

**ORIGINAL**

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**From:** Keith Rowley <keith@sesp.biz>  
**Sent:** Thursday, July 11, 2013 5:08 PM  
**To:** Stump-Web  
**Cc:** info@solarelectricfreedom.com  
**Subject:** DG is good for everyone  
**Attachments:** DG\_good\_for\_all.docx

Bob,  
Please review this document with my view of the future of solar in Arizona.  
Please don't let APS kill it by getting rid of Net-metering.

Thanks,  
Keith Rowley, MS, BSE, EIT, NABCEP  
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Arizona Corporation Commission  
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**The Myth of the Utility Monopoly:**

One day of sunlight striking the earth would satisfy our energy needs of our present population for the next 27 years.

California has the beach, Texas has the oil, and Arizona has the Sun. It is our largest and most valuable resource. We should maximize the use of it.

The Arizona government and the citizens of the state recognized the value of our number one natural resource, the Arizona Sun. They said that using our Sun is good for the State, the citizens, the Utility Companies, our national security and the environment. In 2006, the previous Arizona Corporation Commission (ACC), under the directions of the voters and the Governor, directed them to establish a goal of 15% renewable energy by 2025. Here is a table of the Western States:

State	Renewable Standard	Compliance Date	Administering Agency	Comments and Notes
Oregon	33%	2020	Oregon Energy Office	
	25%	2025		
California	20%	2010	California Energy Commission	
Colorado	20%	2020	Colorado Public Utilities Commission	Applies to investor-owned utilities: 20% by 2020, electric cooperatives: 10% by 2020, municipal utilities serving more than 40,000 customers: 10% by 2020
Nevada	20%	2015	Public Utilities Commission of Nevada	5% of the energy portfolio must be solar
New Mexico	20%	2020	New Mexico Public Regulation Commission	Applies to investor-owned utilities: 5% by 2006, rising to 10% by 2011, 15% by 2015, and 20% by 2020; Rural electric cooperatives: 5% by 2015, rising to 10% by 2020
Montana	15%	2015	Montana Public Services Commission	Applies to Investor-Owned Utility
Washington	15%	2020	Washington Secretary of State	
Arizona	15%	2025	Arizona Corporation Commission	By 2012, at least 30% of the standard must be derived from distributed renewable energy (4.5% of total electricity sales by regulated utilities)

If one reads the comments that are attached to the submittal of the 2006 Renewable Energy Standard & Tariff (REST), most of the people wanted 25% by 2025 but the Utility Company fought for and won the 15% by 2025 level that is in place today.

In a recent poll of the entire state of Arizona, 89% of the citizenry said they wanted power generated by our largest natural resource, the Sun.

Utility companies have been in the position of a publically accepted monopoly for years. They do not want competition. APS's last year was extremely profitable, and the future expects to continue to be even more profitable. However, with the development of new technologies and equipment Photovoltaic (PV) or Solar Electric power is a viable, cheaper and a very safe alternative to the myth of the Utility monopoly. Of course, the Utility companies don't like this and are fighting it with all their resources to stop it. They simply don't like the competition.

The Utility companies are large business and will always say they can do a better job owning all of the solar electric power generation. With Solar Electric distributed generation (DG) power, this is not the case. DG is more efficient, cheaper to install, cheaper to maintain, better on the environment, brings more business and jobs into the state, is more forgiving of outages, less susceptible to terrorist threats, less intrusive to the Utility grid, has less losses in transmission, takes less additional real estate to transmit and generate, and is quicker to install and scale.

The Utility Companies agree that renewable power is viable, profitable and appropriate for Arizona. Why else would they be putting in their own renewable power plants in such a huge scale and rapid pace?

Those who cannot remember the past are condemned to repeat it. Have we forgotten when APS tried to call Nuclear power "renewable" and claimed they had met their requirements for the Renewable Portfolio Standard (RPS)? That attempt was quickly shot down by the public.

APS is now trying to eliminate Net-Metering.

Confusion clarification:

In recent articles there is a major confusion on the types of utility/public interaction, renewable incentives and the associated costs.

