Brown to Green: Make the Connection to Renewable Energy
Santa Fe, New Mexico December 10-11, 2008

Workshop Notes

Wednesday, December 10, 2008

Workshop begins with opening remarks by Brian Johnson welcoming participants, thanking the EPA for allowing New Mexico to host the event, as well as the private sponsors. Also, introduces Sam Coleman EPA Director, Superfund Division 6.

8:00 am Welcoming Remarks:

Sam Coleman: Director Superfund Division, EPA Region 6
Informs participants about what to expect in the workshop to come, including hearing from several distinguished and knowledgeable experts in the field as well as having several opportunities for side conversations and networking. Finding development opportunities are very difficult on contaminated lands, but through bringing together a diverse group of stakeholders, great opportunities for development can be uncovered. If the right people come together, there is a deal for anything. Also, acknowledged that next November, the Brownfields Conference is being held in New Orleans, LA.

8:15 am Workshop Goals and Objectives:

Kathy Isaacson: Workshop facilitator, Strategic Engagement
Introduces herself as the conference facilitator, and informs the participants about the conference. To bring together a diverse group of stakeholders to identify and discuss the potentials of developing on contaminated lands. The workshop includes many speakers, as well as facilitated discussions, networking opportunities, priority setting opportunities, as well as a plenary session to close the workshop. Looking forward to seeing some emerging commitments and champions. We have many distinguished speakers, but also many distinguished participants as well. Encourage participants to examine the agenda and think about where your question might fit if you came with a specific question for the group. She informs participants of the breakout rooms that are also available for networking. Introduces the three keynote speakers.

8:30 am Keynote Addresses:

David Lloyd: Director, EPA office of Brownfields and Land Revitalization
Without the state and tribal partners, what the EPA is trying to accomplish wouldn't be possible. 18,900 sites were cleaned by our partners, freeing up thousands of acres of land. This is the first EPA conference of this type and it is fitting that EPA division 6 hosts this conference because it is home to many firsts. There are many distinguished guests and speakers that I'm excited to hear from. This is a partnership, and in a partnership, regulatory flexibility is important. This is a partnership, without all the partners working together, none of this would be possible. What we are doing is as much

about respecting our land, as well as creating jobs and development. Land management policy has a great effect on GHGs. Making changes to land development has great impact on GHGs. There is an exciting change happening in Washington and policies toward climate changes. As developing of renewable energy increases, it is critical to think about what sites these projects are located on. It is important to hear success stories that have been happening in this area. The EPA has to be flexible to allow our partners and these projects to be successful. We need to find ways to overcome barriers, whether they are regulatory or otherwise.

Joanna Prukop: Cabinet Secretary, New Mexico Energy, Minerals and Natural Resources Department
This topic can be fully integrated into the direction that the country is headed. This state has so many opportunities in this field. NM has a rich natural history base, oil gas and electricity, but we also believe in a strong and balanced regulation. Two basins of great natural resources in the state, in the SE corner, as well as the NW area. There are 50,000 producing wells in the state. There are many areas that meet the definition of brownfields. There is mining in every county of the state, extracting many different materials. A lot of reclamation work on abandoned mines has been conducted. NM is a clean energy state, with excellent renewable resources, along with Gov. Richardson's clean energy policies that include renewable portfolio standard as well as production tax credit, and renewable energy transmission authority to help with transmission challenges. We have experience in redeveloping brownfields, and need to avoid sensitive areas for development. In East Central NM there is a large tract that has great potential for renewable energy development, as well as in other areas of the state. NM has the second best potential for solar development out of all the States, world class wind, and 7th in potential for geothermal. We are also working with NM's dairies to produce renewable energy with their waste. We also require major utilities to produce 15% of their power from renewable resources by 2015 and 20% by 2020. There are many incentives to stimulate solar development in the state. A lot of promise in PV, especially thin film, which do require a large land area. 100 megawatts needs 700 acres. 24,000 acres for solar development is the largest installation in the state. BLM is trying to figure out how to deal with these permits because they are supposed to lease their lands for multiple sources on one area. Brownfields provides a great alternative to BLM land and people need to be aware of those potentials. NM just had the first groundbreaking of a geothermal production plant. RETA is unique because it was developed to get around transmission hurdles, and it requires at least 30% of the energy transmitted to be renewable if they fund the project. Coal fired power plants are NMs biggest producer of GHGs. Power that doesn't have to be drilled for or developed is the least expensive. We need balance to address important issues, of land use. Collaboration is what's needed to create brown to green concepts, and partnerships are key. In the private sector, as well as public/private partnerships. There are many opportunities to provide green jobs and development.

