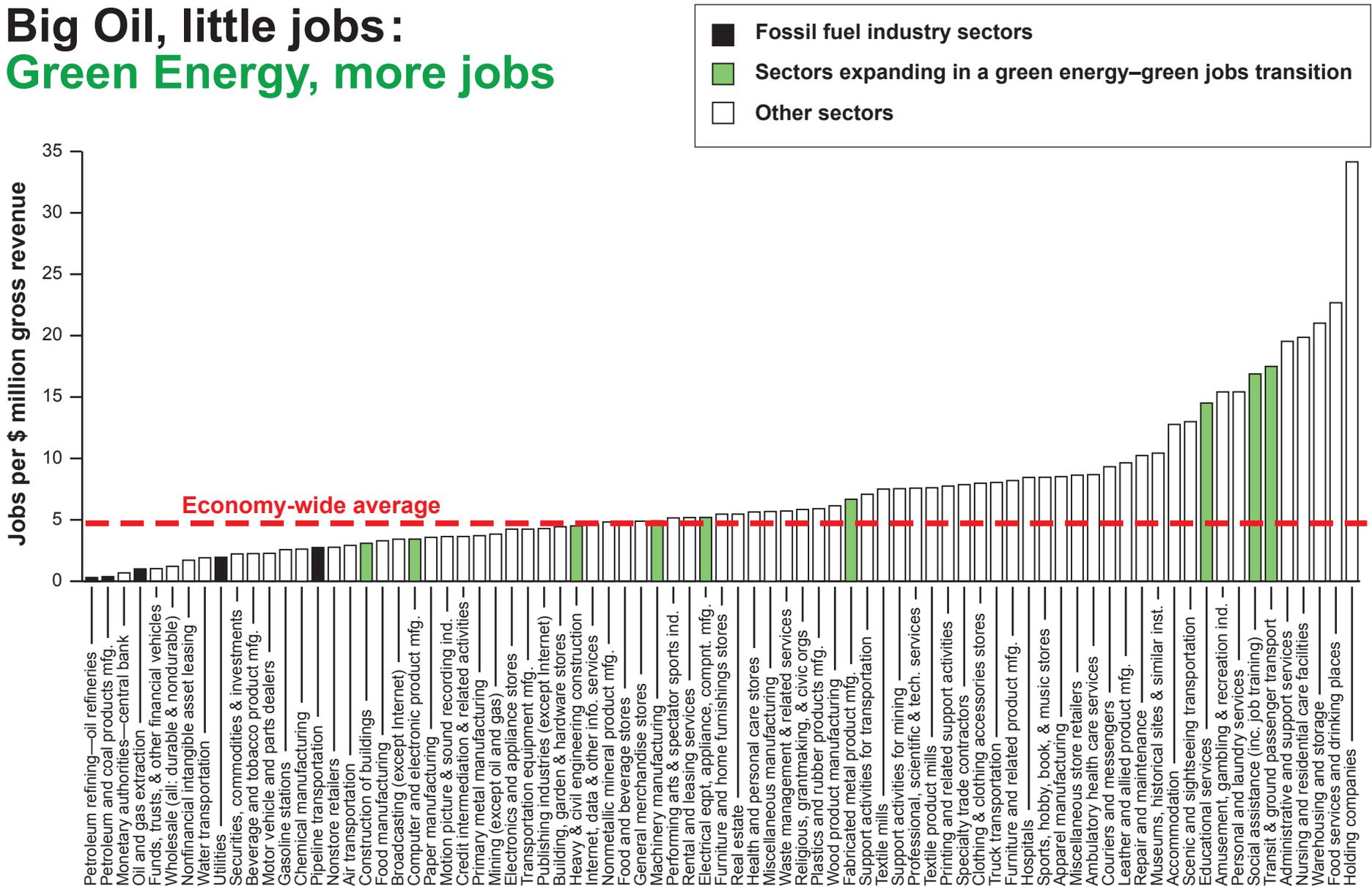


Big Oil, little jobs: Green Energy, more jobs



Paid employees per \$ million sales, shipments, receipts, revenue, or other business done. Averages for all sectors in California, 1992–2007. Data from the U.S. Census Bureau, U.S. Economic Census taken in 1992, 1997, 2002 and 2007. Chart by Communities for a Better Environment (CBE), December 2011.