Two reporters recently wrote about some of the issues of renewable power. Robert Robb wrote an Arizona Republic article titled "Refereeing solar catfight" on April 25, 2013. He mentioned that DG passes the test as being the best and that the Utility Company flunks the test. However, he confuses Net-metering and Production Based Incentives (PBI). Net-Metering is not a subsidy, it is simply trading kWhr for kWhr at no expense to the Utility Company. PBI's are subsidized Incentives with associated money from the Utility Company. DG systems still pay a connection fee and taxes even if they use very little power from the Utility Company.

Ryan Randazzo had an article on April 26, 2013 titled "APS, solar executives trade Jobs". In this article APS has performed studies which state that DG is not cost effective, and not a good decision. Don Brandt, CEO of APS on April 12, 2013, published an article titled, "Make solar-power subsidies beneficial for all customers". In this article he states that "APS is currently required to pay customers who have installed rooftop solar panels up to 25 cents per kilowatt hour for the excess power they generate". He is also confusing PBI systems with DG. Randazzo also states that he likes the large Utility owned solar power plants (Solana) which are owned by out of state companies and the tax incentives and PBI incentives go out of state and ignores the DG where there are no incentive payments. It was commented that he was disingenuous. He did not mention that only the excess DG power is paid at the end of the Palo Verde Dow Jones exchange rate. This year it was 2.8 cents. This is less than it costs APS to generate and transmit the power to the customers who will be using the power. He also didn't

mention that DG helps reduce the peak loads (peak shedding) when APS must buy power on the exchange market at a premium.

Recently an independent consulting group published a study by R. Thomas Beach and Patrick G. McGuire of Cross border Energy titled, "The Benefits and costs of Solar Distributed Generation for Arizona Public Service". Their study clearly shows that DG is cheaper and better for all involved.

How can the two entities have completely diametrically opposed conclusions? In the APS study they took a one-year snapshot where Beach and McGuire looked at the more realistic 20-30 usable lifetime of a DG system. Also, all of the beneficial aspects of DG were not mentioned in the APS study. (REALLY, APS????) A solar electric system is physically and actually able to produce power for 20-30 years. Not using at least 20 years in cost calculations is an unfair, unrealistic and incorrect representation of DG's value.

To clarify some of the confusion, I would like to define a few of the terms used.

Distributed Generation (DG) is where homeowners and business have solar electric power equipment connected to their Utility Service Entrance equipment. It is interactive and power is traded back and forth between the home and Utility Company. This trading back and forth of power is called Net-Metering. It is protected, allowed and required by Federal Law. With DG, there is no exchange of money. The excess power is put back on the grid for free so the Utility Company can sell it to the next home in the neighborhood at no cost to the Utility Company. The homeowner is credited for the kilowatt-hours (kWhr) that he gives to the Utility Company for free and can use it at another time.

Renewable Energy Credits (REC's) There is a tangible, actual value to these REC's and if the Government, EPA and DOE start taxing pollution generators, the value of these REC's will increase significantly. There was a court case during the week of June 2-7, 2013 in Phoenix Superior Court over the REC's. the question is that if the Utility Companies reduce the incentives to zero, are they still entitled to take the REC's from the homeowners. We see no reason that they are eligible to keep the incentives if they are not "paying" for them. Obviously the Utility Companies see a value to them and want them for their own profit without paying for them. On the expectation that REC's will increase value in the future and since they are a recurring value for over 20 years, APS is stockpiling them as a tangible value. The President is attacking the Coal industry as a "Dirty" energy, the result is that all Utility power plant generated power will increase significantly. President Obama is quoted as saying under his plan, the "cost of electric power will necessarily skyrocket".