Ron Curry: Cabinet Secretary, New Mexico Environment Department
NM has long history of collaboration with EPA region 6. We all need to contemplate all the environmental laws that have been passed recently and think about why they were

created, and who created them? Are they for the environment, or for the benefit of business? By examining the processes that create laws it becomes clear that they benefit business. As we are here talking about brown to green, we need to also think about how not to create brownfields in the future. Because of the exemptions that exist for oil and gas industries, many loopholes are available for them, so we need to think about who benefits from these environmental laws, and who creates them. Climate change can indeed create business and business opportunities. RETA is going to make and continue to make NM a net energy exporting state, and renewable energy state. The business opportunities are great from this, but we need to think about what the laws are that these businesses are regulated by. Gov. Richardson gathered a diverse group of stakeholders in the state to create environmental policy recommendations to the Gov. They not only created suggestions but also strategies to implement them. The oil and gas industry is very important in the state, and we are very grateful to have them in the state. They give a lot of taxes to the state and they don't really like it when regulators tell them how to run their businesses. NM was the first state to join the Chicago climate exchange, which helps reduce emissions. The platform of the Chicago climate exchange could be something that leads to something on the state or national level. People ask 'why is NM trying to stop climate change, if they can't change the climate on their own?' The answer should be 'why not do something?' There is a void at the federal level on enforcing GHG reductions, so NM is leading the way and doing it on their own. Every time we create any change that affects the environment we need to ask ourselves whom those changes benefit. I have a joke about Senator Bradley, making a speech at a luncheon. He arrived early and asked a waiter for some butter while he was preparing for his speech. He got impatient as he was waiting for the butter and asked the waiter 'do you know who I am?' The waiter said no so the senator said 'I'm Senator Bradley'. The waiter retorted 'do you know who I am?' The senator said no, so the waiter told him 'I'm the guy with the butter.'

9:30am Renewable energy on contaminated lands: Mine sites, Landfills, Brownfields, Superfund, RCRA, etc.

Stephen Hoffman: Senior Environmental Scientist, Office of Solid Waste, EPA
The federal govt. needs to move fast, developing RE projects. We realize that and will work hard to not lose deals because we're moving too slow. This is a true cooperative effort, and we need to figure out when to step in, and when to not get involved. This workshop is all about striking deals. This state is dealing with an enormous amount of financial loss, and these deals need to make money in a bad economy. There are societal benefits and the current and future presidential administrations are making decisions that do benefit the publics' interest. Obama's administration claims that thousands of jobs will be created in their infrastructure development package they are proposing by creating renewable energy sites. A number of other states are setting up education programs so when these projects are created, educated people are ready to work on the projects. EPA has study grants as well as development grants. EPA will work with groups thinking of developing any contaminated sites, at a regional level or at a national level. EPA needs to know when to get involved in your projects and when to not be involved.

Dick Fate: Technical manager, Sandia National Laboratories
Brownfields and cities are often tied together, and problems for solar power in cities as well as in brownfields are often the same. My project is about reducing barriers to solar power through non-R and D initiatives. 25 cities selected for this program after a very selective process, with the only requirement being that they be cities of over 100,000 people. Houston qualified and was selected and despite their location in the heart of oil country, they are very excited about the project. There are many barriers to solar power, and they can all be reduced through non-R and D means. Many other projects in addition to solar energy, and it is a true federal and community partnership, and it provides outreach to many other cities across the country.

Michelle Price: Energy manager, Nellis Air Force Base, NV
Nellis is responsible for maintaining millions of acres, about one third of the state of NV. Air Force had to do a land analysis, but other than that the costs to the Air Force were negligible. The project started because of NV's strong renewable energy policies led to a lot of interest, even unsolicited interest in the site.

10:15 am Networking activity #1: participants reflect on 'what do we want to get out of this workshop?'

- Information the NM National Guard can apply to our sites
- Have 128 acres with 50gallon per minute water @137 degrees F. Seeking concentrated solar producer interested in purchase or lease 575-534-4725
- Bring together financiers (banks, developers) and property owners to discuss RE potential at their sites
- Consultant to assist in articulating a development strategy/proposal for funding
- List of federal and state funding programs for renewable energy
- Green Starts Fontana, CA 'Towers Ameron' ends NM new beginning for all US

