



AUSTIN: CLEAN ENERGY CAPITAL?

Many people would consider Austin a place where clean energy thrives. Austin Energy has won national recognition for its Green Choice and other programs, residents are thought to be supportive of clean energy, and the University of Texas at Austin contributes research and development of new information and technologies in this fast-growing sector.

But one of the most defining characteristics for any city is the industries which are hosted there. New York is the financial capital of the country, and many would argue Houston is the nation's energy capital – at least it has been over the last century which has been dominated by fossil fuels. In September of 2011, Austin Mayor Lee Leffingwell declared Austin the “clean energy capital of the world.” This begs the question – does Austin boast a clean energy industry consistent with such a bold declaration?

The simple answer is – not yet.

While Austin is a clean energy leader among major US cities, most of this power comes from wind farms located in less developed parts of the state. There are few people who would claim that wind farms, utility-scale solar projects and other major clean energy developments in rural areas will not be a major part of the American energy future, particularly if it is to be a green future. What is more, these projects do create sustained jobs in those cities where components are designed and/or manufactured. However, the most direct route to attracting and encouraging the development of clean energy industries is through the mass deployment of local rooftop solar, *which is probably why solar has by far the most significant presence of any clean energy generation technology in Austin.*

AUSTIN ENERGY SOLAR REBATE PROGRAM 2004-2011

Rooftop solar is well known as an environmentally-friendly way for electricity consumers to reduce energy bills. The long term savings purchased through solar power systems are particularly pronounced in areas where bright sunny days drive energy consumption towards daily peaks which can cause energy prices to temporarily skyrocket. Local solar panels can “shave” this peak demand, making it a great value not only to consumers but to utilities which must manage these peak energy loads.

As an early proponent of solar deployment in Texas, Austin has benefitted greatly since the beginning of its rebate program in 2004. This pilot program has supported nearly 6MW of rooftop solar capacity in the Austin Energy service area, the vast majority of it on individual homes. The total investment over the eight year period has come to approximately \$27 million, excluding systems on municipal buildings and schools.

Figure 1 - Austin Energy Rebate Programs

Solar Rebate Program	FY 2011	FY 2010	FY 2009	FY 2008	FY 2007	FY 2006	FY 2005	FY 2004
Residential (Capacity Based Incentive)								
Rebate Dollars	\$4,822,774.19	\$3,216,535.05	\$4,215,291.48	\$2,799,978.18	\$1,664,541.40	\$2,074,101.49	\$1,782,183.13	\$ 117,450.70
# Rebates	328	212	254	221	130	163	129	9
kW at PTC (PVUSA Test Conditions)	1352.67	793.26	800.65	527.63	310.73	395.70	295.40	19.22
Avg. Rebate per customer	\$ 14,703.58	\$ 15,172.34	\$ 16,595.64	\$ 12,669.58	\$ 12,804.16	\$ 12,724.55	\$ 13,815.37	\$ 13,050.08
Avg. System Size kW at PTC per customer	4.12	3.74	3.15	2.39	2.39	2.43	2.29	2.14
\$/kW at PTC	\$ 3,565.37	\$ 4,054.81	\$ 5,264.85	\$ 5,306.69	\$ 5,356.86	\$ 5,241.57	\$ 6,033.12	\$ 6,112.13
Commercial (Capacity Based Incentive)		Partial FY						
Rebate Dollars	N/A	\$ 556,648.87	\$2,086,482.78	\$1,455,069.01	\$ 700,478.59	\$ 305,206.49	\$1,028,044.04	\$11,478.40
# Rebates	N/A	10	37	25	13	5	12	1
kW at PTC	N/A	106.28464	376.61778	262.72015	127.84618	53.98162	169.41	2.06
Avg. Rebate per customer	N/A	\$ 55,664.89	\$ 56,391.43	\$ 58,202.76	\$ 53,882.97	\$ 61,041.30	\$ 85,670.34	\$ 11,478.40
Avg. System Size kW at PTC per customer	N/A	10.63	10.18	10.51	9.83	10.80	14.12	2.06
\$/kW at PTC	N/A	\$ 5,237.34	\$ 5,540.05	\$ 5,538.48	\$ 5,479.07	\$ 5,653.90	\$ 6,068.43	\$ 5,578.97

