Breakthroughs in the Bakken

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BISMARCK-MANDAN: GATEWAY TO THE NORTH DAKOTA OIL PATCH

Do you need an entry point into the North Dakota oil patch? One with commercial and charter air service? You need look no further. The Bismarck Airport offers daily service to Minneapolis-St. Paul, Denver and Chicago. In addition, charter air service directly to the oil patch, whether you need to make a short round-trip in a day, multiple trips around the oil patch or service on a regular basis.

Do you need to deal with the various regulatory agencies and organizations supporting our State's oil and gas industry? The State Capitol in Bismarck is home to the North Dakota Department of Transportation and the Department of Mineral Resources. Statewide industry organizations such as the North Dakota Petroleum Council and the Lignite Energy Council also base their operations from Bismarck-Mandan.

Have a need for professional services from attorneys, engineers, geologists, consultants or others? They're all here, too, along with the ability to train more at one of our four institutions of higher education: the University of Mary, Bismarck State College, United Tribes Technical College and Rasmussen College.

Need a place to deliver freight to the oil patch via rail and truck? Bismarck-Mandan offers easy access to I-94 and US Highway 83, taking you north and west to the heart of the oil patch. Rail service is also readily available in and out of the community with a variety of carriers. And the Bismarck-Mandan Development Association is currently planning future rail-served industrial space.

Or do you want to move your family to North Dakota and take advantage of the many oil and gas-related opportunities, but don't want to live on-site? Consider this about Bismarck-Mandan . . .

- State of the art health care system employing over 7,000 medical professionals who can care for your every medical need. This includes two first-class hospitals and a variety of medical clinics along with a long list of private specialists and practices.
- An exceptional K through 12 school system, offering both public and private options. Post-secondary options range from one-year degrees to PhDs.
- The Bismarck MSA represents one of the safest communities in the nation by the ranking of the US Justice Department, with both property and violent crime rates well below the national average.
- There is a continuing supply of homes in most price ranges and contractors are building new homes on a continuous basis. New single family home and apartment construction is a community priority.
- Recreation of all types abound with numerous golf courses, tennis courts, miles of bike paths and walking paths. If you like fishing and hunting or you want to check out a museum, theatre production or symphony concert, we have all those things as well.
- And the community offers an excellent and ever expanding choice of retail, restaurant and other amenities you're used to in larger cities.

If this all sounds a little bit too good to be true, you are in for a truly great surprise. This is not a fairy tale, it is real and we invite you to call us at the Bismarck-Mandan Development Association to learn more. We want you here whether you're looking for a place for your family or you need to find a place to expand your company in a location that will give you back door access to the activities in the oil patch.

Talk to us, we do have the answers you need to hear. Call us at 701-222-5530, visit us online at www.bmda.org, or email me at rstaiger@bmda.org.

Best regards,
Russell Staiger, President/CEO
Bismarck-Mandan Development Association
400 E. Broadway Ave., Bismarck ND 58501

BISMARCK-MANDAN, NORTH DAKOTA

Bismarck-Mandan, North Dakota, is growing with the state's oil industry . . . professional services, logistics, commercial space, residential neighborhoods and family living.

Whatever your needs – business, employment, housing – consider Bismarck-Mandan and all it has to offer.

- **Convenient location** – Bismarck-Mandan sits at the intersection of US I-94 and US Highway 83, giving it easy access to the oil industry to the west and north.
- **Air service** – daily jet service to Minneapolis-St. Paul and Denver with charter service to western North Dakota.
- **Access to government** – the State Capitol in Bismarck offers direct contact with regulatory agencies and elected officials, as well as the North Dakota Petroleum Council and the Lignite Energy Council.
- **Well-rounded community** – Whether for business or family, Bismarck-Mandan offers available workforce, quality educational institutions, state-of-the-art healthcare, recreational opportunities year-round, and a safe atmosphere to live, work, and raise a family.

Contact the Bismarck-Mandan Development Association to learn more, or visit bmda.org

BISMARCK-MANDAN
DEVELOPMENT ASSOCIATION

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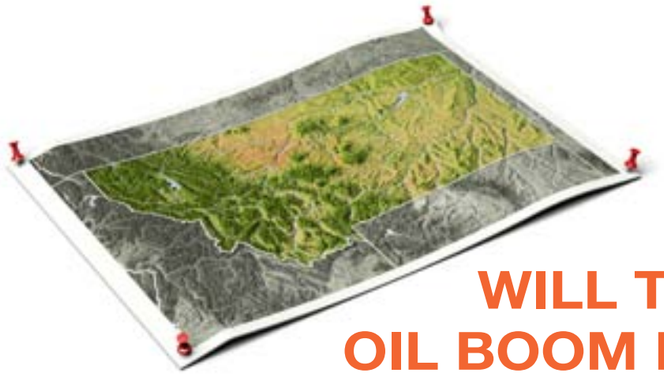

WILL THE OIL BOOM HIT EASTERN MONTANA?
FACT OR FICTION

By Bob van der Valk

Photo courtesy of Dustin Ingersoll

Photo courtesy of Travis W. Cooksey

On May 8, 2012 the Bureau of Land Management auctioned off Federal oil and gas leases on 154 parcels located in four different Eastern Montana counties including Prairie County. The Bakken and Three Forks oil shale formations are centered around Sidney, MT and Williston, ND area with oil production steadily building up in the area.

The Heath formation stretches from Eastern Montana north of the Big Sheep Mountain Range all the way to Lewiston in Central Montana and the oil play promises to be as big as the Bakken and Three Forks oil shale formations. It is shown below from a graph obtained from Sinclair Oil Corp. with a blue line around the circumference from Wolf Point to Lewistown, Montana. The Gammon oil shale formation stretches from Miles City down to the Southeastern corner of Montana.

The first tier players in this play are Great Bear Petroleum LLC and Halliburton (HAL). Great Bear, which is a private LLC, is teaming up with Halliburton for a parallel proof of concept. This relationship could be similar to Halliburton's stake in Central Montana Resources which is already exploring the Heath formation in central Montana. This new Exploration and Production LLC teaming up with the leading frack company in the world will expand exploration in a currently unproven area.

Using the Bakken economics we can get an idea what this strictly Montana oil boom could be worth. A rough estimate of Great Bear's acreage is 500,000 acres. Figuring 1280 acre spacing units yields 390 initial well locations. Additionally, if we estimate an expected ultimate recovery (EUR) from a field of 400,000 barrels of oil per well, total initial EUR of the acreage would be approximately 156 million barrels.