10:45 am Renewable Energy Potential for New Mexico

Penny McDaniel: Environmental Scientist, Office of Policy Analysis, EPA Office of Solid Waste and Emergency Response
As our population increases, the overall energy consumption of the world rises as well, and that is expected to continue with time. It's important to how we are living our lives, and how much we are consuming. The 5% of the world that are developed countries consume these percentages of the worlds' products: 45% of meat, 50% of energy, 74% of telephones, 84% of paper, 87% of vehicles. A new way of looking at GHG inventory is being developed, still being vetted, but worth sharing. Instead of end of tailpipe, this inventory looks upstream, a systems-based way of examining energy use, and using this

model 16% of our country's pollution is from land management. There are 72 million bottles used every day in the US, 90% of which are land filled. To make those bottles, 15 million barrels of oil are needed annually, only for the manufacturing process, not even including transportation. Creating a sustainable energy future is dependent on effective and proactive policies and regulations. Simply not developing new greenspace would save many thousands of metric tons of GHG emissions/year, so preserving greenspace is vitally important. www.epa.gov/renewableenergyland.gov

1:00 pm Facilitated Panel Discussion I: Brown to Green: Common Elements for Success- What make the Deal Work at Contaminated Sites (Infrastructure)

Otto Van Geet: Senior Engineer, National Renewable Energy Laboratory
Employment in mining communities is very important, as well as long-term stewardship of the land. NM has some great geothermal resources, as well as smart grid technologies to inform instant prices of RE, i.e. when the wind is blowing or not blowing. Wind is very site specific, and a year's worth of data needs to be taken to assess a site's viability for wind power. The state can help out in conducting interconnection studies for transmission access. Everything all comes down to economics, but before a development can take place, all these assessments need to be made.

Joe Brunner: Environmental Manager, Freeport McMoRan
Freeport is an old company, dating from the early 19th century. Have been in NM for a long time, some of the mines predate statehood. We have roughly 500,000 acres in the state, as well as a lot of water rights, many of our sites would be desirable for development. The water is very valuable, and we are interested in making that available in the future. Mines require a lot of energy, and there are a lot of energy production facilities on sites, as well as having generally good access to the grid. We are working to expand our RE portfolio, and we have a lot of existing resources to bring to the table. There are lots of benefits to RE to the local community, and RE can be more stable to the economy than mining, because of the fact that minerals are commodities. Corporate commitment to RE and socially conscious investments are important to us. Our mines are very tightly regulated by many entities, but dialogue needs to occur toward the goal of making RE development happen, and all those regulations are surmountable.

Jesse Atkinson: Project Developer, First Solar
We have a fully funded recycling program, and we are the only PV company that has this. Every module that is sold is recycled at the end of its life span at no cost to the owner. We are less expensive because we bring in raw components, and our manufacturing is less energy intensive and quicker than any other companies. We have driven our costs to about 1/3 of the cost of other companies, and we are continuing an improvement process of the costs of our modules. We have a clear roadmap to get to 12% efficiency by 2012, and we will no longer rely on subsidies. Ours have better low light and diffuse sun energy absorption. Our projects can be efficient on a relatively small scale, so they can be installed in a short amount of time. It's important to speed deployment time, to reduce the risk in investment.

Ted Apodaca: General Counsel, New Mexico Renewable Energy Transmission Authority (RETA)
RETA is the nations first state level finance authority for RE transmission. We provide support for development of energy transmission. We are trying to fill the critical link between RE and the markets and the load centers. If RE can't get there, it has no purpose. We potentially can sell our RE to all our neighboring states. RE can offer an opportunity for our state to reclaim its revenues that are lost from the oil and gas industries. By upgrading critical transmission lines to be able to carry RE allows many more KW of RE power to be added to our state. Our infrastructure is very inadequate, and they it is located in the wrong areas, and that needs to be remedied. Up to 12,000MW potential in this state. Rural areas can experience a huge benefit to these, potentially billions of dollars of benefits. Solar power isn't as intrusive as wind because wind towers need deep foundations, which can penetrate contaminated soils. There are very big challenges to developing on brownfields areas.

Patricio Guerrerortiz: Deputy Secretary, New Mexico Department of Transportation
We can provide access to any RE areas. What do we do next? Do we continue to maintain our roads based on a fuel that might be gone soon? Saving energy is the same as RE to us, and transit can be one of those things. When gas prices go down, the state gets less revenue to maintain roads, but still needs to maintain those roads. We have nearly 200,000 acres of right away that can be used as RE sites, and there is good access to those sites.

Questions from the audience to the panel:

For Jesse Atkinson: The cost you quoted of $1.23 per-watt, is that just for the panel itself, not for the entire system.

Response: Yes, just the module itself, not selling price, but that price is at 2007 cost. In 2008 the cost dropped to $1.14, which includes about 4 cents of ramp costs to build our facilities in Malaysia.

For Ted Apodaca: In transmission corridors across the country high wheeling charges get added that make our projects unfeasible, is there a way to even those charges out across the country?

