Next Level of Detail for Each Major Sustainable Energy Initiative: STRETCH GOALS FOR BOLD SOLAR ENEGY BREAKTHROUGH[i]:

This section outlines the stretch goals[ii] needed for USA and Colorado to take on the global leadership for a Solar Energy based initiatives. This initiative significantly reduces the dependency on fossil fuels that are harming our environment, addresses the energy security issues and launches the era of a vibrant new energy economy. This, in turn, will drive the next economic growth engine and create jobs in a size and proportion never experienced before.

Here is a snapshot of the key indicators for this initiative:

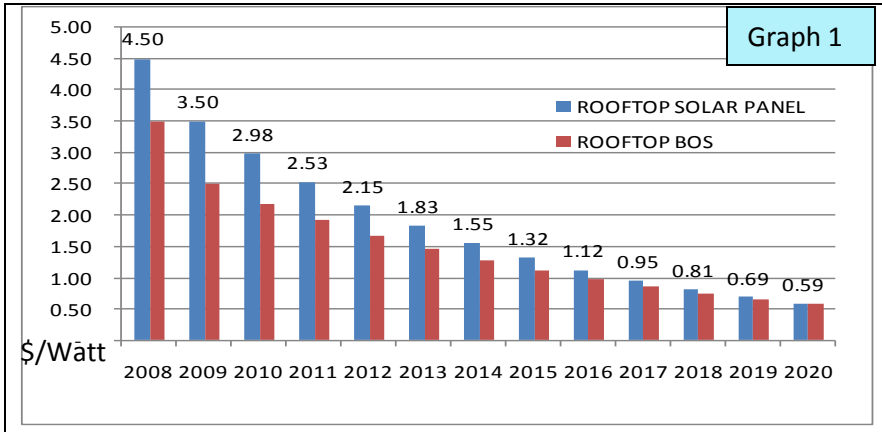
STRETCH GOAL: 30% POWER FROM THE SUN BY 2030, GATEWAY TO INFINITE ENERGY CREATION

The SOLAR ENERGY STRETCH GOALS INITIATIVE: JOBS AND ECONOMIC IMPLICATIONS FOR USA & COLORADO

Need to have THREE four year plans, each with cascading levels of COMPREHENSIVE deployment plans and ACCOUNTABILITY.