To fully develop the 1280 acre spacing units, at least 4 total wells would be needed at an additional EUR of 400,000 barrels each bringing our total EUR to 624 million barrels.

At $100 oil, the acreage over the life of the field could be worth more than $62 billion.

Other companies with major lease holdings in this region include Conoco Phillips (COP), British Petroleum (BP), Exxon Mobil/XTO (XOM), Chevron (CVX), Eni Petroleum (E), Marathon Oil Corporation (MRO) and Shell (RDS.A), Sinclair Oil (SINCP).

The important thing to remember is that when the Bakken Formation was first assessed by the USGS in 2004 for recoverable reserves, it was a fraction of what the USGS and industry believe is recoverable today. They have another study on the way, which will be completed in about a year showing the true reserves to almost ten times the current amount of 4.5 billion barrels of crude oil.

Most of the current interest for oil drilling is north of the Big Sheep Mountain Range of Prairie County including the BLM oil lease auction as well as private property owners signing up with oil companies direct. ■ Bob van der Valk is a petroleum industry analyst working and living in Terry, Montana. He can be contacted at (406) 853-4251 or e-mail: tridemoil@aol.com

His viewpoints about the petroleum industry are posted on his web page at: http://www.4vqp.com/pages/12/index.htm

The Limits of Wind Power

By Chris Bischof

Demand for electricity is always growing. That growth causes us to consider different ways of producing the power we need. As we know, some forms of producing electricity are more appealing than others. Often, the more appealing forms of energy are those that *appear to cost and pollute less*.

Because many people believe that certain forms of energy production are less polluting, we're often willing to make use of them. One of those alternatives is wind power – but is it better?

In 2010, the wind energy industry added over 5,000 megawatts (MW) of producing capacity, increasing the total production capacity by about 15 percent. Moreover, that increase accounted for more than a quarter of all new electricity-generating capacity in the country. The addition pushed total US wind power-generating capacity over 40,000 MW.

What has this meant for Montana, North Dakota, and South Dakota?

Eleven states obtain more than 5 percent of their electricity from wind – North Dakota and South Dakota are among them. North Dakota produces over 1,450 MW (or 12 percent), and South Dakota produces over 780 MW (slightly more than 8 percent). Montana, with almost 400 MW of wind-generated electricity, has passed 3 percent.

If you're a landowner, you may welcome wind generators. Montana landowners receive annual land lease payments of more than $1 million. In South Dakota the annual land lease payments are well over $2 million, and in North Dakota, the payments have exceeded $4 million.

The state is benefiting too. Montana is collecting annual property tax payments from wind project owners of almost $6 million. Meanwhile, both North Dakota and South Dakota are receiving property taxes of about $4 million from their wind project owners.

Energy Investments and Direct Job Impacts to Montana

Wind Project:	MW:	Capital Investment:	Direct Jobs:
Horseshoe Bend	9	$15 million	21
Diamond Willow	30	$45 million	83
Judith Gap	135	$202.5 million	162
Glacier I & II	210	$550 million	371
Gordon Butte	9.6	apprx. $15 million	est. 22
Spion Kop	40	apprx. $86 million	est. 90
Rim Rock	189	apprx. $320 million	est. 350
Totals:	**622.6**	**$1.233 Billion**	**1099**

And more payments are on the way if developers of wind generation sites achieve their goals. There are a lot of wind projects on the drawing board. In Montana the anticipated projects are estimated to produce over 2,300 MW. For North Dakota the figure is 11,500 MW, and for South Dakota, developers have already sketched out plans for over 30,000 MW of new production capacity.

To further sweeten the pot, there are jobs tied to wind power. Montana estimates the wind industry directly and indirectly employs somewhere between 100 and 500 workers. North Dakota puts its wind energy jobs figure in the range of 3,000-4,000, while South Dakota puts its total between 1,000 and 2,000.

To ensure continued employment and the demand for energy from the wind industry, quotas for electricity generated from renewable sources have been set. In 2005 Montana developed a Renewable Portfolio Standard that sets a timetable by which utilities must produce 15 percent of their sales from renewable resources by 2015. Both North Dakota and South Dakota set their targets at 10 percent, also for 2015.

However, the list of renewable sources includes more than wind power. Others are solar, hydroelectric, biomass, and geothermal.

The push for using renewable energy sources is driven partially by environmental worries. About half of all the electricity generated in the US is fueled by the combustion of coal – a "villain" in a lot of people's minds. Slightly more than 400 coal-fired plants operate in the US, and they face plenty of opposition, including that from the President. The chief complaint is tied to the combustion products the coal plants emit in their exhaust. However, studies show that only about 10 percent of all coal-fired plants are the true culprits. This small group accounts for over 40 percent of harmful gas emissions. Fortunately, coal-burning technology is improving, despite the fierce opposition.

To many, wind power seems to offer an exceptional opportunity to produce electricity while doing no harm to the environment. This belief is less factual than most people realize. The cost of providing wind-generated electricity is not low. Furthermore, demand for electricity sticks close to a well-understood pattern, and the wind is not nearly as predictable.

Production of electricity by burning coal or natural gas has led to a level of efficiency that other forms struggle to match. When it comes to electricity production using renewable resources, each has its limitations – hydropower, for example. There are a finite number of rivers that can be dammed and used to drive turbines. In fact, we are now at a stage when dams are being removed. Our capacity to produce electricity by this method has peaked; there isn't another Hoover Dam in our future.

When it comes to wind, electricity producers have to go where the wind is. However, unlike water (which always flows downhill), the wind, even in the windiest places, is intermittent. Thus, it's not possible to replace conventional baseload power plants with wind generators. And when it comes to obtaining electricity from the wind, wind generators don't produce enough power to cover their costs. If a wind generator is placed in a favorable location, over the course of a year it will produce an amount of energy equal to less than one-third of its maximum capacity. Using the most generous accounting, the actual cost of generating electricity with the wind is almost twice the amount charged to the customer.