Ted's response: There is only so much capacity to send power down the line, and because of that in order to get a space on the line, people line up in a queue, and in this state it's first come first serve, and people can get blocked from getting off the line. In NM we are well aware that the queue system is in desperate need to upgrading, and it prevents small companies from getting on the market, and some companies block other companies from getting online. At RETA we sign confidential agreements with developers, so they know that we won't disclose the details of their deals. RETA doesn't have to follow the queue. We want to include developers, including those in the queue and talk to them. Right now there isn't even enough capacity to get RE on the market.

For Ted Apodaca: Why is the RE minimum for RETA projects only 30%?

Ted's response: we can't be involved in funding projects that don't involve at least 30% RE. We are meeting that requirement, and in many cases we are exceeding it, we are involved in projects that are 100% RE.

2:00 pm Facilitated Panel Discussion II - Brown to Green: Common Elements for Success- What make the Deal Work at Contaminated Sites (Financial)

Baxter Wasson: Vice President, Deutsche Bank AG
From the financing perspective, what are the barriers to funding RE? Most RE projects are capital intensive, and the lenders are lending to the projects specific risks, and future capital. Unforeseen increases in cost can impair debt service. Due diligence is important, and robust government support. Using a contaminated site can add cost and friction, more parties are involved, and that slows things down. There are ways that people can work together to make these things happen. In the example of a severely contaminated site that the owner can't clean, that has great potential, because the government can take over the site. Then the government completes an assessment to create a baseline for the property. Then people could view the site assessment and negotiate or discuss any additions or addendums.

Luis Reyes: CEO Kit Carson Electric Cooperative, Inc
Creating partnerships and the cooperative structure are very important to us. Investments are from partnerships that we create. Our biggest member is Chevron mine, who has a brownfield, and we hope that in the future we can work with them to create RE projects. We work in poor counties, and so we have to be innovative to create new projects. We only have one source of power, and we have volunteer members that are on our RE program. We have 9% of our energy from RE, which is ahead of the curve. One of our programs is that we got a bond from the federal government. Our infrastructure can't support big systems, we think it's wiser for more distributed systems. With our bond money we are creating a solar power plant 500KW tracking system, which will be the largest system in NM. We also have a committee on our board that is examining how we can go from a big system to a group of housetop systems. If the consumer has a vested interest, as far as a financial contribution, then our program won't be subject to the failures of the programs in the 70s. The way to work is to create partnerships, and to leverage the resources of our partners, financial and technical. We need to break down the barriers that don't allow poor citizens to install solar panels.

Charles Costenbader: Associate Director, Macquarie Cook Power Inc.
We trade physical electricity with PNM. We are interested in financing development of RE and the brown to green concept. We are willing to take risks with environmental issues, as long as they are disclosed. Investors want transparency, if there are issues, we want to know about them.

Fernando Martinez: Director, EMNRD Energy Conservation and Management Division
More than incentives, renewable portfolio standards drive these programs forward. We have a lot of incentive programs for RE, that are all very helpful, but our standards are most important.

Ellen Veseth: Program Director, NM Economic Development Department
Non-incentive benefits: bonds, largest industrial revenue bond in the world, tech. jobs tax credits, low income tax credits

Questions for panel:

For Charles Costenbader: Finances are the fuel that fuel our industry. In 1992 the tax credit went away but we had a performance model that allowed us to move on despite this. The financial industry didn't belief that, and so they said that the model had a problem, because it used an average of $2.20 of gas and they didn't think that gas would go above that, even though we had contracts for ten to twelve projects. Now we are in a similar place, that gas prices just went down, and so I'm asking what the financial community thinks about funding RE projects as far as the risks because gas is so cheep right now.

Charles' response: The real issue is what is the incentive, because they are clearly needed. We need to get away from problem areas. The govt., if they are going to give the PTCs they need to be more liquid, so they can be sold, as a tradable item, so not all people have to be owners. We don't ascribe any values on PTCs beyond 2010, we don't know if the legislation will approve it. With oil at fifty dollars a barrel, we need a twenty-five dollar tax on oil, because cheap oil is the worst thing for this country. The PTCs are nice, but they are a bridge, first of all to use them you have to be a taxpayer.