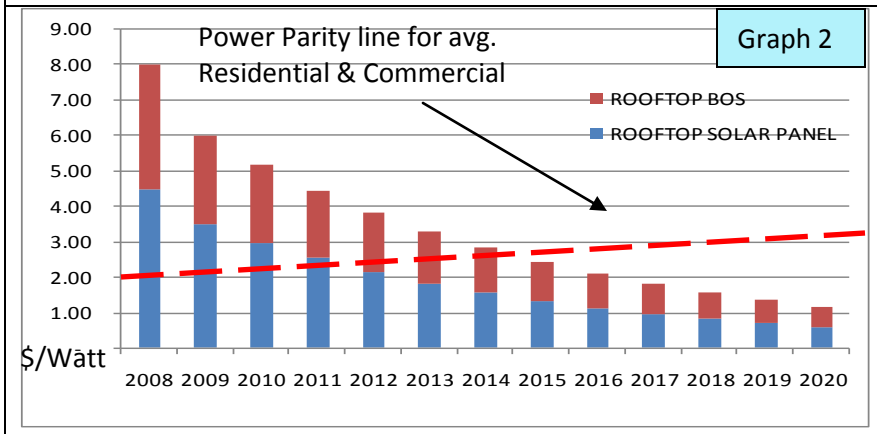
		actual estimate	FIRST FOUR YEAR PLAN				SECOND FOUR YEAR PLAN				THIRD FOUR YEAR PLAN				THE PAYBACK YEARS
	UNITS	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2030
USA JOBS CREATED, PV ONLY		7,673	59,846	91,192	108,389	132,265	158,782	191,605	231,760	282,683	349,447	434,975	538,206	666,919	2,172,566
COLORADO JOBS CREATED, PV ONLY		559	4,991	9,978	13,811	19,361	25,304	33,345	41,993	53,142	67,884	87,330	111,482	141,529	502,591
TOTAL SOLAR ENERGY GENERATED USA	B kWh	2	7	15	27	44	68	101	147	212	301	424	590	813	9,217
STRETCH GOAL: SOLAR ENERGY AS % OF TOTAL USA		0.007%	0.023%	0.05%	0.09%	0.15%	0.23%	0.34%	0.50%	0.72%	1.03%	1.45%	2.02%	2.78%	31.51%
TOTAL PV ENERGY GENERATED CO.	B kWh	0.17	0.42	1.02	1.94	3.23	4.94	7.26	10.62	15.46	22.46	32.62	47.16	67.64	967.91
ENERGY AS % OF TOTAL COLORADO		0.04%	0.09%	0.22%	0.41%	0.68%	1.02%	1.48%	2.13%	3.05%	4.36%	6.25%	8.90%	12.57%	155.01%
TOTAL SOLAR ENERGY REVENUE USA	$B	$ 0.19	$ 0.71	$ 1.64	$ 3.02	$ 5.17	$ 8.31	$ 12.86	$ 19.58	$ 29.29	$ 43.27	$ 63.33	$ 91.63	$ 131.36	$ 2,205.44
CUMMULATIVE SOLAR REVENUE	$B	$ 0.19	$ 0.71	$ 2.35	$ 5.37	$ 10.54	$ 18.85	$ 31.70	$ 51.29	$ 80.57	$ 123.84	$ 187.17	$ 278.80	$ 410.16	$ 9,722.52
TOTAL DEMAND SUPPORT INCENTIVES NEEDED	$B		$ 13.99	$ 17.71	$ 16.20	$ 14.04	$ 10.60	$ 5.69	$ 0.56	$ -	$ (1.08)	$ (1.90)	$ (3.21)	$ (5.25)	$ (110.27)
TOTAL R&D SUPPORT INCENTIVES	$B	-	$ 3.00	$ 4.00	$ 6.00	$ 5.00	$ 4.00	$ 3.00	$ 2.00						
TOTAL INCENTIVES FOR USA BASED PLANTS	$B	$ -	$ 3.50	$ 6.00	$ 7.00	$ 7.00	$ 6.00	$ 3.00	$ 2.00						
CUMULATIVE INCENTIVES/(payback)	$B	$ -	$ 20.49	$ 48.20	$ 77.40	$ 103.43	$ 124.03	$ 135.73	$ 140.29		$ (1.08)	$ (2.98)	$ (6.19)	$ (11.44)	$ (476.13)
PPI: Power-Parity Index rooftops PV		4.12	3.00	2.51	2.09	1.75	1.46	1.22	1.02	0.86	0.72	0.60	0.50	0.42	0.13
PPI: Power-Parity Index centralized PV		4.38	3.44	2.84	2.18	1.74	1.39	1.11	0.89	0.71	0.59	0.49	0.40	0.33	0.10
			PRICED HIGHER THAN FOSSIL FUELS, NEEDS LONG TERM INCENTIVES						POWER PARITY		PRICED LOWER THAN FOSSIL FUELS				

If we can realize the stretch goals for harnessing the Solar Energy, we will not only create three million jobs by 2030, we will be generating about 24- 27% of the total energy required from solar PV and Thermal alone. Colorado & its neighbouring states are well positioned to take on a leading role and have manufacturing plants that supply the solar PV and Thermal units and supply energy to most of the other states. In this model we have shown that Colorado will supply as much as 1.8 Trillion kWh of energy, 80% of which will be supplied to other states. The investment and incentives needed from Federal, State and Private Sectors in the next 6-8 years will be paid back handsomely by 2030 without even considering the snowball effect on other industries and economy as a whole. The key to making this happen is for Federal, State and Private Sectors to come together and agree to a three, four-year plans that provides a long term twelve year framework that will track the Power Parity Index PPI [VSNI TM]. The following pages give a quick overview of the key dynamics shown in the table above.