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Photo courtesy of Governor Brian Schweitzer's Montana Energy Development

GENERATIONAL OIL BOOMERS

Talk About Life in the Patch

By Ellen M. Feuerhelm

Everything seems to fit naturally when people follow in their father or grandfather's footsteps. Many of the Bakken Booyah! are actually people with connections to the area through a family member that worked the last boom, or even the first boom of the "dirty thirties." A few weeks back, I grabbed my camera, squired yellow pen, and sat at the South 40 Restaurant in Sidney, Montana. There I interviewed Sidney resident Gary Gilligan and his son Gary Gilligan Jr. from Belgrade, MT, James Richie from Colusa, TX, and Corey Donahue and Josh Zuelke from Three Forks, MT (both coworkers of Gary Gilligan Jr.) all about growing up in an oil field family – each one had connections to the area. Gary and Gary Jr. had both hauled water and worked as roustabouts for the oil industry. More recently, Gary Sr. worked as a pumper for the oil companies, checking pumps and driving 200+ miles each day to check the sites. Gary Jr. currently works for Pioneer Engraving in New Town, ND, and carpools to work with his coworkers in order to share expenses and get a little shut-eye going to and from the Bakken. Gary Sr.'s father did the dirt work for building the drilling sites in the area, and his uncle Ronnie Schwindt grinded out oil samples from the tanks to see if it would pass for selling.

James Richie's grandfather worked in the oil field in Dickinson, ND during the first boom of the 1930s; James talks about photos that his family has from that time. Originally from Rapid City, SD, he has driven truck in the oil patch and worked for a coil tubing unit.

Gary Jr., Donahue, and Zuelke state that the worst thing is the monotonous drive back and forth. All three live in "man camps" up in New Town, and work eighty-five hours per week, in rotations of seven days on and seven days off. All talked about their stint as a "worm," or "you know that person is going to be a worm going nowhere." But each stated that they loved their paychecks.

"The only people complaining in the Bakken are the ones not cashing in on money," Donahue said.

The guys all said that there isn't much to do after work in these small towns but eat, shower, and sleep until they can go back home. Zuelke worked as a forest service contractor at the Federal Building and says he likes having seven days off. Throughout the conversation, I felt a little overwhelmed as they discussed their years as bricklayers, electricians, and working in other fields.

The next time you jump into your car to go shopping or to visit with a friend, think about the hours people spent getting oil out of the ground just so you can turn that key. They miss their families, but are following in the footsteps of their family predecessors of people that worked the patch. Reaping the monetary rewards for their hard work to support their families back home, while the money is there for the making. ■

Photo: Gary Jr. and Gary Sr.
To contact Ms. Feuerhelm, send your email to elli_welch@yahoo.com

➤ WIND, continued from page 9

And who picks up the shortfall? Taxpayers. How? Through generous tax credits and grants given to investors. As long as the total percentage of power generated at taxpayer expense remains low, its costliness remains relatively unnoticed. But if the bulk of electricity were generated from wind power, consumers would see a large increase in their utility bills. On top of the huge increase, there'd be paralyzing shortfalls in production during those times when demand is high and the wind is lacking.

If the cost of building, maintaining, and fueling coal-fired and natural gas-fired electricity plants were higher, wind power would look better. But the costs of each alternative are well known and not likely to change in ways that benefit wind power. There is a lot of energy in the wind, but converting the power of the moving wind into mechanical energy and then into electricity is also well understood. There's no great leap of technology that can change the physics in the wind power equation. On the other hand, the combustion process has seen substantial improvements, and huge gains have been made in the area of pollution control. More improvements lie ahead.

One can conclude that, at best, we can use wind power to supplement electricity production, but we cannot expect it to replace conventional power production, save money, or reduce harmful emissions by more than a token percentage. ■

NEW HOUSING OPTIONS IN THE BAKKEN

Entering a New Phase of Responsible Housing Development

By Michael Lombardi and Charles Bruni
Managing Partners, Strategic Housing Concepts LLC

At the recent Bakken Oil Conference held in Bismarck, ND, three constraints to sustainable operations and expansion in the Bakken were noted: 1. New EPA regulations; 2. Limitations of current infrastructure to move oil – pipelines; and 3. Lack of available housing. At Strategic Housing Concepts (SHC), we are focused on solving the housing needs created by the Bakken oil boom.

There are typically three phases of development response during an economic boom like that in the Bakken. The first phase is "emergency response housing." During this phase, the idea is to get as much housing developed in as little time as possible to house the available workforce. In this phase of the housing cycle, the accommodations are largely "man camps" and quickly developed (and frequently underdeveloped) trailer parks. The quickly-constructed nature of Phase I housing is generally haphazard – without amenities – and is a drain on local community resources.

The second phase of housing response is "livable housing." During this phase, negative community and workforce reaction to Phase I housing forces developers to respond with more thoughtful housing options that support the longer-term needs of oil field employees, enhance rather than detract from a community, and are generally acceptable as mid-to long-term housing solutions.

The third phase of housing development is the creation of larger master planned communities – this includes a mix of housing options with multi-family and single family units available at multiple price points. These communities are built to be permanent neighborhoods. This is the typical state of most mature communities.

At SHC, we believe the long-term Bakken oil boom requires a shift from Phase I housing, towards more livable Phase II homes. As such, our housing solutions provide a more livable alternative to "man camps" and poorly developed trailer parks. This is a critical phase for the oil companies, their employees, and the communities. It is a time when communities and the oil field workforce are seeking acceptable and sustainable solutions that will enhance the employee experience – so as to reduce turnover – while simultaneously proving beneficial to local communities.

A defining characteristic of the "livable housing" phase is that the focus turns from quantity to quality. The challenge for the Bakken is that the area is under such positive economic pressure that both quantity and quality are sorely needed. Factors that define quality can be debated. Some say a bed, meal service, TV, and a dormitory-style restroom are all that is needed – the oilmen are deemed "much too tired" to notice their surroundings. We disagree. Our findings are not based on a formal study, but on numerous conversations with oil field workers.

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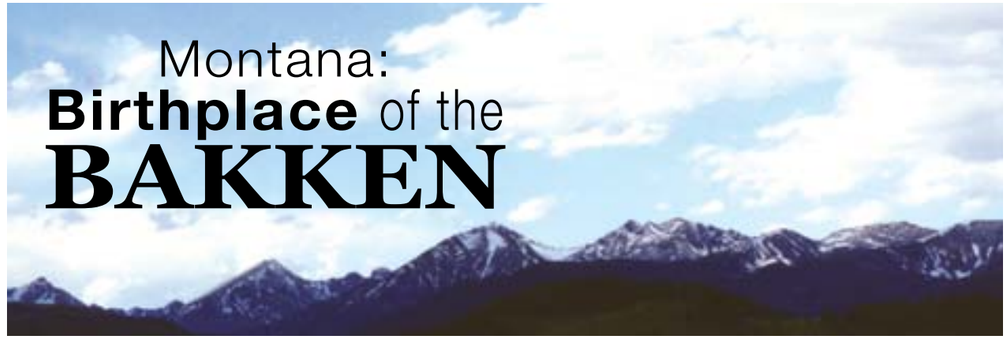
Simply put, the "man camp" environment is not conducive to positive employee morale over the long haul. Yes, they get three square meals a day, but the sterile institutional feel and cramped depersonalized living arrangements will wear down any employee over time. Additionally, employees are kept apart from their families for long periods of time. While this may work for 9 to 12 months, it starts to become a problem, leading to substantial workforce turnover for oil field companies. Finally, communities don't want endless rows of faceless housing destroying their landscapes. This is clearly evidenced by the moratoriums and deadlines to remove "man camps."