3:45 pm Facilitated Roundtable discussion of the day's topics

Reflections from conference convenors:

Camille Hueni:
The situation represented goes beyond NM to national issues
Oil and gas revenues will be dropping by half or more
Lots of potential opportunities for wind and solar in NM for income through exporting energy and creating jobs
There is a critical lack of capacity on the lines, which is not just here but throughout the US
We want to hear what we need to do next, from the EPA and from everyone here
What you have here is a downside and opportunity, and NM will be representative of where we are going nationally

Brian Johnson:
The PTCs aren't liquid and that gives them limited use, which was new to me. The PTCs we have help create some projects but it's interesting to hear how limited they are
Good to hear what happened at Nellis Air Force base in so little time
Good to hear that some businesses are doing well

Steve Hoffman:
The concept of environmental risk certainty is good to hear about, that we need to work on that
Lack of transmission line access is good to know about
The Nellis Air Force example is great, and could be duplicated here
The differences between the two types of solar systems, which are great the one we heard about this morning, being fast to produce hearing about different approaches of using smaller units instead of big projects

Susan Roddy:
We were thinking big as far as solar projects, but maybe we need to rethink that
Wheeling agreements are an important factor in all this

Reflections from the participants:

The petroleum industry is an extremely valuable partner for RE in NM. First, gasification of petroleum sludge, for small scale and medium scale refineries has potential. As far as biofuels, dairy farms don't have the infrastructure to move biofuels, but the petroleum industry does. Vapors and waste gases have many options.

There are growth opportunities in power purchase agreements driven by states driving large projects in SW

These are huge, complicated projects, and the more govt. agencies are involved the more complicated these are, and we need to take a broad view of what all the complications are in terms of regulations. These processes need to be streamlined, like more involvement from the DOE, BLM, EPA, etc.

It is daunting looking at all the regulations from all the agencies, and as a representative of a small community (Hobbs, NM) it would be very beneficial for these agencies to do more community outreach to help communities with these complications

NEPA and endangered species act are both important to be included in streamlining, and they have utilized a streamlining process, which the EPA can help with. The EPA has done a lot of work with multiple agencies to streamline processes

People have to come to the table ready to make a commitment and ready to make a deal, everyone!

So many studies have done, and they should be reexamined and used again so there don't have to more studies to slow these processes

What Kit Carson Cooperative did was educate and convince their consumers to use RE, and using this approach they easily reached the 2015 NM energy standard

What is our working definition of green?

Need to work with landfills to recover and reuse methane. That needs to be a priority

Need to streamline these processes by not always deferring to the EPA for all our environmental decisions

Look to Europe for examples of successful RE projects

Need to know who owns the land, which federal agency.

If a site sells the rights to the energy that doesn't count towards the RE goals

Each project needs a champion

4:45 pm Closing remarks

Larry Starfield: Deputy Regional Administrator, EPA Region 6
We are very passionate about helping develop these projects in the EPA, despite all the hurdles towards making something like this happen. This is a win-win situation. Brownfields adds a level of complexity as well as a level of opportunity. These processes take longer on brownfields, but investors and developers can come in later in the process because the govt. has done a lot of work on the sites already. The possibilities are endless and the potential gains are huge. We don't like being involved in 'endless research projects' and we are all about transparency, and we like to streamline our processes. Those are all things that I've heard from people that they want the EPA to do. Bring us some projects!

Thursday, December 11th

8:00 am Recap/Discussion of first day

Brown to Green: Make the Connection to Renewable Energy

DAY 1, December 10, 2009
SUMMARY

The Invitation:
(Quotes from EPA and State of NM)

- EPA is very passionate about this issue!
- There's always a deal somewhere.

- What do we want to do with the land? 16M acres.
- Each stakeholder cannot do it alone.
- We need innovative ways to proceed.
- We know the Government needs to move quicker.
- Do not develop RE on greenspace! Develop on brownspace.

The Incentives:

- Much of the infrastructure is in place (roads, grid, access, buildings).
- Financials incentives are in place.
- The time is right for win-win-win-win.
- Successful Brown to Green projects enhance stakeholders' image.

The Challenges:

- Cost
- Complexity
- Regulatory issues
- Permitting issues
- Wheeling agreements
- Transmission obstacles
- PTCs have limited use because they aren't liquid.
- Risk certainty assessment

The Path Forward:

- Be transparent. No surprises!
- Come to the table with persistence and readiness to make a deal.
- Oil and gas industry revenue in NM is projected to drop by half or more.
- Address the critical lack of capacity in transmission lines.
- Examine the successful project at Nellis Air Force Base to guide projects in New Mexico.
- Examine the possibilities of small, as well as large, PV projects.
- Address problems with wheeling agreements and how to avoid them.
- Include the petroleum industry as a potential partner in developing renewable energy.
- EPA can assist in multi-agency collaboration, including DOE and BLM.
- Develop community outreach and consumer education programs on renewable energy development and associated costs.
- Harness the methane from landfills

8:15 am State/Federal Regulatory Considerations

Shahid Mahmud: Environmental Engineer, EPA Office of Site Remediation and Technology Innovation
EPA is very supportive and wants to develop on these contaminated properties in NM. We have experience working with developers on superfund sites, not for RE yet, but for many projects. A document is available to you that addresses all the EPA regulatory concerns you may have. Comfort letters can also be written by the EPA to comfort

potential developers about the site, clarify liability, and environmental status, cite precautions for owners and developers, and acknowledge the environmental status of the site. We have developed a lot of tools for developing these properties and we want to help. We can facilitate with permitting, and work with other agencies to try to get permitting. We also are interested in developing a standardized, independent entity to consolidate and work on permitting issues.