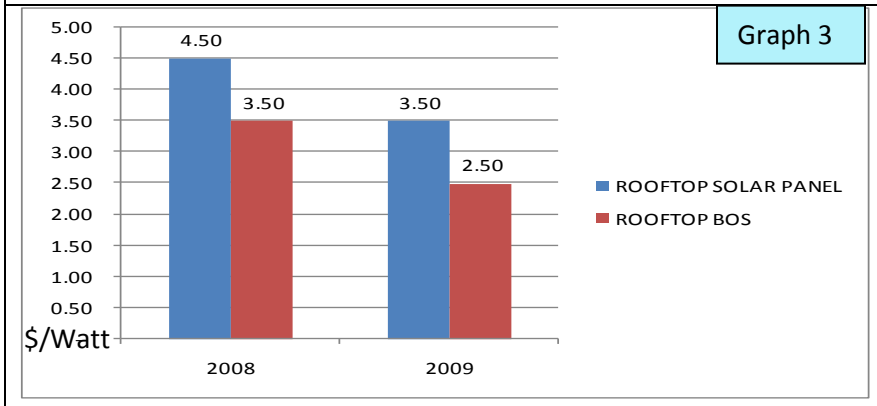
The ability to provide breakthrough massive scale for solar energy will depend on our ability to drive the prices down per watt aggressively each year. Graph 1 illustrates that in 2008, the rooftop average panel prices were about $4.50/W and the balance of System (BOS) prices were about $3.50/W.

If the Rooftop PV industry can follow the trend shown, solar industry can reach breakthrough volumes as prices for solar energy will be cheaper than an average of residential and commercial electricity rates by 2015 without any incentives.



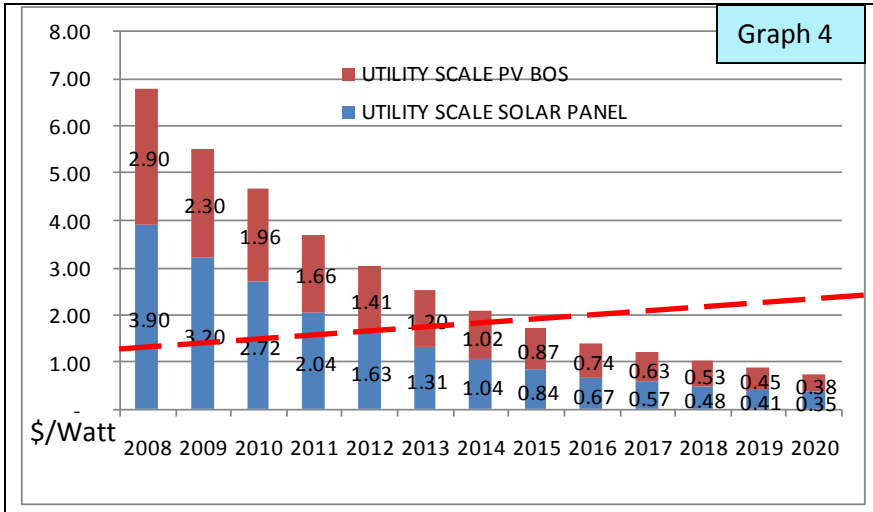
While we feel the thin film (especially Cd Te) panel manufacturing industry can track to the aggressive pricing in the foreseeable future, BOS pricing will have to be streamlined, as most of these companies are small businesses and efficiencies have not been streamlined for mass scaling. For residential the power parity price is about $2.25/W and for commercial the power parity number is about $1.80/W for 2008. The power parity line is a weighted average of these two. The slope in the power parity line is due to an avg. 3% increase in energy pricing each year.

We are very well aware of the roadmap provided by a 2004 report by the Solar Industry experts which has a much lower price improvements year over year. The price performance outlook has improved significantly since that time.



The current demand supply mismatch created by the economic crisis and credit crunch provides a huge opportunity for US to step in and take on the idle capacity and negotiate a steep drop in pricing and yet provide a better profit for the panel manufacturers if they can increase their plant utilization from an average of 35% to 85%. Similarly BOS pricing can be reduced by at least one dollar by streamlining the install process and cutting down sales, marketing and admin costs.