Alternative livable-housing solutions addressing these problems come in many forms. What is consistent is the focus on the workforce, their families, and local communities. Enhancements to housing developments include landscaping, better infrastructure, aggregate or asphalt roads and walkways, open areas and common areas – in all, homes that are welcoming for family visits or longer-term stays – are a start. SHC focuses on more personalized, non-sterile living areas, a sense of community, and developing housing into which an oil field worker would want to bring his family. These are key elements of a successful development plan. These higher-quality housing developments – despite the added cost of "livability features" – can still be provided at a lower price point than expensive "man camps." SHC can provide these high quality accommodations quickly, and in a manner that serves the needs of oil companies and local communities.

At SHC, we are focused on programs that support the Bakken workforce. We attempt to put ourselves in the shoes of the men in the field, and develop quality housing to suit their needs. Some of the features SHC provides include a range of housing unit options – from more mobile custom-built trailers near the frontline operations, to mobile homes in landscaped parks, and single family housing units nearer the larger towns or cities. Our housing solutions include relocation clauses in our mobile trailer products, so that workers can "move their trailer" with them as they relocate to different oil fields. We offer lease-to-own options so that at the end of the lease term, the oil servicing company or employee can purchase their trailer for personal use. Most important may be our new "dual lease" programs wherein we supply a worker's family with leased Phase III-type housing in a larger, more supportive community like Bismarck, while providing the worker with "front line" housing near their designated worksite. We believe combination housing like this will bring families to the Bakken and keep experienced workers here, reducing turnover for the oil companies. This leasing program can also include build-to-suit product designed to meet the specific needs of an oil or oil service company.

Ideas like these and others will become more common in the "livable phase" of housing development around the Bakken. We don't have a monopoly on new ideas and are eager to hear from oil companies and their employees regarding what they would most like to see in future developments. Our goals and the goals of the other successful developers in this new phase of Bakken housing will be built around a more responsible approach and higher quality housing options focused on client needs, as well as being a source of pride for communities affected by this rapid growth. ■

Charles Bruni is a Managing Partner with Strategic Housing Concepts. Michael Lombardi is Managing Partner and President of Strategic Housing Concepts. Please contact them with your specific questions by telephone at (310) 432-6868 or email mlombardi@strategichousingconcepts.com, cbruni@strategichousingconcepts.com



Montana: **Birthplace** of the **BAKKEN**

Evan Barrett,
Chief Business Development Officer
Governor's Office of Economic Development
State of Montana

The Bakken formation was first tapped in eastern Montana in 1951. Due to the geologic structure of the formation, conventional extraction methods at the time did not provide enough return on investment to grant full scale development. It wasn't until horizontal drilling and fracturing technology was employed in Montana's Elm Coulee that the massive potential of the Bakken became clear.

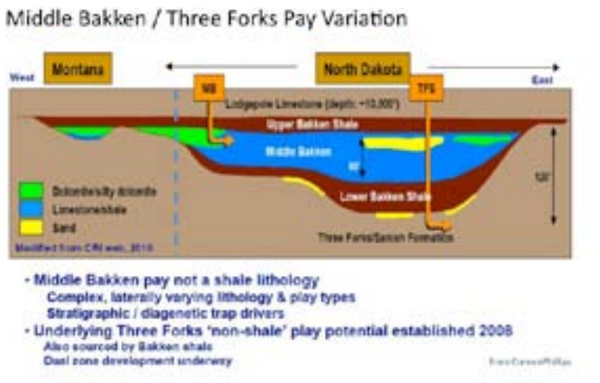
Continental Resources' Harold Hamm played a major role in the early development of the Bakken in Montana. "...The business-friendly environment, that's why we mapped and started here," said Hamm at a conference in Billings this spring. Once the potential of the resource in Elm Coulee had been unlocked, other developers flocked to the region. Elm Coulee leases in Richland County, MT were rapidly leased up, and Montana saw the largest increase in oil production in decades. The Bakken was born.

The fact is North Dakota holds the lion's share of Bakken formation. With advanced technology geologists found the sweet spot east of Williston, ND, where the reservoir is thicker and under greater natural pressure than in Montana.

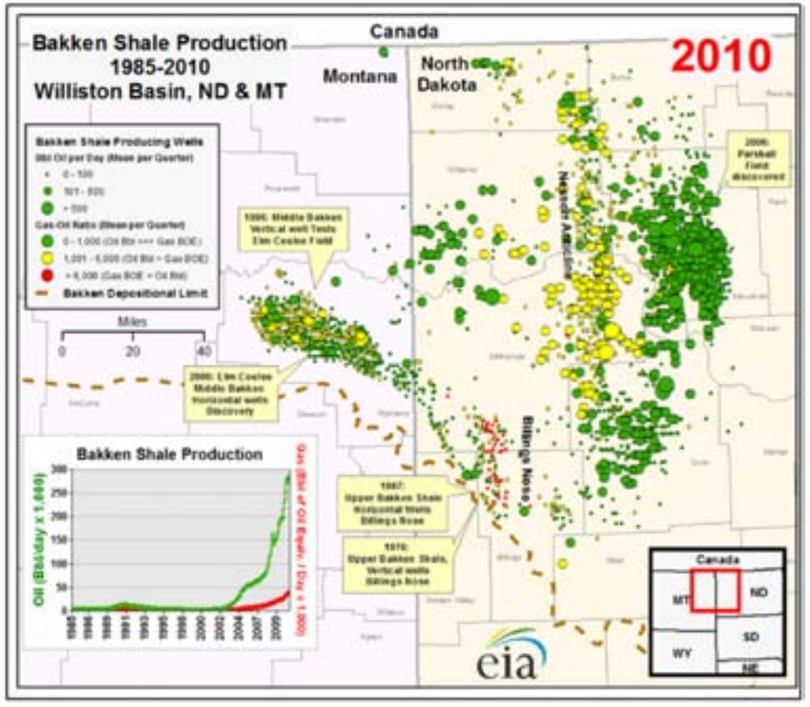
The industry drills first where it expects a well to have the highest production early on, delivering a rapid return on this $7-10 million dollar investment. Wells in the Elm Coulee field in Montana were some of the first big producers, and the field has been 100% leased and under full production for years.

