Thank you for your comment, Le Hayes.

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Comment Date: June 22, 2008 19:59:30PM
Solar Energy Development PEIS
Comment ID: SolarS50027

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See Attachment.

My name is Le Hayes, I have been the General Manager of the Baker Community Services District, the town of Baker, for seventeen years. I am the author of *Pilgrims in the Desert, the Early History of the East Mojave Desert and the Baker, California area.* My wife and I are members of the Mojave River Valley Museum in Barstow, CA, the Mohahve Historical Society in Victorville, the Shoshone Museum and others desert organizations. I am also a member of the Desert Bighorn Sheep Society, helping to survey and photograph water sources in the remote areas of the East Mojave Desert. I am a member of SKYWARN, a program conducted by the National Oceanic and Amospheric Administration, (NOAA). SKYWARN members are technically called Storm Spotters, however most people refer to us a Storm Chasers. The job of a storm chaser is to safely penetrate as far into violent or unusual weather as possible and report those conditions directly to the National Weather Service which then sends out those severe weather alerts which interrupt your television or radio programming. Most of my SKYWARN work in the east Mojave involves Summer thunderstorms.

The point of the above is to hopefully convince you that I know a bit about the East Mojave Desert and to lend credence when I say the desert is a fragile ecosystem which can be irreparably damaged by those who would pillage its resources. Unfortunately, large commercial power plants, be they Solar or otherwise, are a prime example of pillaging the resources of vast areas to support population centers which have already consumed their natural resources. Population centers which now want to reach out and steal the resources of the surrounding areas.

One of the most prized resources in the arid West has always been water and the Los Angeles Department of Water and Power (LADWP) provided us with one of the most striking examples of pillaging surrounding areas when they went into the Owens Valley and transformed rich agricultural lands into wastelands. Most of us already know, but perhaps we need to be reminded, that beginning in about 1913, William Mulholland and others convinced the public that Los Angeles was teetering on the brink of a water crisis. Mulholland and others then created a scam, with the collusion of federal officials, in which they convinced the farmers and ranchers of the Owens Valley that they were selling their lands and water rights to the U.S. Reclamation Service for the Owens Valley irrigation project which would benefit the entire valley. Once LADWP had the land the feds scuttled the reclamation plans and declared the mostly treeless Owens Valley to be a part of the Inyo National Forest, under federal jurisdiction. They then drained Owens Lake and the Owens Valley of their water. By 1924 Owens Lake and 50 miles of the Owens River were sucked dry by Los Angeles. Later they drained Mono Lake and other huge areas. One result of this thievery scheme was that a new phrase was introduced into our language. That phrase: “Water can be made to flow uphill - towards money.” An axiom which holds true today.

Now, less than a hundred years later, we again have the LADWP and public officials telling us that Los Angeles is again teetering on the brink of destruction, this time because of a shortage of electricity. No, I don’t think it’s a scam this time, I think it’s probably true, but there are lots of reasons for it, including waste, mis-management, over regulation and over population. They are trying to sustain an artificial environment which has consumed all their natural resources and now, once again, they want to reach out hundreds of miles and steal or damage the resources of the surrounding areas so they can continue to run their air conditioners, light their shopping centers, parking lots, freeways, and their high crime areas at 3 AM.

The proponents of Solar Power Plants like to point it's only Sunlight and we get a new supply every day, and that's true. The problem is not sunlight, it's the way they intend to collect it that will devastate our desert. Look at one of the aerial photographs of a large Solar plant, in particular a Parabolic Trough system, and you will see that they scrape off and flatten thousands of acres of desert, then cover it with hundreds of thousands of mirrors. Two years ago Southern California Edison signed a contract with Phoenix based Stirling Energy Systems to secure electricity from a 4,500 acre solar-thermal project in the California Desert. Pacific Gas and Electric has announced plans for a massive solar park which will cover up to nine square miles of the Mojave Desert. In the aggregate, more than a million acres of desert is under application by speculators hoping to cash in on alternative power plants.

There are several kinds of Solar plants, too many to discuss here, so I want to pick one type and examine it. I want to examine a Parabolic Trough Power Plant because they are the cheapest to construct and therefore the most popular. Several have already been constructed in the desert. The U.S. Department of Energy says a parabolic trough power plant with wet cooling typically uses a thousand gallons of water to produce a megawatt hour of electricity. The Ivanpah plant which is planned in the East Mojave Desert intends to produce 400 Megawatt hours of electricity which means it will consume 400,000 gallons of water to produce that amount of electricity during that time. Why so much water? Because it doesn't use the Sun to produce electricity, it uses the Sun to produce heat which is then used to drive an old fashioned steam generator which actually produces the electricity. Traditionally heat to drive steam generators has been produced by natural gas, coal, and other products, even wood. There is nothing new about steam energy. The first functional steam locomotive engine was constructed by Richard Trevithick in Wales in 1804. During our Civil War, in the 1860's, horse and cow manure was burned in steam locomotives to produce steam. A parabolic trough Solar plant is nothing more than a new source of heat driving old technology which by its very nature consumes large amounts of water.