As we have seen in the First Solar model, massive scaling done systematically can dramatically improve the cost per Watt produced. However, First generation PV with high efficiencies like the one provided by SunPower are more suitable for rooftop installs due to optimize space constraints.

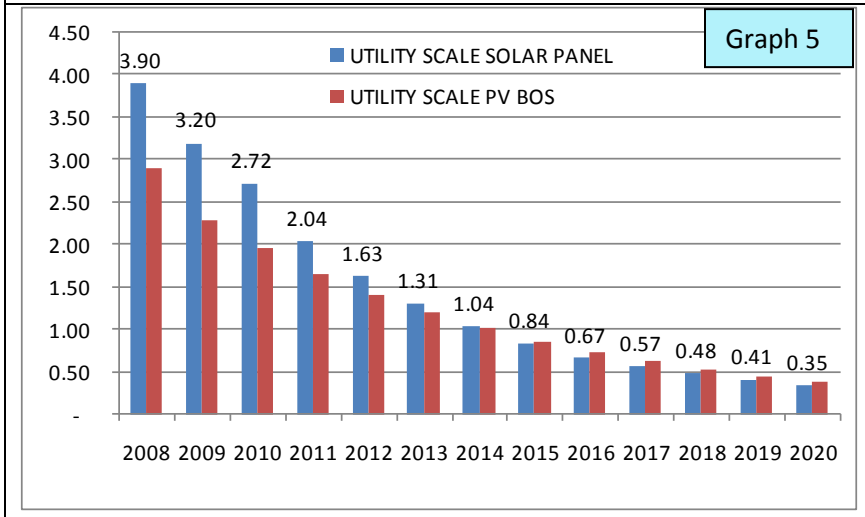


For industrial and utility pricing power parity is $1.40/W in 2008. The slope in the power parity line is due to an avg. 3% increase in energy pricing each year.

We believe the intermittent energy generators like Wind and Solar can complement each other and will not need to address storage issues until it reaches 30% of electric generation or 10% of total energy generation.

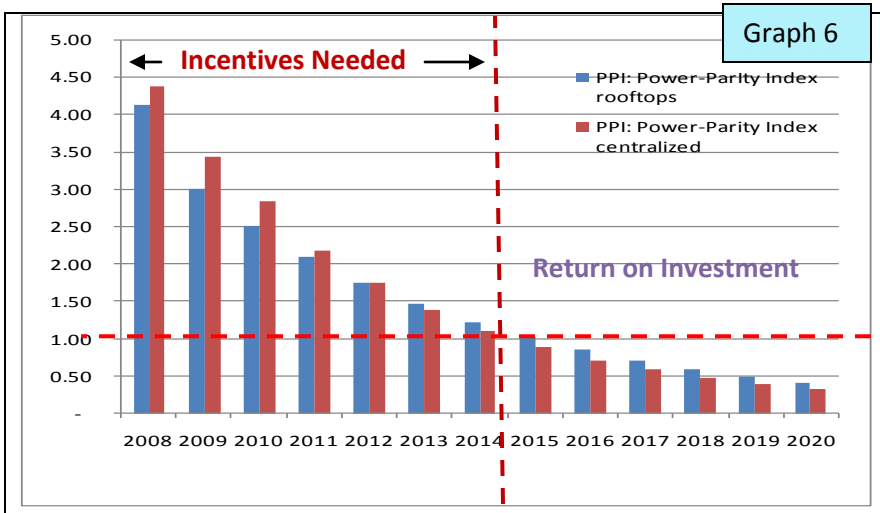
If the industry cannot replicate this aggressive pricing trend, CSP Solar Thermal and other renewable initiatives will see an even more increased activity in the near future.

There has been significant activity in new CSP solar thermal orders in the last few months mainly due to lack of competition for First Solar Cd Te based panels, that has a lower cost/MW to install and maintain than CSP.