Other wells in Montana maintain strong production levels, but due to the geology of the Bakken they do not produce in the short-term like wells to the east. Montana's tax and regulatory policies, however, tend to attract development in spite of geology. Rob Roosa of Brigham Energy has praised Montana's business climate. "They have a good operating environment," he said. "It takes an oil and gas company to determine what's economically feasible, and they have to figure out the right technology to use. Throughout the basin, they're completing wells differently."

Montana is currently home to the only oil and gas tax holiday in the Bakken play. Extraction taxes are only 0.5% in the first 18 months of production, giving producers a great opportunity to recoup their capital investment. Montana's post-holiday rate is also the most competitive in the region, a full 40% below that of North Dakota over the average life of a well.



Montana Governor Brian Schweitzer recently defended the state's regulatory environment from an overreaching EPA. Montana allows a producer 60 days of drilling/production before its Department of Environmental Quality requires an air quality permit, whereas the EPA wanted this permit to be issued before any drilling. Governor Schweitzer's administration argued that the current policy allows developers to know what to expect from a well's production and what the permit needs to address, greatly expediting overall permitting.



The production trend in the Bakken has shifted since 2007 due to increased exploration. The flurry of industry competition has created quite a boom, but this is a massive resource with a long term outlook. Multiple industry experts believe this play will last over twenty years, and maybe even forty. As the sweet spot of the formation begins to play out, more rigs will again move westward into Montana fields. Already this movement is evident, and the state's rig count is expected to at least quadruple in 2012.

This long term view has spurred Governor Schweitzer to seize an opportunity to move Bakken oil via pipeline to the largest refinery hub and crude oil marketplace in the world. When TransCanada announced plans to build the Keystone XL pipeline through the state to carry Alberta crude oil to refineries in the Gulf of Mexico, the governor began negotiations to allow Bakken crude into the pipeline via an onramp in Baker, MT. The result is the $140 million Bakken Marketlink project, which will move up to 100,000 barrels per day of Bakken crude, enabling producers to receive full market value.

Governor Schweitzer has walked the walk with respect to responsible oil and gas development. He has overseen more oil and gas production during his tenure than the past two administrations combined, a twelve-year time frame. He has strongly advocated not only for Montana's oil and gas resources, but for all of the abundant energy resources in the state. His administration has demanded increased funding for higher education at historical rates, from Montana's Colleges of Technology to its top universities, including Montana Tech, one of only seventeen four year colleges in the nation to offer a degree in petroleum engineering.

Montana's resources in the Bakken and across the Treasure State are just that. This treasure will play a significant role in the nation's journey to energy independence. Leadership like that of Governor Schweitzer will be indispensible in Montana and elsewhere, if we are to sustain ourselves into the future. We need strong advocates with the vision to spur and maintain responsible development of our resources. ■

ENTREPRENEURS OF THE PRAIRIE

"INNOVATION MEETS THE WILD WEST"


Photo courtesy of Dustin Ingersoll

May 21, 2012 – Fargo, North Dakota. The tension is high as 20 finalists of the Innovate ND program vie for a chance to win the Idea Champion and individual category awards. Eight months of grueling hard work and preparation have gone into this moment. Dr. Jeff Stamp, creator of Baked! Lays® Potato Chips, is keenly aware of the electricity in the air as he travels around the country teaching participants in contests just like this. Many ideas and successful companies were first developed in entrepreneurial programs across the U.S. and Canada.

250 miles west, over 4,000 participants are streaming into Bismarck, ND for the Williston Basin Petroleum Conference – a highly-anticipated, 3-day event electric with new ideas, political policies, infrastructure, and information surrounding the boom of the Bakken. The Civic Center in Bismarck is packed inside and out for the numerous meetings and exhibits that make up this event.

You might ask, "What do these simultaneous ND events have in common?" The answer is: "Innovation." What is innovation and what drives inventors, entrepreneurs, and companies to create new products, ideas, and ventures? Or more simply put: how can one improve existing processes and methods of doing business, while improving safety for employees, the public, and the environment? Is innovation about timing, or is it about creating something that fulfills an unmet need? Harvey Reese, renowned author and creator of over 100 new products said, "You don't have to invent the wheel, just find a problem in an industry you know and solve it."

"Three rules of work: Out of clutter, find simplicity; from discord, find harmony; in the middle of difficulty lies opportunity." – Albert Einstein

With Einstein's remarks in mind, if difficulty can spark incredible ideas, how do you go about it? Maybe we should take a lesson from children. After all, have you ever noticed how easy it is for a child to learn something new or master the newest electronic device, remote control, or video game? Is this because they keep experimenting until they get it right? Or don't they fear failure? Whatever the reason, they try and try again until they've master the challenge. And so we must persist, bearing in mind Thomas Edison's words: "I have not failed 1,000 times. I have successfully discovered 1,000 ways to not make a light bulb."

It is said that Edison didn't invent the light bulb – it was patented some 50 years earlier. Even then, there were 22 other inventors working on their own versions of the light bulb, just as Edison perfected his own. But what Edison did was figure out how to actually make it work – the true definition of "innovation and tenacity."

There are two major industries in the Bakken oil region, which includes Montana, North Dakota, and Saskatchewan: agriculture and oil. But there are other industries that subtly provide the services to help everything work in harmony.

➤ continued

➤ ENTREPRENEURS, continued from pg 19

So what are the problems that these industries face, and how might they be solved?

Agriculture is embracing new technologies on a scale that is unprecedented. But with these changes in technology, problems arise including missed GPS signals, software failures, problems with positioning, and an aging population of owners and workers. Because of the wages paid in the Bakken oil fields, labor is a huge problem for the agricultural industry. This and a plethora of other problems plague a valuable industry in North Dakota and beyond. Heavy Equipment and trucks are used to build infrastructure including roads, housing, RV pads, etc. And do they have problems that need to be solved? Absolutely.