Proponents of Solar power like to tell us how many homes a particular plant will supply with electricity. That is only half of the equation. The other half is what they consume to produce that power. Four hundred thousand gallons of water is just a number. What does 400,000 gallons look like? Well, the container would be four stories high (40 feet) and it would have approximately the same diameter, 40 feet. In other words if we were to lay the tank on its side, it would still be four stories high. It is huge. Another way to understand 400,000 gallons of water is to relate it to people. The American Water Works Association tells us the average indoor per capita water use is 69.3 gallons per day. In other words, it will take nearly 6,000 people 24 hours to consume 400,000 gallons of water, the amount used to produce 400 megawatts of electricity an hour. It seems obvious these folks won't need the electricity in their home if they have no water at the tap.

Proponents like to tell us they recycle water through the plant. Unfortunately, that is only partially true. Look again at the aerial photographs of parabolic trough plants and you will see dark rectangular areas which for the most part are unexplained. They are in fact wastewater evaporation ponds. A significant amount of the water pumped through the plants emerges so laden with chemicals and high mineral content that it cannot be reused in the plant. It is dumped into wastewater ponds where they hope to evaporate the water into the atmosphere leaving the toxic sludge. I have seen no explanation of how they propose to get rid of the toxic sludge.

Water is the most precious commodity in the desert and yet we continue to waste it. Lake Mead, near Las Vegas, has a hundred feet of light colored rock surrounding it, rock that used to be submerged. Land features which haven't been seen since the lake was originally filled are beginning to appear and yet Las Vegas continues to try and dazzle us with giant fountains of water shooting high into the air and sea battles staged on man made seas. If you look down on Las Vegas when you are flying in or out you will see thousands of acres of green lawns, golf courses, and swimming pools which have been constructed on the desert floor. Vegas likes to point out the opulence of these water intensive creations as proof of their wealth. Many of us see it as a demonstration of ignorance and proof of the axiom that water can be made to flow uphill, toward money. But there is hope, the Nevada Department of Transportation (NDOT) is beginning to understand that water is the most precious commodity in the desert. Their new freeway system uses crushed rock of various colors to landscape the freeways. Not only does this landscaping not consume water, but it saves the cost of installing and maintaining water systems and the constant care of whatever plants the rock has replaced. It is also much more attractive than the old system of plants in various stages of growth or decomposition.

Sadly, the California Department of Transportation (Cal Trans) has yet to adopt this landscaping method. Not long ago when they opened a new stretch of freeway in the basin, they bragged about traveling the world and bringing in exotic plants to landscape the freeway. Not long afterward they were complaining about thieves stealing the brass sprinkler heads used to water the freeway landscaping. Do any of us really travel the freeway admiring the trees and plants? I think most of us travel the freeways glancing at our watch then back to the brake lights on the vehicles in front of us. I don't want Cal Trans to try and dazzle me with the amount of water they can consume. I want them to show me a smooth expanse of colored rock which requires no maintenance and fewer brake lights. Cal Trans needs to get out of the gardening business and get back into transportation.

Before the BLM or the DOE permits any more water to be pumped out of the desert they need to understand the present state of water in the desert. They need to gather a handful of U.S.G.S. maps and visit the natural springs shown on them. They might be shocked to find how many of these springs no longer produce any water. Many more will be observed to only support some half dead Mesquite Trees. A few will still have a trickle of water emerging. When we visit those springs and former springs we carry our water with us. What about the more than 500 species of animals that live in the desert? What about the birds, reptiles and insects that live in the desert? Shall we just let them die so we can run our air conditioners while we watch our televisions?

If you want to experience just one small facet of the declining water in the desert join a group of Desert Bighorn Sheep volunteers on a July or August day, when the temperature hovers in the 120 degree range, and help us haul water to supply a drinker which is going dry. Bring your own vehicle and buy your own tires and gas. The desert critters won't thank you, they can't speak our language, but I can assure you they will appreciate you bringing them water so hopefully they can survive until the natural water starts flowing again.

Now I want to move from too little water to too much water. Earlier I told you that I follow the thunderstorms which hopefully sweep over the desert every Summer. Many times I have observed the flash flooding these storms bring. Water will cascade down dry washes for miles. I have photographed standing hydraulic waves striking the railroad grade between Kelso and Cima some

ten miles from a storm in the Cedar Canyon area. I have seen boulders larger than my truck, which were alongside the roadway prior to a storm, simply disappear. Were they washed down stream or buried? I have no idea. They were just gone.

