http://wwmpd.com/index.svg>.

Looks like a "Mosquito Chart", might be more trouble than the "Duck Chart".

Html5 web browser is required to view the chart.



Hope some of these ideas are helpful, please try the website and let me know what works and what can be improved.

Please view clip from [Senate Energy, Utilities and Communications Committee](#) video on making efficient use of energy a way of life.

https://youtu.be/_BE47rMtAWM

I have made efficient use of energy a way of life.

Please enjoy,

Steve Uhler
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