Oil companies are facing major issues in their respective states and with the EPA, in regards to hydraulic fracturing. Heavy traffic on roads is another issue that is fiercely debated. What other problems can be solved on the rigs, themselves, to improve efficiency and safety? Are there problems with the transportation of materials and water? Do they have positioning problems when loading and unloading products, and concerning the spillage that accompanies them?

So how can we solve these problems and many others on an ongoing basis? All are connected to the biggest problem of all faced by entrepreneurs, inventors, and creators – money. To overcome this hurdle, strategic partnerships need to be made between companies with problems and those with solutions. My 81 year-old mother has an age-old saying: "With enough money, you can get sugar blown up your butt." Aside from being funny, it's quite a profound statement when you stop and think about it.

Growing pains have long been associated with boom towns

and the western frontier. And here we stand yet again, watching the folks in this territory attempt to learn from past mistakes and garner ways to bring newer and better solutions to the market. As we sow our ideas, some will take root, and some will grow fruit.

For more information on the Innovate ND program and announcement of the winners, please read "One of Our Own Wins at Innovate North Dakota" on our blog at http://bakkenoilbiz.com/blog. ■

Larry M. Mosbrucker is the founder of LaurusTech Industries, a technology co. and the developer of "StopSensor," and numerous other devices for positioning trucks and heavy equipment, which are in development. "StopSensor" is the 2012 Innovate ND Idea Champion and Value-Added Ag and Advanced Manufacturing category winner. Mr. Mosbrucker has worked in the coal, power plant, pipeline, construction, and heavy equipment industries. He is a lifelong farmer and rancher, and currently works in advertising for the Bakken Oil Business Journal. He can be reached by email at larry@bakkenoilbiz.com, by phone at (701) 425-2774, or by visiting www.stopsensor.com.

Frac Sand Processing Technology Offered In a Unique Portable System

An industry first, a portable frac sand plant has recently been produced and introduced to the hydraulic fracturing and mining industries. CEMCO Inc., a leader in the design and manufacturing of material reduction equipment, is aggressively producing the portable McLanahan/CEMCO frac sand plant for oil and natural gas drilling.

"The idea behind the portable frac sand plant is to provide an economical, efficient means to produce sized frac sand for use in oil and natural gas drilling applications," explained Neil Hise, President of CEMCO Inc. "The portability of the plant makes it easily transportable from one deposit site to the next, making it useful at multiple locations."

The McLanahan/CEMCO Portable Frac Sand Plant was created in response to the growing demand for highly specialized frac sand. This model features proven McLanahan design and technology in a CEMCO portable configuration that's easy to set up, take down, and transport. Only two or three operators are needed to assemble and disassemble, and setup takes less than eight hours. Additionally, the plant is highway legal and meets all State DOT requirements for transport.

The McLanahan/CEMCO design of the portable frac sand plant is based on McLanahan's Hydrosizer™, an essential plant component able to make the discrete cuts necessary to meet frac sand requirements. Sand enters the Hydrosizer™ from the top, while a column of fresh, clean water pushes upward from the bottom of the machine. The water moves at such a rate that only particles of -70 are carried up and over the unit, while coarser materials drop to the bottom of the Hydrosizer™. This separation is key to the process, as specially-sized particles are considered "true frac sand."

McLanahan/CEMCO's specialized, self-erecting portable frac sand plant is designed for high-volume production, offering an average output of 150 TPH, and is built for continuous-duty, 24/7 operation. From the initial feed, material first reports to a sump which pumps the sand and added water up to a cyclone. The cyclone is mounted to the self-erecting Hydrosizer™, which separates sand of +70 mesh and transports it to a system of vibrating dewatering screens. Screens dewater the sand and convert it to a stackable, removable material. Meanwhile, the -70 mesh sand is recycled through another system of cyclones, which again separate out the +70 mesh, guiding it through the dewatering screens and converting it to a stackable material. The entire system ensures all usable frac sand is processed and separated into the two sizes, with minimal material waste.

Although highly advanced in engineering and design, the plant is easy to operate. One touchscreen control panel regulates and determines the operation and characteristic of the entire plant, with a central power distribution panel to control all the electric motors and pumps.

The standard plant design features two units on separate chassis, enabling it to stay within the legal transportable height of 13.5', and meet all DOT requirements with just an overwidth permit needed for the Lites-Out™ chassis. Setup sizes of each unit are as follows: 11.5' wide by 44' long by 30' high, and 8.5' wide by 50' long by 12.5' high, when erected. The two units connect with just four hoses, creating one complete, integrated plant. The third unit piece is a skid-mounted feed sump.

"This mobile unit allows for high volume production without the need to own multiple stationary plants or obtain building permits," said Hise. "As an added bonus, each unit can be fully-customized to suit each customer's specifications." ■

For more information, contact: CEMCO Inc. (505) 864-1200, sales@cemcoturbo.com or visit www.cemcoturbo.

THE ARCHAEOLOGICAL PORTION OF THE PERMITTING PROCESS

Christina Grimsrud Burns, M.S., RPA
Vice-President/Archaeologist/Project Manager

During the early morning in the Badlands, Beaver Creek Archaeology is hard at work hiking through draws and across ridges, ensuring that no cultural resources are in the way of the project on which they are working. Wade Burns, founder of Beaver Creek Archaeology, says: "As a cultural resource consulting firm, we are morally, ethically, and professionally bound to protect significant archaeological and historic sites. We are hired for our expertise in cultural resources, and we owe it to our clients to best advise them on how to handle potential archaeological and historic sites." The archaeologist's job is to provide the client and agency with recommendations based on the findings during what is called a "cultural resource inventory." Based on these recommendations, the overseeing agency will provide a final determination on the status of the project.

The company was created to fill what Burns describes as a "void" in the archaeological portion of the permitting process. "There are many archaeological companies out there," he says, "but few that focus on client relations." He worked for a few companies before starting his own, and noted that efficiency, communication, and technology were lacking within the companies where he had worked. The process from receiving project information to delivering the final product seemed much more cumbersome than it needed to be. "We do a lot of fieldwork, but the bottleneck is usually found within the office before and after the fieldwork is done," Burns says. "Before we go into the field, maps have to be created, searches for known archaeological and historic sites needs to be done, and authorization from federal agencies needs to be obtained before we step foot in the field. When the field work is done, a lot of field data (such as GPS points, photos, and field notes) is processed at the office before we can even start writing a report." Burns streamlined the process by continuously updating both software and hardware. "It is amazing how much more efficient it is when everyone in the company is able to access pertinent information about a project and share that information with each other!"