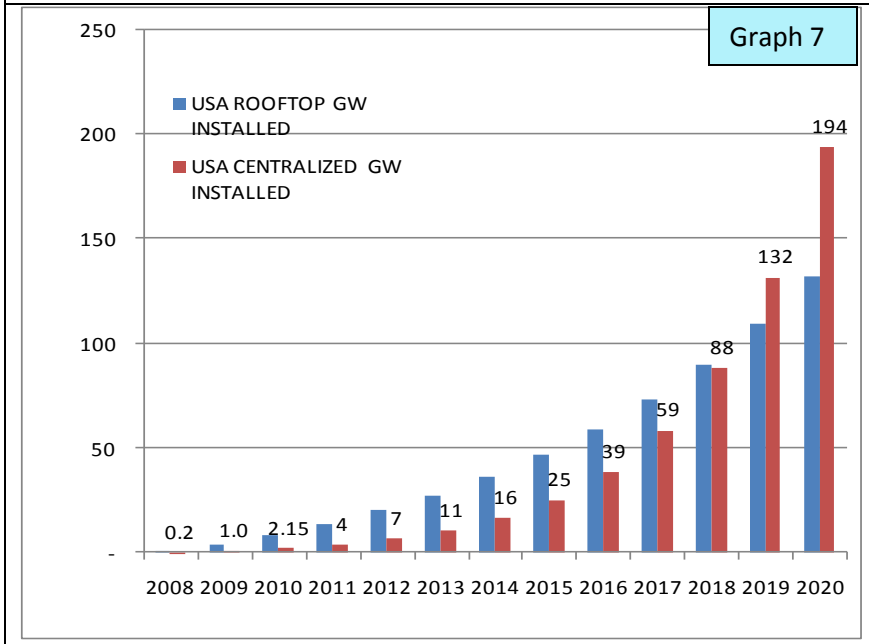
First Solar has already achieved a cost of less than one dollar for solar panel cost in Q4, 2008 and they have announced their cost will continue to reduce significantly in the future. Companies like AVA Solar and Primestar located in Colorado can achieve similar costs and with progressive long term policies that encourage competition and exponential growth, may see a price performance better than the trend shown.

If we can create abundant demand at the pricing shown each year, companies like First Solar and the industry can generate more profit due to scaling.



The Power Parity Index PPI [VSNITM] is a powerful tool that equalizes different power parity price points discussed in the previous page for different sectors and different types of energy sources[iii]. Simply put as long as the power parity is greater than one it is costlier to generate energy from this source compared to the current costs of energy typically produced from a combination of fossil fuels. For example, in 2008 the PPI for rooftop solar PV was about 4 or it is 4 times costlier than the standard rates for that sector. If the pricing trend can be maintained, we reach power parity by 2015, represented as an index of 1. By 2020 PPI for rooftops is about 0.4 or it is 60% cheaper to produce solar energy compared to standard rates.

Centralized Solar PV based on Cd Te format will have a lower PPI by 2015 compared to rooftop PV if pricing trends can be maintained. By 202 PPI for centralized can be as low as 0.33, making this industry very profitable.



A key part of our ability to drive down pricing will be our ability to provide massive scaling over the next 12 years to generate economies of scale.

While initially rooftop installs will be 85% of the total PV installs by 2020 centralized solar will constitute 75% of installs. This stems from three reasons:
1. We will start running out of rooftops
2. Multi megawatt installs for centralized utility scale projects can be much more cost effective.
3. Need more competition from Thin Film Cd Te and other low cost producers to come on line.