Marcy Leavitt: Director, Water and Waste Management Division, New Mexico Environment Department
I am familiar with water and wastewater programs. We have projects that might be applicable to RE on contaminated lands. We have a great breadth of projects that might be applicable. We always encourage early meetings with developers, they can help any project moving along quickly, and allow the ultimate approvals get passed. We can modify permits as well. We want to help.

Bill Brancard: Director, Mining and Minerals Division, New Mexico Energy, Minerals and Natural Resources Department
I'm on the regulatory side, especially the regulation of mines. The NM mining law gives a map to how one might use a former mine as a development site. We deal with surface regulation issues, and other agencies deal with environment issues. The default concept in this law is that the landscape on the site should be returning to the same state it was in before the mine. However, there are provisions for different post-mine land uses, but one still has to abide by the rule of reclamation. We have done many facilities that are used for industrial post-mine land use. We can examine existing development on mine sites and if a developer proves that that infrastructure already in place from the mine will be used, then in some cases they can be kept in place. The caveat is that most of the approves sites we have worked with are ones that don't have significant contamination, and the ones we deal with in the future will, and those will be much more complicated.

Tracy Hughes: General Counsel, New Mexico Environment Department
Developers need to contact the local govt. before they start developing, to assure they abide by zoning laws, and to learn how they will be received in the neighborhood. An RE project typically shouldn't have any liability over issues with contamination as a result of previous development, unless there project adds to the contamination or impedes the reclamation, but this needs to be verified by the govt. A comfort letter can be obtained, or a covenant not to sue, which should satisfy a lender so they will lend money for the project. NM doesn't have CERCLA authorization, so if CERCLA is involved, the EPA needs to offer the comfort letter. Also, private insurance can be obtained to provide extra assurance and comfort for your lender.

Bill Merhege: Deputy State Director, U.S. Bureau of Land Management
The types of land that the BLM could make available are limited in NM, but the types with the most potential are closed landfills and to a lesser extent, abandoned mines. The mines are typically small, in rural areas, and not near communities or load centers, so

they aren't as promising. The most promising sites for development BLM has to offer in NM are abandoned landfills. There are closed landfills ranging in size from 2-40 acres all over the state that could be used for RE projects. The opportunity is there, but the biggest hurdle is the liability for the caps. We can exchange those lands, as long as they go back to the entity that used them originally. The BLM isn't a regulatory agency, we issues some permits, but more often, people get permits from other agencies, and we just verify that they have the correct permits. The folks that regulate us are the public, and they have the opportunity to review any project proposal. The Antiquities Act and the Endangered Species Act are both often in play when developing sites. Sites can also be purchased by communities, or exchanged with companies or other entities, like the state. I mentioned the possibility of PV panels as a cap to landfill to my boss and he gave me the assignment to get a project like that going in the state.

Questions for panel:

For Bill Merhege: What about trenching for high voltage lines in a landfill that's needed for PV installations?

Bill's response: We defer to the state EPA on those types of things

EPA response: The EPA has made rules about caps, and if a cap is disturbed for electrical access and the overall permeability below the trench is equivalent to the original cap, then it could be allowed, at least in other states in which we are involved, it hasn't been a big issue, but NM has the final say.

For Shahid Mahmud: Does the liability for the site lie with the developer or the owner?

Shahid's response: Typically it lies with the owner, because the developer didn't create the contamination, but due diligence needs to be taken, in order to not disturb a cap for example.

For Marcy/Tracy: Solar projects need water, so access to water rights are a big issue in developing solar projects. We use a lot less water than agricultural uses that we often reclaim land from, but we still are received with resistance, what is the stance on that in NM?

Marcy's/Tracy's Response: Water rights are dealt with a separate agency than the environment department. Based on what I know, it is possible to transfer water rights, but there is resistance to transfer water rights from agricultural to industrial and commercial uses, because of the public's perception of the state losing its' agricultural base.