JOB CREATION: THE ADVANTAGE OF ROOFTOP SOLAR

By virtually any standard, Austin Energy’s pilot solar rebate programs have been a success, but the programs’ most startling success has been in creating jobs. In a survey conducted in January of 2012, *Solar Austin counted at least 615 full time sustained jobs in the solar industry in Austin*. This figure alone would put the solar industry at #40 on the list of Austin’s top 50 employers (based on figures compiled by the Austin Business Journal). The number is impressive in its own right, but is all the more so for the relatively small investment that has attracted this large volume of jobs. With an average investment of just \$3.5 million per year from Austin Energy an industry supporting an annual payroll well in excess of \$20 million has been created. Adding standard jobs multipliers¹ pushes the total direct and indirect employment supported by the Austin solar industry to 1,180 to 2,190 jobs.

There are several reasons that Austin has been able to leverage a relatively small investment for big economic gains. The first is that Austin Energy is not paying the full cost for rooftop solar systems. Individual businesses and homeowners also cover much of the cost, helped in part by federal tax credits that incentivize the switch to solar. The Austin Energy rebate programs do for local job creation what matching contributions do for charities and public media – entice others to invest. As an example, a resident who has an extra \$10,000 to spend or invest has a number of options, most of them non-local. She could put the money down on a new car, buy stocks or bonds as an investment, or take a dream vacation.

¹ Updated Multipliers for the US Economy, Economic Policy Institute (2003)
http://www.epi.org/page/-/old/workingpapers/epi_wp_268.pdf

All of these are perfectly reasonable choices, but none does as much for local economic development as spending the money right here in Austin by hiring contractors to come put solar on her roof. The rebate program provides the extra capital that some people need to decide in favor of solar over these and other options.

Secondly, investing in rooftop solar before other major cities gave Austin certain “first-mover” advantages. Investors and entrepreneurs looked at Austin as a favorable climate in which to develop business directly and indirectly tied to solar technologies. Even if a company did not believe it could sustain itself on the Austin market alone, the fact that Austin had a market and had city and utility leadership that believed in the potential of rooftop solar attracted a wide range of businesses including integrators, manufacturers, service providers, financiers, engineering and design firms, and many more. This in effect created an early solar hub in Austin with businesses with reaches far beyond the city limits.

Even speaking in the present tense, the Solar Austin survey is not complete. Several dozen small businesses in solar and other clean energy industries did not respond to the survey or did not want to disclose potentially sensitive information. In total 76 clean energy companies employing a total of approximately 713 people did respond. Only 98 of those were employed in wind, biomass, and other clean energy technologies. A complete listing of employers who responded to the survey is included here without specific employment data.

Altumaxis Technologies	Heliovolt	Solar Community
Aleo Solar (Bosch subsidiary)	Hill Country Ecopower	Solar Edison
American Solar Living, LLC	Ideal Power Converters	Solar Power Technologies
American Wind Energy Association	ImagineSolar	Solar, Wind & Rain
Baryonyx Corporation	Independence Wind Power	SolarBridge Technolgies
CH2M HILL	IREC	SolarFlex
Cielo Wind Power, L.P.	Jacoby Solar Consulting	SolarPro Magazine
Circular Energy LP	Joule Unlimited	SolarTEK Energy of Austin
Butler Firm	K Power (CEI)	SOLMAX
Clean Energy Associates	Lighthouse Solar	Sologen Systems
Clean Energy Incubator	Longhorn Solar	Solpowerpeople
Concurrent Design Inc.	LongSol	Sunbelt Solar
Crawford Electric	Meridian Solar	Sunergy Solutions LLC
Crsolar	Morrison Supply	SunPower Corp.
Csun / Richards Rodriguez & Skeith LLP	OpenAlgae (CEI)	Susan Ross Consulting
Dorsan Biofuels (CEI)	PowerFin Partners	Sustainable Biodiesel Alliance
Entero Energy	Red Spectrum Energy	Techsun
Freedom Solar	Renewable Resource Consultants	The Wind Coalition
Fremantle Energy, LLC	RES America	TREIA/TXSES
GENIVAR Wind Energy	RRE Power	URS
Global Water & Energy LLC	Sally J. Hahn	Varian Semiconductor Equipment
Greater Austin Chamber of Commerce	Scott Burton	Venti Energy
Green Solutions Systems	Self Reliant Solar	Virtus Energy
Greenbelt Solar	Sky Blue Solar	Wolf Green Technologies, LLC
GridPoint	Solar Capital Group, LLC	