When I look at the plans for some of these huge power plants where thousands of acres will be scraped off and leveled I have to ask - where are the provisions for flash flooding which will occur most Summers? In the aerial photograph I can see hundreds of small channels, which normally carry and dissipate the water from these storms, blocked off and leveled. Do the engineers really think the water will just stop? Do they not realize millions of gallons of water can and will come rushing down those channels toward their facility? What will happen when that occurs? I can tell you what will happen, I have seen it many times. The water will go where it damm well pleases and it pleases it to go downhill. When it reaches the fence of that newly constructed solar plant it will pause for a minute or two, maybe five minutes until the initial trash and debris carried by the water builds up on the fence creating a dam, then the fence will give way and a torrent of water will make its way across the ground and begin digging a new channel. The water will increase and the channel will increase in depth and width, the array of mirrors will lose their footing and collapse into the channel, the pipes carrying the heat transfer oil, a hazardous material in the state of California, will spray their pressurized oil into the flood waters and the oil will be washed downstream to contaminate miles and miles of desert. This will happen repeatedly all over the once flat area and when the storm waters have subsided the solar project will look like a table top toy which has been dropped. In court, lawyers for the solar project will argue an act of God. Lawyers for the contaminated desert will argue stupidity. I happen to agree with the latter.

In time the engineers for the solar plant will demand more land so they can construct huge channels to divert water around the project. Two arrangements are possible. One, a channel running diagonally across the desert upstream of the plant which should catch the flash flooding and carry it away from the plant. Another proposal will be a horseshoe shaped channel to divert water around both sides of the project. The first method will channel millions of gallons to a single point, destroying whatever is downstream of that point. The second method will concentrate millions of gallons of water on two points, with the same downstream effects. Flash flood waters mixed with hazardous oil will be carried miles into the desert to contaminate what it doesn't wash away. Millions of dollars will be spent on lawyers for both sides while the case drags on for years in the courts.

During the time the case is in court the water supply for the plant will be exhausted so deeper wells will be drilled. In time those deeper wells will be exhausted leaving the corporate owners no way to produce electricity, no way to produce revenue, and faced with mounting costs in the courts they will disappear behind their corporate veils. Shortly tumble weeds will begin to pile up against the fences, thieves will begin to carry off anything of value and vandalize the remainder. No one will be responsible, not the BLM, not the DOE, and certainly not the owners. The politicians who pushed the desert energy projects will turn their backs and move on to something else. The eternal desert will remain. Stripped of its vegetation, and robbed of its water, it will remain a wasteland for centuries. It might as well be radioactive. Successive generations will ask - What the hell were they thinking? Were they relying on people like Matt Spangler, a spokesman for the BLM in Washington who said "Our vast lands and waters provide boundless opportunities for renewable energy"? Were they relying on people like Keely Wachs, a spokesman for PG&E who said "The environmental

impact will be minimal"? Were they relying on people like S. David Freeman who wrote "The wasteland of the desert is the goldmine of our future energy needs"? Incidentally, Freeman was an energy advisor to both presidents Nixon and Carter and a former manager of the LADWP. Apparently his policies haven't worked. Future generations might want to present Freeman, Wachs, and Spangler with the Mulholland Award.

Finally I want to tell you how relieved I am that I don't work for the BLM. I can't imagine being employed by the BLM, working hard in my speciality field, after years of training, and years in the field trying to protect the resources of the lands under BLM management, only to be sold out by top management wearing speciality sun glasses with dollar signs painted on the lenses. If I was a specialist with the BLM, an archeologist, biologist, zoologist or any other ologist, I would immediately apply to the Park Service which continues to fulfill its responsibility of protecting the lands under its jurisdiction.

Most likely I have irritated you sufficiently so I want to move on and suggest a solution so we may avoid all of the above.

Southern California Edison has it right. They have an initial plan to install 250 megawatts of solar panels which generate electricity, not heat, on commercial rooftops, generating enough electricity to power 162,000 homes. These solar arrays will be erected on the rooftops of huge warehouses and other large buildings in the Inland Empire where the power is needed. That eliminates the need for both transmission lines and pillaging huge areas of the desert. There is an almost endless array of warehouses, big box stores and other large rooftops which meet the criteria for solar installation and the power will be generated where it is needed.

Brad Mitzelfelt has it right. Mitzelfelt is the San Bernardino County Supervisor whose first district encompasses much of the desert where the solar plants want to build. In a recent scoping meeting in Barstow, California, Supervisor Mitzelfelt pointed out the former George Air Force Base, now known as the Southern California Logistics Airport, has acres and acres of rooftops suitable for solar panels.

Edison and Mitzelfelt have it right. We should listen to them.

Best Regards,
Le Hayes