9:15 am Renewable Energy on Tribal Lands

Greg Kaufman: Environmental Scientist, Jemez Pueblo
The tribe is not a gaming tribe and they are hoping that RE could replace gaming as an economic program for the tribe. The solar panels we are purchasing are low maintenance, which is important because there are low labor resources in the pueblo.

David Melton: President/CEO, Sacred Power Corporation
We are trying to install systems on low cost HUD housing on reservations, and are in the process of talking with the authorities about that. Solar carports provide big opportunities for us, and we plan to add plug-in capabilities for electric cars to them. We are also working on off the grid, remote site systems. There are approximately 60,000 Native Americans without electricity and they probably won't ever get on the grid because of their remote locations. We are working on providing them with RE electricity options with PV, or PV hybrids. We also work with telecommunication companies providing remote power units for their sites, as well as water pumping units. We are also conducting training at UNM.

Sandra K. Begay-Campbell: Principal, Technical Staff, Sandia National Laboratories
The tribal energy program is offered through the DOE. We are looking into how we can offer more green collar jobs. There are a lot of reasons that tribal lands are the number one option for RE development sites. RE will likely surpass gaming as the number one tribal industry. There is a great need on tribal lands for basic electrification. Many tribes have conducted feasibility assessments to determine what RE resources are available for them. In the last year only two tribes were awarded deployment grants for hardware in the ground, so many of them are still at the feasibility stage. There are many incentives for working with tribes on RE projects. Ecotourism is also an effective development idea. It is also important to develop and mentor students, young natives. For effective RE projects it's important to create a partnership with an entity that has a tax appetite, because there are many tax incentives to make these projects more appealing. Green tags, and the electrons can be sold and traded on the market, especially for entities like musicians who use a lot of energy for their concerts, in order to offset their energy use.

Questions for the panel:

For panel: can you highlight any important steps, or unique issues on developing RE projects on tribal lands?

Panel's response: It's a necessity to have the NEPA clearance document blessed by the BIA. The BIA is shrinking so their lead-time to have any documents cleared can be very long, because of their shrinking workforce. To get around that, the EPA can be used, which BIA is typically amenable to. Also, tribes are located in remote areas, and that can cause problems, especially in accessing transmission lines and limited to the customers that are on that line, and if they want to buy the project.

Also, the appropriations for the Indian act will help get the financing needed for development projects, but also there is a DOE order for RE portfolio standards.

10:00 am City of Santa Fe Renewable Energy

David Coss: Mayor, City of Santa Fe
We have an energy auditor consultant who has helped us save thousands of dollars in city energy costs. We also were the first city to sign the 2030 challenge, which we are very proud of. We had out own brownfield where the Railrunner park is, which had some really bad contamination, and is now a beautiful park. We also have a complete CNG fleet of city buses. We are working with all the builders and now have very aggressive green building codes. Our new convention center is also LEED certified. We also are implementing a comprehensive recycling program. We are also going to run our wastewater facility from solar power and methane recovery. We are also working on lowering our energy use at our community recreation center. We also passed a low interest loan program for low-income citizens for RE upgrades to their residences.

10:45 am Facilitated Discussion III – Siting Criteria for Solar, Wind, Geothermal, Biomass and Clean Fuels Projects (A Developers Prospective)

Michael Albrecht: Geothermal Project Development Manager, Raser Technologies
Geothermal is a sleeping giant, in its infancy and is ready to blossom. Geothermal installations are relatively small, only 6-7 acres are needed for a 10MW plant, so it uses very small land area. Geothermal energy can come from either blind reservoirs or visible reservoirs. In blind reservoirs, there is no visible surface manifestation, and those are much more risky than visible reservoirs to develop on. Instead of building our company around one geothermal project like many other geothermal companies, Raser is built around a large inventory of geothermal projects, so the company is well insulated and safe. Rapid deployment of our projects enables six-month completion time. Also, with new technology, Raser is able to tap into water that previously was not hot enough for creating energy. Raser can use either air-cooled or water-cooled, depending on the water availability of the site. Three different fluids are used in the process, working fluid, heating fluid and cooling fluid, and none of them mix with each other, so there is no pollution or contamination. Geothermal is a very economical power choice, and the plant operates 24/7, no down time like wind or solar. Exploration costs are roughly $400,000 just to determine if a site is viable.

Thomas R. Mancini: Program Manager, Solar Thermal Technology, Sandia National Labs
Transmission is very critical, and if there were anything to do about transmission right away, that would be paramount. In NM there is a huge resource in solar, but the issue is, how to move the power. Water usage is a key issue, dry cooling is possible, but there is a downside, a sacrifice.