[Detailed support for the chart on the previous page]

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CBE analysis of California data shows switching to sustainable energy creates jobs.

CBE compared California businesses based on jobs per million dollars spent on each business activity statewide. Jobs/\$MM was calculated as shown below:

Jobs/\$MM “gross revenue,” example calculation for two business activities

NAIC ^a	activity	jobs ^b	gross revenue ^c	jobs/\$MM
324110	petroleum refining	9,898	\$73,500,619,000	0.13
4851	urban transit	9,930	\$580,839,000	17.10

^a North American Industrial Classification. ^b Paid employees. ^c Sales, shipments, receipts, revenue, or other business done. All data are from the 2007 U.S. Economic Census for California (statewide).

All of the “green energy” sectors in this comparison (see the second group in the table below starting with construction) would grow if we take real climate action. This is because the deep cuts in emissions needed to avoid severe climate impacts require deep conservation through energy efficiency, switching to non-fossil electricity *and* replacing fossil fuels with this “decarbonized” electricity in our cars, industry and homes (Williams et al., 2011. *Science* 10.1126/science.1208365). We need to expand public transit; make our industries and buildings much more efficient; make and install the solar, wind and other resources that “decarbonize” electricity; make the electric cars and battery charging networks that electrify transportation; and provide job training for people to do this work.

Dollar for dollar, based on the data in the table below a switch to sustainable energy can provide 3–29 times more jobs than the fossil fuel sectors weighted average now.

CBE’s comparison of long-term averages for all business sectors in California’s economy shows that this green jobs advantage holds over decades. (See chart, previous page.)

Data for some business types involved in a green energy transition

Sector (as shown in chart)	jobs/\$MM	Relevant subsector activity (NAIC)	jobs/\$MM
Petroleum & coal products	0.18	oil refining (324110)	0.13
Oil & gas extraction	0.58	oil & gas extraction (2111)	0.58
Utilities	1.95 ^a	fossil power generation (221112)	1.24 ^a
Pipeline transportation	1.78	oil & gas pipelines (4861 & 4862)	1.77
Fossil sectors weighted avg.	0.47	Fossil subsectors wtd. avg.	0.23
Construction of buildings	1.89	efficiency remodeling (236118)	5.44
Computer & electronic products	2.90	solar cell & LED light mfg. (334413)	3.55
Heavy & civil eng. construction	3.15	decarbonized transmission (237130)	3.71
Machinery manufacturing	3.74	wind turbine manufacturing. (333611)	3.51
Electrical eqpt. & compnt. mfg.	3.83	energy efficient lighting (3351)	4.70
Electrical eqpt. & compnt. mfg.	3.83	lithium & other batteries (33591)	3.42
Electrical eqpt. & compnt. mfg.	3.83	battery chargers & fuel cells (335999)	3.81 ^b
Fabricated metal product mfg.	5.32	metals reuse/recycling (332)	5.32
Transit & grnd. passngr. transp.	13.75	urban transit (4851)	17.10
Transit & grnd. passngr. transp.	13.75	school & employee bus (485410)	16.27
Social assistance	14.05	green jobs vocation training (624310)	23.90
Educational services	13.44	apprenticeship training (611513)	10.36

Jobs/\$MM as defined above. Relevant subsector activities and data from U.S. Economic Census. All data shown from California in 2007 except as noted: ^aCalif. data in 1997; ^bU.S data in 2007. Note that these single-year jobs/\$MM data for sectors differ from the multi-year averages for sectors shown in the chart.