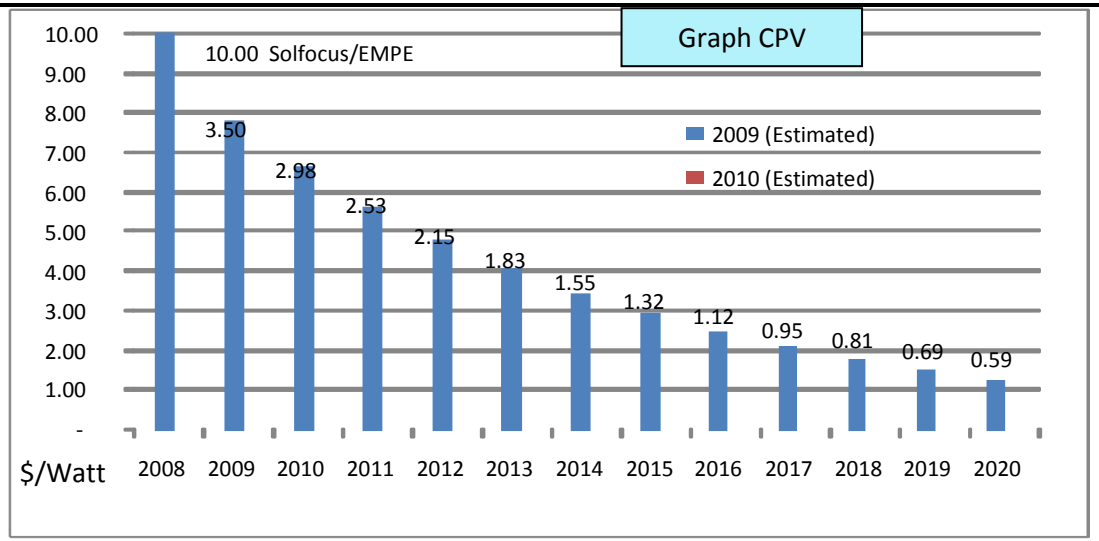
So in the first few years, Rooftops will constitute a larger installed capacity but by 2020 we will see centralized PV overtaking rooftop in total installed capacity.

CPV Outlook:

The following pages give a quick overview of the key dynamics shown in the table above. We have based these discussions on information that is largely taken from public sources. Since there is significantly more data regarding cost, price and performance of Solar Photovoltaic in the public domain, we have built our analysis and forecasts based to a greater extent on this, than on Concentrated Solar Power technologies. We will show in the following pages that there are reasons for supporting the development and deployment of these technologies, since they promise a different mix of benefits in different geographic and climatic settings. We believe that a technology agnostic approach is important for the successes of these initiatives.

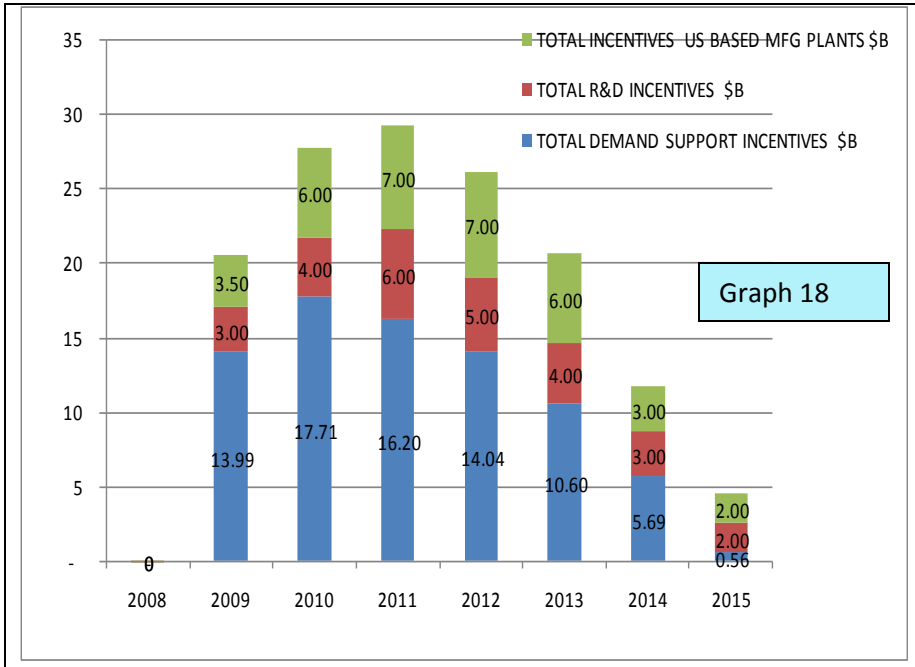
Solfocus EMPE, announced 2008, completion 2009 $103M, 10MW -- $10/watt

Solfocus Helios, announced 2009, completion 2010 $900M, 200-300MW -- $4.50-$3/watt



The use of concentrated sunlight on small cells can provide cost-effective commercial and utility scale solar electricity generation, particularly in Colorado and the US southwest. The capital cost for manufacturing capacity is lower, by utilizing smaller quantities of PV material combined with products from more mature sheet metal and plastics industry. It is amenable to local manufacturing, since it can leverage mature manufacturing infrastructure, capacity, and skilled labor.