"Clients have asked us to provide them with services in other states, and due to increased workloads in both Montana and Colorado, we are currently looking into opening offices in both locations," Burns says. Bismarck/Mandan is a fairly centralized place for Beaver Creek Archaeology to be located since they also do a lot of work in the eastern part of North Dakota, which is not related to the oil industry. "But with the increased workload in the western part of North Dakota and eastern part of Montana, opening a field office in that area is inevitable, granted we can find available space." ■

An Innovative Solution FOR OIL & GAS WASTEWATER

A water management technology that cut its teeth on natural gas wells in the Woodford and Fayetteville shale plays can be equally effective on liquid plays such as those found here on the Bakken, says Ecosphere Technologies Inc., a water engineering, technology licensing and environmental services company based in Florida.

Current economic and environmental pressures are driving greater awareness of the urgent need for intelligent resource conservation. Through invention and application of its innovative technologies, Ecosphere is helping organizations improve their water treatment practices so they can meet both production goals and environmental requirements successfully.

Ecosphere has developed, patented and fully commercialized an advanced oxidation water treatment process, called Ozonix™, that allows operators to r eplace the liquid chemical biocides and scale inhibitors typically used on the front end of hydraulic fracturing operations and then re-use 100% of the flowback and produced waters on the back end. As a result, Ecosphere's Ozonix™ technology is helping operators save millions of gallons of this valuable resource, while eliminating the need to truck wastewater to deep injection wells for disposal.

Ecosphere's Patented Ozonix™ Technology Used on 500+ Oil and Gas Wells

Since 2008, Ecosphere has been operating this liquid chemical-free water treatment and water recycling technology for major oil and gas companies such as Newfield Exploration in the Woodford shale and Southwestern Energy in the Fayetteville shale. To date, Ecosphere and its energy subsidiary, Ecosphere Energy Services, have treated more than 1 billion gallons of water on nearly 500 oil and gas wells around the United States.

Ecosphere's latest product, the Ozonix™ EF80, is a mobile water treatment system housed in a 53-ft trailer that goes from well site to well site and processes up to 80 barrels of water per minute OR approximately 3,360 gallons per minute – the real-time flow rate of a fracturing operation. The system is currently available to U.S. onshore oil and gas operators through Ecosphere's sub-licensee, Hydrozonix LLC. Hydrozonix has most recently deployed the technology in the Permian Basin and Eagle Ford shale plays.

Ozonix™ is a patented ozone-based advanced oxidation process that treats industrial wastewaters without the use of liquid chemicals. Ozonix™ oxidizes heavy metals and eliminates highly resistant bacteria, biofilms and the food source for microorganisms. The Ozonix™ process does this by combining ozone with proprietary hydrodynamic cavitation, acoustic cavitation, and electro-oxidation technologies.

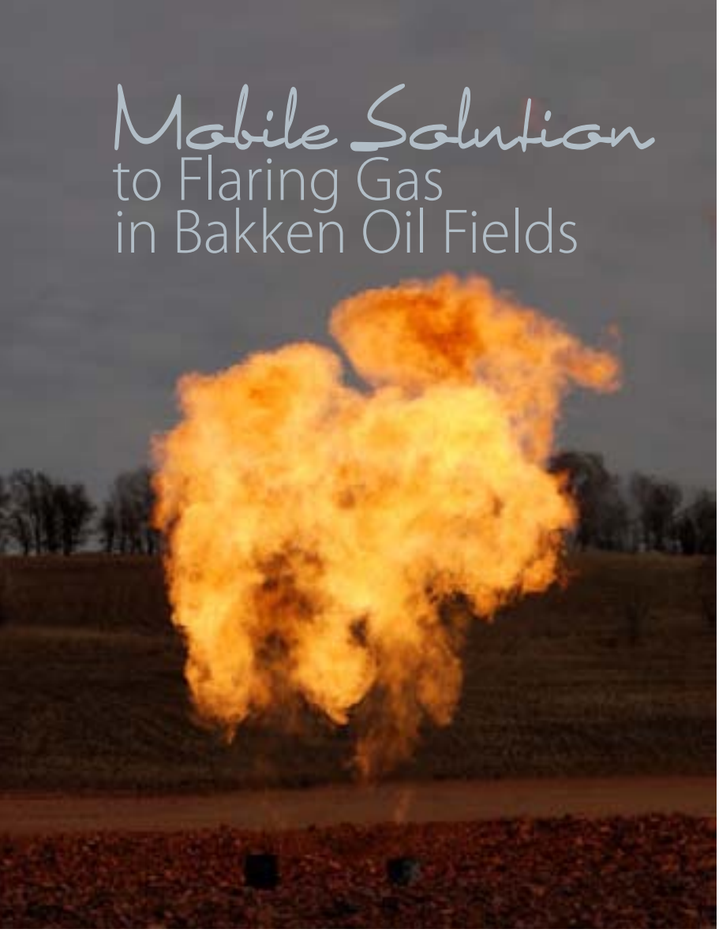
In March, the Company and its sub-licensee Hydrozonix signed a letter of commitment with the Blackfeet Nation to work with oil and gas companies to provide the Ozonix™ process to treat waters used in the production of oil and gas on the Tribe's 1.5 million acre reservation, which sits on top of the western reaches of the prolific Bakken shale.

Several major oil and gas companies have all secured mineral rights from the Blackfeet Tribe and are actively drilling vertical and horizontal wells on the reservation to pursue the Southern Alberta Basin, which includes the Bakken, Three Forks, Nisku and Lodgepole formations. The Devonian-Mississippian Bakken shale on the Blackfeet reservation is a widespread, organic-rich marine source rock that has been a known producer in the Williston Basin.

Customers are seeing the benefits of deploying Ecosphere's Ozonix™ technology first hand, which include:

- Eliminating costly biocides and scale inhibitors typically used for bacteria and corrosion control
- Oxidizing contaminates, killing bacteria and completely destroying bacteria cell walls on-the-fly
- Preserving vital, natural water resources and reducing the associated costs of fresh water acquisition
- Providing rapid on-site water reclamation
- Eliminating the costs associated with waste separation, transportation and disposal
- Providing high-volume water treatment capabilities
- Offering minimal mobilization and demobilization arrangements
- Eliminating hazardous waste byproducts and residual pollutants
- Minimizing carbon footprints

With a decade of focused research, development of patented technologies, and successful large-scale water projects completed, Ecosphere is focused on providing energy exploration and production companies with a cost-effective solution to recycle millions of gallons of wastewater each year, mitigating regulatory risk and improving the economics of each well, while safely developing our nation's energy reserves, and improving energy security. ■



Mobile Solution to Flaring Gas in Bakken Oil Fields

By Mark Lambrecht, Executive Director
Western Environmental Trade Association

A group of Montanans recently started up a business that provides an alternative to flaring gas for production wells in the Bakken fields, and creates an additional revenue stream for producers. "G2G (Gas to Green) Solutions," based in Billings, MT, offers a service to producers in the Bakken by providing mobile units that can capture and store natural gas liquids (NGLs) that would otherwise be flared from producing wells. G2G Solutions works with producers looking to minimize waste and maximize revenue streams.

