

ENERGY DEVELOPMENT POWER POINT

*First Slide—Much of this info came from other agencies, especially the State Geologist's Office and the Oil and Gas Commission. Many of these slides are from the State Geologist's office. I want to present an overall review of the current energy development picture in Wyoming, where it is going, and a state-wide summary of effects on fish/wildlife and our agency.

Let's quickly preface this with a broader picture of what is driving the nation's energy situation.

* Slide—In the past, energy supply has outpaced demand, and prices fluctuated for reasons other than supply. Because prices could fluctuate, energy booms in the past were temporary. Now, demand is outpacing supply, with the result that prices and development will stay high. **We will not see the boom/bust fluctuations of the past and the boom we are in now will last into the foreseeable future.**

* Slide—The two biggest reasons for the current demand are China and India. They are large emerging nations that are experiencing tremendous economic growth, and are creating a huge demand and competition for energy, and will continue to do so well into the future.

* Slide—How does Wyoming fit into this picture? In a nutshell, there are unstable world politics and dwindling supplies elsewhere, while Wyoming has significant domestic energy reserves. **These factors increase the focus on development in Wyoming.**

* Slide—This table shows energy production in terms of Btu's. Notice that Wyoming is first among states in total Btu production, because we have all three of the major energy sources (oil, coal, and natural gas). Notice also that we use less of it in-state than any other state, meaning we export more of it to others. Compare us with Texas that produces almost as much as we do, but uses more than it produces, making it a net importer of energy. Because of our low population size, **we will increasingly be relied upon in the future to produce energy for others.**

* Slide—Energy is also Wyoming's main economic engine. For the next 30 years, from a state economic standpoint, **this will increasingly be the case.** This slide demonstrates the predicted future economic gains expected from energy. It also speaks indirectly to the level of effects on Wyoming's landscape. Oil production will increase slightly, in large part from enhanced recovery. **Oil's impacts are already significant but not expected to be much above recent levels (unless a major find occurs, or oil shale becomes feasible).**

Coal will increase a bit more.

* Slide—coal production, from where we are now, will see a short-term significant increase over the next 10 years, then level off. Most coal production will be from the

Powder River Basin. Coal mining is a severe land disturbance, but it is concentrated in area and it is well regulated through the Environmental Quality Act by the state DEQ. It's also likely that mothballed uranium mines will reopen and new uranium mines will be developed.

More wind generators will be built as well.

Plus a whole lot of infrastructure for all of these developments including roads, pipelines, transmission lines, not to mention expanding urban areas and rural subdivisions to house new workers and service providers.

Much of this development will impact important wildlife habitats or affect sensitive wildlife species and maintaining wildlife populations comparable to what we have today will be a major challenge.

* Slide—We will obviously have to deal with wildlife **impacts** from all of these sources of energy, but our focus must be primarily on natural gas. As this slide shows, **this is where the majority of future development and, by inclusion, impacts will come.** Look at the recent trend to 2006, and where it is going. The current gas boom is well started, and the permitting is in progress to sustain the increases you see on this graph.

* Slide—If you look at Wyoming today, existing oil and gas wells are sprinkled liberally throughout the state. This shows the current number of active drilled wells statewide. Right now, you're looking at roughly 59,000 wells.

* Slide—For every well, there is associated infrastructure to allow it to produce and be maintained. This is a slide of a portion of the Jonah Field in Sublette County, south of Pinedale. Every producing well needs a service road and a pipeline. There are also booster stations, various storage tanks, and other facilities. So the wells that I will show you on the rest of the slides are all accompanied by a production system that looks a lot like this on the ground.

* Slide--This shows just the major pipeline system in Wyoming. Obviously, hundreds of miles of smaller collector pipelines feed into these major arteries. But this gives you a flavor of that part of the development picture.

* Slide—This shows the major gas development areas in Wyoming, where the bulk of development currently is and will increase the most in the foreseeable future. There are some significant points to make here. First, the areas tend to be huge, in terms of acres. We have been told that the Powder River Basin is, in acres, the largest natural gas field in North America. The underground gas reservoirs are also large. The Jonah Field was widely known, until a couple of years ago, as having the largest natural gas reservoir in the history of North America. Now the Pinedale Anticline is believed to be 3X larger than Jonah. So these fields are clearly world-class gas development areas.

* Slide—WHAT DOES CURRENT DEVELOPMENT LOOK LIKE IN THESE AREAS?

These major development areas cover about 25% of the land area of Wyoming. There are currently about 44,000 active wells within these major areas, out of the 59,000 statewide, so about 75% of the current production activity occurs within this 25% of the state. Some of these areas are already going through permitting to **greatly increase** the natural gas development far beyond those figures. We will discuss them in greater detail in a moment.

WHAT ARE SOME OF THE MAJOR WILDLIFE RESOURCES WE MANAGE IN THESE AREAS?