John Brown: President, Nexgen Energy Partner LLC
It is important to understand all the stakeholders' motives, and what people want from the projects. We don't want projects with transactional friction. There are a lot of experts out there that are knowledgeable with these types of projects, like brown to green, and it's important to create partners with those people. Size is important, small is often better, especially because transmission isn't an issue with smaller projects. Community-scale and commercial scale, as opposed to industrial scale wind and solar projects are very viable right now. We are also focusing on projects that are high quality: high quality sites, experts, and customers.

Ed Henderson: Principal, Source Technologies, LLC
The context of a project is important, like commercial, industrial, non-conventional, etc. You have to be prepared to put together a new proposal, like writing a new textbook on the subject. We try to meet any site-specific needs for any project. Gas needs to be looked at and talked about in BTUs, that's an accurate measure of its worth, instead of gallons, or any other measure. The depletion curve is important, how quickly the resource is being used, and how long the resource will be available for use. Measuring and verifying results is important, its how people get paid. Doing an audit is important, because it can save people lots of money. Incremental growth potential is important, and it is important to think about how that can happen, how can that incremental growth be financed. If one project flounders, then the whole industry gets viewed as being more risky, so it affects the whole industry, and people can't get financed, so when you are doing a project, you are doing it not just for yourself, but for the life of the industry.

Greg Nelson: Executive Director, Public Service Company of New Mexico
Cost and intermittency pose the biggest problem from the utility perspective; distance from consumers is also a big concern. Sites that add additional cost and schedule delays and project risks are all problematic. There are many RE projects proposed that PNM is considering from all over the state.

12:00 pm Facilitated Workshop Wrap-Up

Question for EPA: What is the real value to a bank or financier of a comfort letter?

EPA's Response: Banks tell the EPA that it works to comfort them because the level of risk is better understood. It assures them that given the degree of prior analysis there is a level of certainty. The letter lays out the status of a site, and tells what the EPA knows about a site.

Wrap-up:

A challenge to all of us is to think about what tools we have at our disposal, what can we use to help these projects come to fruition. We as experts can act as facilitators on the ground to help. We can also work as educators, to tell people about the language of this specific type of field. What types of partnerships do we have to create to make these things happen?

The State EMNRD is willing and ready to collaborate, and work on best management guidelines, and we are taking steps to do that. We need to try to create a document by June of next year outlining best management guidelines. Even though we were thinking about mine sites as a way to start these brown to green projects, after this workshop, I think that maybe landfill sites are a better place to start, either for PV or methane reclamation. We all need to keep community needs in mind, they need to be involved. The developers, even though they are working hard, they need to engage the community early in the process. EMNRD is well suited to work as project managers for these types of projects. 3 out of 15 of our staff are experienced in mine reclamation, so that expertise could be very useful.

I hear good opportunity on tribal lands, also PV on landfills. Also transmission issues are big and real. We need to be thinking about putting these projects near load centers, as well as creating distributed, small-size projects. One of the issues is that the economics for PV are tough, the incentives are limited, and that presents challenges for the state.

Jesse Atkinson from First Solar: Tax incentives are great, and in some states those work to make us competitive, but in NM we are competing with coal, which is really cheap, and the NM incentives aren't enough to make us competitive. PTC would make our projects very viable, and we really hope that those become available in the future. Environmental permitting is important, and those permits need to be issued quickly, or the project won't be viable. Current agricultural use sites are very usable, because the permitting time is quicker on those sites. Everyone could work on putting processes in place that make developing brownfields quick and simple, because that lowers risk, that make a value-proposition.

NM needs to fix the incentive structure for PV, or else they won't invest here, and that is about transactional efficiency, making those projects easier.

The transmission issue is big, and the state should consider putting together a package to petition the federal govt. for funds to develop their transmission lines to make RE projects on a large-scale more feasible. NEPA reviews are something that the EPA is going to work on; our involvement in those, to make sure that they are done in a timely fashion. If you are developing a project, and need to know what is known about the site, and what studies have been done on that site, contact the EPA, and they can research what studies have been done already, to eliminate redundancy. The opportunity on tribal lands is something that the EPA is very interested in, both as power plants for the tribes, as well as exporting energy off the reservations. Also, we will be contemplating smaller plants, in addition to larger plants. A good thing is, we can guarantee a power purchase agreement because of our RE portfolio standards. We also need to sit down with our partners to figure out when we should be involved in these projects, so we speed things up, instead of slow things down.

Question from audience: In doing an RFP, trough systems, arrays, and geothermal energy are sometimes all grouped together and defined as PV. If we are to all be grouped

together, we would like to all be defined as solar electric, or simply renewables, instead of using PV, which is language that excludes some things.

1:00 pm Workshop ends