Co-founder, Brian Cebull of Billings, MT, stated that G2G offers a unique solution that is "based on our client's specific needs and designed to handle the variability of oil well production." G2G's other co-founder, Mark C. Peterson of Helena, MT, added, "Different oil wells produce different amounts of natural gas and different flow rates. Volumes can surge at any time, so we had to develop a technology that could handle that variability. We found a basic NGL-capture technology that has been around since the 1970s, and is modified to be variable, portable, and scalable to meet a variety of client needs."

Here's how the technology works: Each portable G2G unit is connected to a producing well, and the natural gas that would otherwise be flared is routed through the G2G system, where a majority of the NGLs are condensed into liquid and sent to a large, pressurized storage tank. NGL production rates vary, but are typically on the order of 3 to 7 gallons of y-grade NGLs per MCF treated, depending on the flare gas composition. The technology also reduces carbon emissions by up to 50 percent and total flare volumes by up to 25 percent. Cebull states, "G2G focuses on capturing NGLs, which are the most valuable portion of the flare gas stream, providing both economic value and environmental value to our clients." Peterson adds, "G2G tanks are the largest NGL storage tanks you can put on wheels. It can take 2 to 15 days to fill our 18,000 gallon tank, depending on the production of the well and the gas composition. This requires us to be focused on the specific needs of our clients and their wells." Peterson advised that G2G Solutions is not the only company working in the Williston Basin to address emissions from flaring.

Cebull said Bakken producers have been receptive to working with G2G Solutions because "They recognize this creates a win-win situation. Companies can minimize the environmental impacts of their operations while producing a useable product and additional revenue stream." G2G doesn't take ownership of the NGLs they extract from the wells, but rather captures, stores, and provides a means of transporting them for other uses. The well producer retains ownership of the NGL stream and is responsible for moving it to market.

The long-term prospects for this technology and service look positive. Despite major capital investments and efforts, pipeline construction in the Williston Basin lags far behind well production, creating a need for a service such as this to capture NGLs for reuse. The federal Environmental Protection Agency (EPA) may also require emissions control at oil wells sometime in the future. The EPA was set to propose regulations requiring capturing of emissions from wells, but reached an agreement with industry groups to delay the requirements until 2015, to allow for more time for technologies to emerge and mature. ■

Mark Lambrecht is Executive Director of the Western Environmental Trade Association (WETA) in Helena, MT. WETA advocates for the responsible development of natural resources and reasonable environmental regulation on behalf of its natural resource industry and trade union members. For more information about WETA, visit www.weta-montana.org or call (406) 443-5541.

For more information about G2G Solutions, visit http://www.g2g-solutions.com or call Brian Cebull at (406)867-6700.

THE PRICE OF GASOLINE

By Inger Koppenhaver

Gas prices always seem to be a subject of conversation once the mercury starts rising in the summer. Whether you're travelling for business or pleasure, you're certain to keep an eye on the pump as the wheel spins faster and faster this time of year.

Residents in the top five states spending the largest percentage of their income on gasoline by the end of 2010 were: 1- MT, 2-MS, 3-LA, 4-SC, and 5-AR according to the Oil Price Information Service (OPIS). Montana weighed in at a whopping 12.74% of a household's income spent on fuel. The top five states that spent the least percentage of their income on gasoline were: 1-NY, 2-MD, 3-MA, 4-NV and 5-IL. New York households spent only 4.71% of their monthly income on fuel. While there are some obvious differences in lifestyles when comparing the high percentages in Montana versus the low one in New York, the basic concept behind this data is that Americans are losing a large chunk of their household budgets to putting gasoline into their tanks.

THE MYSTERY OF WHY GASOLINE PRICES FLUCTUATE

When prices spike back over $4 per gallon at the pump, some feel woozy, others complain to any who will listen, and still others will try to blame it on the owner of the gas station, the big oil companies or even the President himself. Who really is to blame? And where do those high prices actually come from?

The U.S. Department of Energy (DOE) Energy Information Administration (EIA) is a great source of information for those interested in learning more or tracking changes in our gasoline prices. (Weekly updates are downloaded on their website.) According to EIA, "The single biggest factor in the price of gasoline is the cost of the crude oil from which it is made. In recent years, the world's appetite for gasoline and diesel fuel grew so quickly that suppliers of these fuels had a difficult time keeping up with demand. This demand growth is a key reason why prices of both crude oil and gasoline reached record levels in mid-2008."

Prices mainly fluctuate due to the supply and demand principle, which can also apply during times of natural disasters, refinery fires, wars or rumors of war and other interruptions in shipping of this valuable product to its final destination: the retail pump at your favorite gas station.

2008 was the first summer since the gas rationing days of the early 1970s that people started to restrict their travel in favor of "staycations". The term "staycation" refers to taking time off from your work week, just as you would in a regular vacation, but you opt to stay home and find things to do locally or work around the house. This phrase started being used more frequently as people lacked the monetary ability to travel due to the high gas prices reaching almost $5 per gallon in July 2008. By 2009, this term had become so popular that it had been added to the Merriam-Webster's Collegiate Dictionary.

WHERE DOES THE MONEY GO?

Here is where the money goes when consumers pay for a gallon of gas:

- Tax* - 11%...$.039
- Distribution/Marketing - 5%...$.018
- Refining - 12%...$0.43
- Crude Oil - 72%...$2.58

RETAIL AVERAGE PRICE, FEB 2012 WAS $3.58/GALLON

* Taxes vary by State. The federal tax on gasoline is 18.4 cents per gallon. On top of that, there are state taxes and, depending on where you live, local gasoline and/or sales taxes, too.

Inger Koppenhaver is a published author who also owns a 50's style café in a small town in Eastern Montana. Inger, her husband and four kids love to pile in the car and take road trips every chance they get! Her favorite journeys include finding the fun activities and historical stories across the great state of Montana.

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