Production Based Incentive (PBI) is where the utility company has a 10 or 20 year contract with the Solar Electric system owner to pay an incentive for every kilowatt-hour they produce by Solar Electric. The PV system owner can then use the power they generate at their own facility. The Utility Company doesn't want that to get out of hand so they put a cap on the amount of PV they can install. That cap is 125% of what is used on-site. The excess power they don't use is then given back to the Utility Company free of charge to be used as the Utility Company dictates. One would ask: why would the Utility Company sign a 10 or 20 year contract to pay for free power from the sun? There are several reasons, and this is the start of the objections from the Utility Company. First, with the directive by the ACC to have some of

the state's power be generated by renewable sources they are forced to support DG. Secondly, APS is able to keep the Renewable Energy Credits (REC's). Commonly called "Green Credits" or "Environmental Attributes".

Power Purchase Agreements (PPA) are renewable energy facilities that are owned by third-party (typically out of state) entities. They take all the Government tax credits, Utility Incentives and 85-95% of the solar energy power for their own use. Over the life of the system the PPA Company will take over 85% of the value that system will ever produce. In essence, the PPA Company is using Arizona real estate and Government tax payer's money to make a profit. The value to the state is minimal and is the source of most of the incentive burden that people are citing when talking about Renewable Power. DG does not fall in this category and should not be blamed for 20 year contracts they have with the Utility Companies. This is where the abuse and cost impact studies should be focused.

Brenda Burns, ACC councilperson, made the statement that the APS ratepayers are paying for DG where the APS customers with DG are not helping to pay for the renewable power or maintain the APS infrastructure. Her comments were not based on data, facts or correct assumptions. DG solar electric power provides significant financial benefit to APS, APS Ratepayers and the state in total. In fact, studies show that the financial benefits of DG exceed its costs by over 54%. This financial benefit applies to both the residential and commercial markets.

Burns also sights the cost of DG by the lost revenue to APS and APS ratepayers by reduced consumption by DG owners and then export their excess power back into the grid. This is actually completely opposite in its impact. DG has a useful lifetime of 20-30 years with minimal maintenance. As we know, APS is increasing the rates to 24 cents per kWhr for peak times of 12-7 p.m. and 48 cents per kWhr during super-peak times of 3-6 p.m. The reason is that the load during those times is higher and the power they must purchase costs more. This increased cost is not just for residential customers but commercial customers as well. DG would reduce the peak demands during these times and could be used to pre-cool homes and charge batteries at no increase to the loads to the APS power plants and distribution networks. If ACC customers invest in DG, APS will be able to avoid or delay the huge cost of long-term resource acquisition costs. DG aids in reducing peak demands (Peak shedding) by generating power during the day when the needs are greatest. This is supported by the Utility companies reducing the cost of power in the winter when the demand is lowest. During the summer, when peak demands are greatest, the local utility companies need to go on the open power market and buy power at a premium. DG helps offset these costs.

ACC chairman Gary Pierce, stated that solar electric DG power needs to stand on its own merits and not survive by incentives. All other power sources are receiving subsidies. If we take out the solar electric incentives, let's get rid of the subsidies and incentives for Gas, Coal, Gasoline, Hydroelectric, Wind, Biofuel, Blended fuel, etc. Let's all be on an even playing field. Pierce said that he is not going to burden the APS ratepayers so that a few people can have jobs. He is also discrediting the benefits and financial value DG gives to APS, APS ratepayers and the state in total.

We often give subsidies to bring business into our state. We give loans, grants, tax credits, etc. Why do we do that? It is to bring business to our state so that we have more money, resources, better standard of living and healthier economy. DG is worth giving subsidies because of all the benefits it provides that pay back these subsidies far into the future for our economy and environment.

DG has many real benefits which are commonly overlooked and not valued. I would like to enumerate some of these benefits. It is clear from these benefits that DG should be supported, allowed and even encouraged by the State, Utility Companies, the rate payers and the voters of Arizona. Net-metering is fair and reasonable and should not be allowed to be eliminated by the Utility Companies for the benefit of their own profitability.