* Slide—lets start with the areas outlined, and add known sage grouse leks. The black dots are leks, and when you add habitat suitable for nesting, brood rearing and winter use, the total acreage obviously increases to include much of the development areas.

* Slide—now lets add crucial big game winter ranges for elk, deer, antelope, bighorn sheep and moose.

* Slide—now lets add big game parturition ranges (calving and fawning areas for big game).

* Slide—now lets add major streams and lakes (which are in blue) and major streams and lakes that hold sensitive fish species (which are in red).

* Slide—This slide indicates the value of habitats in these development areas for sensitive (CWCS) species. Each area provides habitat for the number of species indicated. These are our Department's Status 1-4 species. These categories of species are those for which we have some level of concern, in terms of either populations or habitat, and potential threats to their well-being or know very little about. These are species for which federal listings under the Endangered Species Act could be a possible concern.

As you can see, some very significant portions of some of these areas, and nearly all of others, are comprised of habitats that we would consider as very key to managing fish and wildlife.

So these development areas clearly not only contain world-class energy resources, they also contain world-class fish and wildlife habitats, and in many cases, these two resources are located right on top of each other.

Let's briefly look at each of these areas, and talk about what is in their future.

* Slide—This is a larger picture of the fish and wildlife resources in the Continental Divide and Atlantic Rim areas. Note about where it lies, between Rawlins and Rock Springs, and south to Baggs. There are about 270,000 acres in Atlantic Rim and over 1.1

million acres in Continental Divide. The areas contain crucial winter range for antelope, elk, and mule deer, they have sage grouse throughout, and include the Muddy Creek drainage where we have ongoing important work with Colorado River cutthroat trout and three species of sensitive nongame fish.

* Slide—Here is the current and future development for these areas. The black dots represent about 200 existing wells in Atlantic Rim and about 2200 wells in Continental Divide area. There are EIS's being written right now for both of these areas, and this will allow permitting of an additional 2000 more gas wells in the Atlantic Rim area and about 9000 more gas wells in the Continental Divide area. So foreseeable development for the next roughly 20 years will be about 10X what you see here for Atlantic Rim, and about 5X what you see for Continental Divide. **Again, keep in mind not only the number of wells, but the roads, pipelines, and associated infrastructure that will also accompany that increased level of development.**

Atlantic Rim is mostly coalbed methane, Continental Divide mostly deep gas. Likely there will be little directional drilling here, so on most of this, there will be one drill pad per well. Over the next roughly 20 years, these areas will have a well drilled on an average of every 160 acres over the entire 1.8 million acre combined development area.

* Slide—this shows the Moxa Arch, Pinedale Anticline, and Jonah fields. Nearly all of the Moxa is sage grouse habitat, over half is crucial big game ranges, and many of the drainages are key fish habitat for Colorado River cutthroat and sensitive nongame species. Jonah has sage grouse habitat. The Pinedale Anticline contains crucial winter range for deer and antelope, and essentially the entire area is sage grouse habitat.

* Slide--Moxa Arch is a ½ million acre area, and currently has 4300 oil and gas wells. An EIS is currently being written that will allow another 1800 natural gas wells over the next 10 years, which is about a 40% increase over what you see here.

The life of this field is predicted to be 40 years. This will be an infill project, meaning more wells will be drilled in the existing field. These are relatively shallow wells (5-10K feet), and will be drilled at not less than 80-acre spacing, so what this means is that there will be no directional drilling, and one pad/well.

Jonah just had a new development EIS finished and BLM signed a Record of Decision in March. This 30,000-acre field currently has 600 wells, which will increase, under the new ROD, by 3000 over the next 13 years. So the total development will increase by 6 times.

There will be at least one drill pad on every 10 acres over the entire 30K acre field, and a life of project of about 75 years. Because of the intensity of drilling, about 50% of the surface acres will be actively disturbed. This is a complete write-off for maintaining wildlife habitat, and the ROD requires off-site mitigation to try to maintain the displaced wildlife and make up for the loss of habitat. The impact is so intense here that an

interagency office has been started just to deal with the mitigation and reclamation for the field.

The Pinedale Anticline is about 200,000 acres in size. It currently has about 600 wells, but more importantly here, there are about 270 producing well pads. The number of well pads are used on the Anticline because many of these have several directional wells drilled from each pad. The current ROD calls for 700 producing well pads, or as many as 430 more pads. So the final development will be about 3.5 times what you see here, over the next 15 years.

A disturbed well pad, regardless of whether it produces gas or not, is still a disturbance for wildlife. This means a well pad about every 220 acres, and most of these, as it turns out, will be concentrated along the crest of the anticline, which is also the most productive mule deer habitat. Most drilling should be in the next 15 years, with an expected life for the field of at least 60 years.

* Slide—The Wind River Basin is a very large area with a tremendous diversity of key fish and wildlife habitats, from bighorn sheep and elk in the higher elevations to mule deer and antelope, sage grouse and fish throughout the lower elevations.