AUSTIN'S SOLAR FUTURE: TURNING HUNDREDS OF JOBS INTO THOUSANDS

The success that has been achieved so far has come despite significant technological obstacles which are quickly disappearing. While rebates in 2004 started at \$5.00/watt, this now exceeds the total installed cost of most photovoltaic systems. As a result, the per-watt rebate has been cut in half, meaning every utility dollar invested goes twice as far.

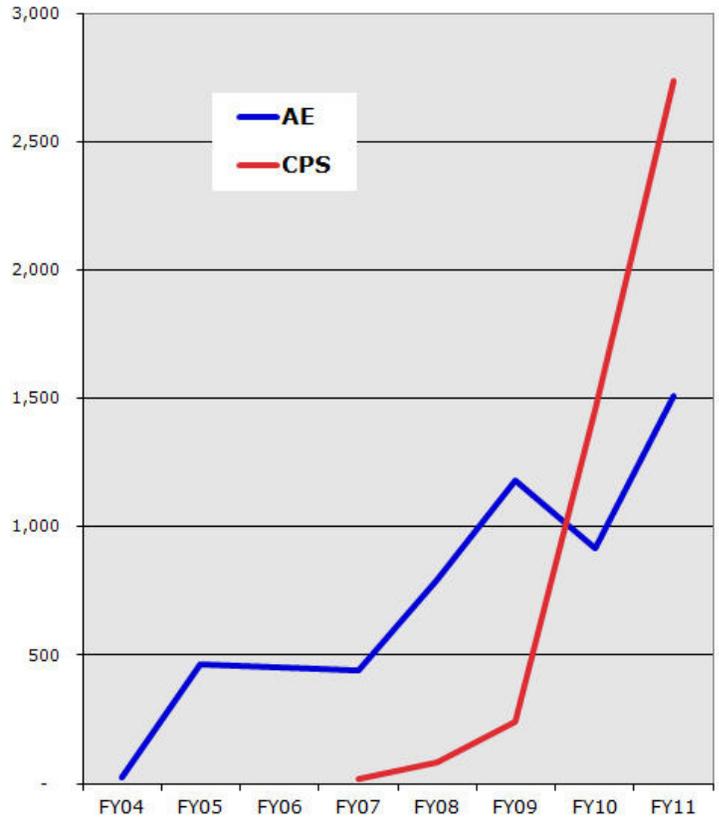
In the “clean energy capital of the world” one would expect that such dramatic cost decreases would be the harbinger of rapidly escalating deployment, but so far this has not been the case for Austin.

The chart at right comparing rooftop solar installations supported by Austin Energy and San Antonio's utility CPS tells two important stories. The portion covering 2004 to 2008 tells the story of Austin's early success with pilot rooftop solar programs. The portion since 2008 tells a very different story about how San Antonio recognized that rooftop solar would soon break from its niche and become a major energy resource and economic driver.

Should Austin fail to make the same adjustments, it is unlikely that the local solar industry could grow substantially in the near term. This chart implies that the

economic development benefits to those cities that remain ahead of the curve will be far greater than what Austin and other first-movers have experienced so far. The reason is simple – *the scale of future development will be orders of magnitude greater than what has occurred to date*. Even as an early leader Austin has only deployed a few megawatts of rooftop solar, whereas in the relatively near future we can anticipate hundreds or even thousands of megawatts being deployed in those communities with the right policies and conditions.

Figure 2 - Austin Energy vs. CPS in Rooftop Solar Installations (kW)



***MAKING*AUSTIN THE CLEAN ENERGY CAPITAL**

The question Austin must answer is whether or not to pursue the “clean energy capital of the world” moniker. The title fits well with Austin's image, but to get there we will have to do more than declare it is so. Fortunately, the solar industry is one which creates opportunities up and down the opportunity scale and which has a higher job multiplier than most. This is good news if we are ready to create the industry ecosystem which can support local solar business development. Big goals, visionary leadership, and utility engagement can make Austin such a place.