#### Benefits:

1. Distributed Generation (DG) power when put back on the grid is used by the nearest neighbor consumer. Often this distance is not more than 100 feet. There is no burden on the high-tension power lines, substations or other distribution networks. DG power does not come from the generation power plant and is not transmitted over high-tension (high voltage) power lines which have over 10% power loss. APS resells this DG power at full retail prices and does not have to pay any generation, fuel, transmission losses or ancillary costs for this power. They get it for free. (Which means this is all profit for them). DG producers pay the monthly connection fee of \$18.54-\$25/month without using even one kWhr of power. 100% of this money goes to the utility company without burdening the infrastructure. Which means this is all profit for them.
2. DG is a long-term resource to APS. It will be available for 20-30 years with no fuel and minimal maintenance requirements. All calculations on the benefit of DG should be calculated in at least 20 years.
3. DG is a high efficiency and a short-lead-time resource.
4. Power lines require extensive and costly real estate procurement and pathway routing. This is a major logistic and financial issue with large utility owned power plants. DG has none of these problems and expenses.
5. DG power plant owners will maintain and repair their systems at their own expense (it is not an expense to APS or APS ratepayers).
6. DG helps protect the security of our power grid. There will not be a single point of failure that we now have. There are no ways that terrorists or any other mechanical failure can impact DG in any reasonable fashion. Almost every network in the APS and SRP distribution has redundant paths. This allows them to reroute power in case power lines, transformers or other distribution equipment go down or fail.
7. DG can be easily and rapidly scaled. This is not the case with large scale fossil generation resources or Utility owned solar power plants. A utility owner power plant takes huge amounts of time, resources and additional distribution infrastructure. DG is an end-user based power generation.
8. Utility companies site the rapid rise and fall of solar power due to clouds is too fast for the power plants to respond to. First issue, DG has power sources all over the valley disbursed. A

cloud will not cover all of them all at once so the graph of one house that APS sites as the justification that they can't support solar electric DG is not accurate or real life. If you graph the cloud impact over several 10's of square miles and small percentages these fluctuation variations over the entire grid cancels out and is not a factor. DG actually levels the power needs over the state.

9. APS has sufficient infrastructure until 2017. After that time, APS plans on increasing their generation capacity by natural gas-fired combustion turbine generators. The plan to increase their present generation capacity by over 3,700 MW. This natural gas will come from El Paso Natural Gas System (EPNG). This will take revenue out of the state and weaken our resources and capabilities. It also makes us susceptible to outside potential of system failure, variable delivery costs and future NG costs. All the benefit of DG is completely available to people and business in Arizona and is not susceptible to any rate or cost increases. These systems are designed and capable of 20-30 years of service with no fuel, delivery charges and with minimal maintenance. NG cost forecasts are conservatively estimated to increase over 200% over the next 18 years. Let's keep Arizona's revenue in the state for our uses.
10. The Western Electricity Coordination Council (WECC) requires that there operating reserves of 7% of their loads. APS is even required to have 15% reserve margin. DG reduces the peak demand on the APS system. This defers the time that APS must put more generation capacity in place.
11. Smart Grids are now available, possible and required. The utility companies need to update their equipment as part of doing business.
12. DG systems still pay a connection fee and taxes even though they don't use any power from the Utility Company. APS is approximately \$22 per month where SRP is approximately \$18.54 per month. This is higher than any other state in CONUS.
13. Current DG solar electric concentration is about 3-6% in Arizona in the central, city areas. The RPS requires 15% by 2025. Up to 25% will not even be a factor for regulation control for the Utility companies. Hawaii Electric Company has done studies and showed that 25% solar electric power can be controlled by modern Smart Grids and has lifted any DG density limitations.
14. Over 10% of power is lost in transmission over long length of high-tension transmission lines. With DG, this loss is non-existent since the power generated by DG is used at the house before, adjacent to or after.
15. Location to place for solar electric power is at a premium. Empty roof tops do not need special zoning, permit costs, are closer to the user and even cools homes by 8-50 % shading the roofs. This has been proven in California with their rooftop solar program. With our flat spread out housing style in Phoenix, DG is even more suited here.
16. PPA does not help local economies but sends 85% of the solar electric generated revenue to out of state interests.
17. Every dollar invested in the Local economy will multiply and generate approximately \$3 for the local economy.