Here again, large-scale deployment will depend upon our ability to drive down price per watt installed. Limited public data hints that the cost of deployment is lower than the cost of deployment of flat plate PV. If the promise of leveraging cheaper and more mature manufacturing capabilities to produce reliable systems is met, this technology could be a contender for lowest cost electricity production, particularly in sunny climates.



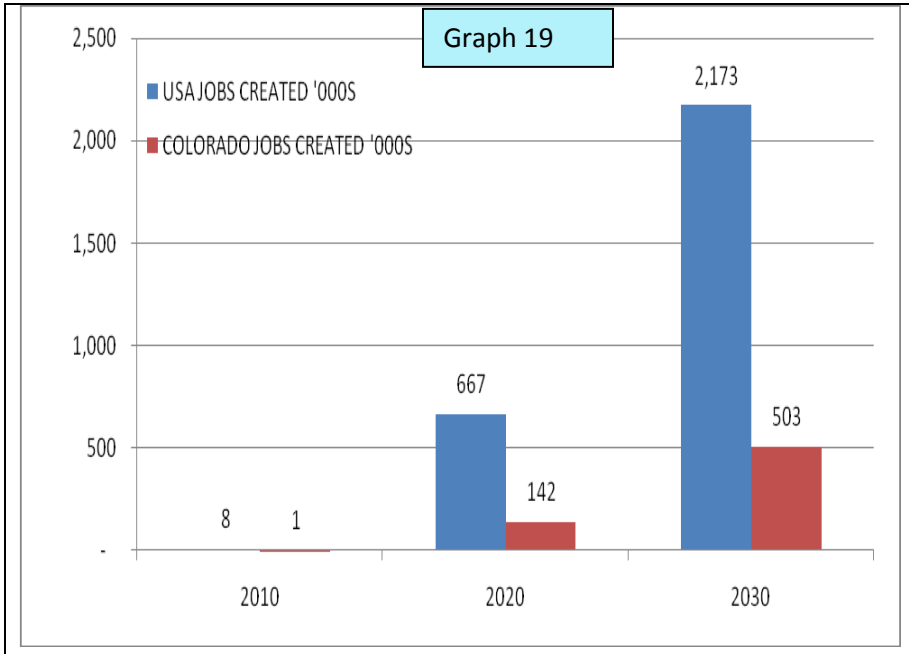
For Solar PV here is the investment that will be required at the national level. The investments are needed in three areas:

1. Demand Support incentives as long as power parity is above 1.

2. Incentives for setting up manufacturing plants in US. Since it is a significant long term job creator, countries like Malaysia has offered significant incentives for reputed companies to locate their manufacturing plants in Malaysia.

3. R&D investments for Fundamental research for energy storage solutions and application development and cost reduction research.

The current Stimulus package may provide as much as $26 Billion but this initiative may need as much as $140 Billion over the next seven years for PV and another $30 -$50 Billion for CSP Solar initiatives. This investment can see a revenue creation of as much as Two Trillion dollars by 2030. A four percent tax after 2015 will return 3-5 times the investment made in the next seven years.



Solar PV alone can create 2.1 million jobs by 2030 and another 1 million jobs for solar CSP. Colorado can target 500,000 jobs from Solar PV industry alone by 2030. Colorado already has a head start with some very significant new energy initiative[iv] policies that has key players in public and private sectors working closely together to create a new energy economy for Colorado.

With massive scaling, there needs to be rapid streamlining and productivity improvements for resources required for construction, manufacturing and BOS. For 2008, for every MW we install, we estimated 25- 35 jobs are created many of them are in sales, marketing and Admin areas. If we do massive scaling in 2009 for US (10X), we should be able to streamline the requirements to 16-18 jobs or less for 2009 for rooftop installs and reduce it 12.5% each year with 20 -30% growth each year to help maintain the cost curve for BOS.

Colorado and neighboring states, NM,AZ, NV, UT will have more jobs from construction, assumed to be 3.5 per MW and 2.5 -3 in manufacturing as factories locate near sites of massive centralized utility scale installs. The right incentives and policies need to be in place to attract manufacturing plants in Colorado.

So what will it take to get this audacious stretch goal in place? Our in-depth model shows that, for both public and private sectors, USA will need to provide incentives at Federal and State levels to accelerate the demand for rooftop and centralized installations, until we reach **power parity** in 2015. A large part of the funds can come from the already approved $787 Billion stimulus package. We will also need to have incentives for fundamental and applied R&D to accelerate radical technologies needed to progress beyond 2016 as we cross 15% of total electric power generated. Incentives are also needed to entice solar manufacturing companies to set up shop in USA, just like they did in Germany.[v] The details for the last two components of incentives will only emerge after private and public sector key leaders sit down together and work out a long term growth plan.

The $250 - $300 Billion investment needs a systemic long term approach that in turn will accelerate the Solar PV industry exponentially to reach the take off velocity needed to be profitable. The initiative will pay back many times the investment directly and indirectly within the next two decades, driving the economic growth engine that will gush (not trickle) into other industry sectors and propel a sustained job growth for our country. We will lead by example and we will find that many other countries will adapt the model to

suit their needs and follow. The current stimulus plan already has some major provisions to get this initiative started, but we need a much more focused second wave of initiatives to regain global leadership in sustainable energy initiatives.

As you will note from our vision presentation, Solar PV is only one critical component of the total energy initiative. We need to collaborate with all the key stakeholders to create an energy initiative wedge that spans into the balance of this century. Again, the Germans have a well thought out strategic energy sources wedge. We need to create one that takes specific US strategic resources into account to create a comprehensive vision and strategy linked to specific deployment plans. At times like this, it almost seems a modern day Charles Dickens would have flipped his quote and said "*It is the worst of times, and it will be the best of times*"… Yes, we can do this if we take control of our destiny together. No other country has come close to our ingenuity and resolve when we set our minds to overcome a crisis.[vi] Sustainable Energy Initiatives that drive the robust economic engine for the future should be our next "Man on the Moon" mission. We owe it to our very next generation.[vii]

[i] While this section looks into only the Solar component, at the comprehensive vision level we should be technology agnostic. We will need to look into technologies for each different resource for sustainable energy and invest it significant technologies that hold promise for not only meeting power parity compared to the traditional fossil fuels in the near future (next six – eight years), but will become significantly cheaper to produce in the longer term(beyond 2020). Within Solar, Flat-plate PV, CPV: Concentric PV, CST Concentric Solar Thermal technologies all show immense promise to meet or exceed power parity within the next 6- 10 years and should be closely monitored during its massive scaling phase.

[iii] Rooftops we have used an average of residential and commercial utility rates and for centralized we have used industrial utility rates for tracking the Power Parity Index.

[iv] Amendment 37: 20% of electricity must come from renewable energy sources was a very major policy step for Colorado based public and private sectors to work together on sustainable energy was architected by Matt Baker, who is working closely with this initiative.

[v] Labor component in a solar manufacturing plant is less than 5% of the revenue generated from the plant. One of the main reasons many PV manufacturers are placing their factories in China and Malaysia is because of the huge incentives governments offer to prospects in those countries. We have seen that even high labor component industries like automobile are relocating to USA to be close to source of demand. It will make even more sense to set up shop in USA for solar panel manufacturers around the world , if USA can create a long term demand growth.

[vi] No one has expressed it better than Admiral Yamamto, who orchestrated the bombing of Pearl Harbor: *"I am afraid we have awakened the slumbering giant"*

[vii] In many ways our country is at an inflection point. Our generation will be held accountable for which way it goes in the next few decades. Our country has been a magnet for attracting the best talent from around the world so that they can come and settle on "the greatest country on earth, that provides opportunity to people who work hard and has been the source of innovation and ingenuity to blaze new paths and create new market economies.