18. DG is cheaper than large Utility owned power plants. The average installation cost of DG is presently approximately \$3/watt. APS and the plants they are installing are billed at approximately \$7/watt.
19. DG systems are more efficient than Utility owned power plants. DG systems are producing on average 1800 kWhr/W/year where both APS and SRP report that their solar farms are producing power at 1600 kWhr/W/year. They are now adjusting this number to 1500 kWhr/W/year.
20. Less maintenance. A DG power plant can literally function flawlessly for over 20 years with minimal maintenance or interaction. No other power source can claim or deliver that level of reliability or performance.
21. Power is distributed (DG) with DG by definition. This reduced the power line stress caused by generating power at one central location and then distributing it over their entire network. The power lines will last longer and are safer because of their local concentration distributed nature.
22. APS and SRP have now eliminated PBI for all but personal use, government, school and non-profit. So the argument that Robert Robb presented that money is given back at \$0.25/kWhr is not true or valid.
23. APS is still collecting \$3.85/month from each ratepayer that uses their neighbors' DG power (over \$3.56M/month) even though they are only giving a one-time payment of \$0.10/installed watt to the DG customer. This is a huge profit and they want to take away the one-time \$0.10/installed watt from the DG customer?
24. APS and SRP are keeping the Renewable Energy Credits ( REC's). These REC's tradable commodity items or "get out of jail" tokens have an associated tangible value if the government ever taxes us for energy generation pollution. This is not mentioned in the discussions of how much money they are taking from the ratepayers or the reducing cost factor for renewable energy. If the utility incentives go to zero, the utility is not eligible to receive the REC's. The system owner is then the owner of these valuable items and should not surrender them to the utility company without any compensation.
25. APS and SRP are investing in out-of-state Wind farms, Hydroelectric plants and claim they are satisfying their requirements for the RPS. Why would APS invest in out of state renewable energy resources when they could invest the same money in Arizona satisfy the same requirements for the same cost?
26. APS is the largest public utility in the country. SRP is #3. They show a significant profit each and every year. They are investing in several renewable solar power plants. They know the long-term value and benefit to their bottom line and their ratepayers. It will take action by the Governor and ACC to assure that the beneficial DG is not exclusive to a single large utility business but available to everyone.
27. SRP takes DG customers excess power at the end of April and gives them credit at the Palo Verde exchange rate only(in 2013 it was \$0.028/kWhr). Even though they have invested large sums of money to put in solar electric systems that will produce large sums of free power for SRP who has sold the power to local neighbors at full retail/peak/super-peak rates and had to invest zero to produce, purchase or distribute it. This power from DG solar electric systems is then not available to the DG customer to offset their high summer air condition loads.



28. Three other bad side effects of NG fueled power plants include 1. Green House Gasses (GHG), 2. Thermal Heat and 3. Water usage. All of these three items are significant and detrimental to the state and its citizens. "Fueled" power plants generate between 1.7 to 2 pounds of pollution for every kWhr generated. DG has 0% impact of these three items. DG generates no additional GHG's, heat and uses no water to generate its power. There is no question that DG helps the environment.
29. "This study clearly shows that solar offers concrete net benefits to all APS ratepayers, regardless of whether or not they have installed solar," said Carrie Cullen Hitt, senior vice president of state affairs at SEIA. "It's essential that we keep smart policies like net metering in place so that Arizona can continue to benefit from its abundant solar resources."
30. DG brings in many more jobs and companies to the state. That means more revenue and job opportunities. The job potential and value for DG is significantly higher than a Utility Owned resource. Remember, the maintenance for DG falls completely on the homeowner and is no cost to APS or the ratepayer.

We have so much sun, we need to generate electricity and send it to other states. This will balance out the discrepancy of peak power generation and peak usage. DG is a beneficial business to have in the "Sun" or "Solar" state and we should help it any way we can. Governor Janice K. Brewer said we should be selling power generated in the state to other states as a source of revenue to the state. She is correct.