* Slide—The Basin contains several clusters of development. There are a total of about 2500 existing wells throughout this area. Most of these are combinations of oil and gas. There aren't any big developments being planned right now. Interest is high for the Madden field (NE Fremont County) and a couple of the fields near Riverton. While smaller areas are developed here, the number and intensity of the fields in the Wind River Basin can cause significant localized issues for fish and wildlife.

* Slide—Powder River Basin has a lot of sage grouse habitat throughout the development area, and many miles of important stream reaches for sensitive fish.

* Slide—This field is about 8 million acres in size, and there are currently about 34,000 wells drilled in this area; about 21,000 are gas wells. Most of the gas wells have been drilled in only the last 4 years, and this number is increasing rapidly. The final development **of the gas alone** calls for another 39,000 gas wells in the next 20 years. So you can expect over twice the development you see here.

The majority of the area will have well spacings of 40-80 acres, and directional drilling that would reduce surface impacts is not possible. This development is moving generally from east to west, with the gas getting deeper and the water that has to be pumped off of it of worse quality. One of our major issues in the PRB is water release, as most water cannot be reinjected and also cannot be released on the surface without additional impacts.

With the intensity, scale, and duration of development in these areas, and the fish and wildlife resources we have there, you can easily visualize the impacts we are trying to address.

Some bad news and good news before we move on:

The bad news is that this is actually likely the best-case scenario for development. Most fields in these development areas will likely have infill projects in the future, to capture more of the gas reservoir, or to capture it faster. This will cause even more intensive development than what I have shown you. Nearly all of these fields have been permitted for lesser amounts of development in the past, and have had increasingly more permitting to get where they are now. We expect this pattern will continue in the future.

On the bright side, we have an increasingly positive relationship with industry regarding the development of these plays. Some companies have been very willing to cooperate with us to try and minimize and mitigate impacts. Companies do some very good mitigation and reclamation work and we've been recognizing some of that good work through our environmental stewardship awards to the mining and oil/gas industries. We are very appreciative of their efforts.

One of our biggest problems is the time and resources we need to realize the benefits of cooperation with industry.

**Which brings us to the next topic,
HOW WILL THIS AFFECT THE GAME AND FISH DEPARTMENT?**

* Slide—This shows our Department's terrestrial regions (red lines) and the individual biologist regions within them (blue lines). Currently 5 of our 7 Department regions, and 14/20 of our individual biologist regions have significant development going on. As the intensity of development increases, the need to plan mitigation and reclamation will also greatly increase. The work associated with this is very time-consuming, and will obviously get much more so over the next 15-20 years.

* Slide—The same is true of our aquatic regions; 5 of our 8 regions have significant development, and again, the time and work to deal with development can only get more intense.

* Slide--IN SUMMARY (*just read these*)

* Slide-- HOW DO WE RESPOND TO THIS AS AN AGENCY (*just read these*)

Some things are very clear. As an agency and as a state, we have never faced this level of impact before. We need to pro-act as well as react to these affects, and put considerable focus on them if we are to maintain our fish and wildlife resource.

* Slide—Here are some things we have been able to do

PROCESS ITEMS

Working collaboratively with industry on individual plans to minimize and mitigate fish and wildlife impacts. This has been fruitful, but is time-consuming.

Working collaboratively with BLM on the development plans, and on their Resource Management Plans, which guide how they permit these operations. Again, this has allowed us to provide input into BLM processes, but is very time-consuming. We are currently involved with 4 RMPs, and they typically take a couple of years or longer to complete, with many meetings along the way, some of them a week long.

PERSONNEL ACTIONS

Jonah Interagency Field Office is completely funded by industry. —Because of the mitigation and reclamation requirements for this Field, a 4-person team has been formed to work exclusively on it. We have a position here that began in April. This is the first time the concept of a Field Office has been used in Wyoming, and we hope it becomes a model for future, intensive developments.

Oil and gas coordinator in Pinedale is a WGF position that BLM and the US Forest Service are funding. —Because of the amount and diversity of activities going on in the Pinedale region, it was necessary to have a full-time coordinator to make sure all activities in the area complemented each other, avoid duplication, and timely communicate new findings to everyone for their use. This position was filled last year. The person who initially filled it moved into the Jonah position and beginning May 1, a new person occupies this coordinator position.

NE Wyoming Coal Bed Natural Gas Coordinator is funded by WGF. —This position has been filled, and will deal with water and sensitive fish issues in the Powder River Basin. This is not a new position, but a reassignment of one of our Fish Biologist positions. A contract position will also be hired to backfill some of the work that the Fish Biologist position use to do.

INTERNALLY

Our agency's staff is looking at the current Department organization to shift personnel duties to address these issues. — Essentially we are trying to stretch current positions to help handle energy work, prioritize programs, and in a worst-case scenario, decide which programs we might have to decrease or discontinue in order to allow time for working on energy issues. Game and Fish staff will again meet on this issue and discuss options May 16.

Regardless of these efforts, we will need some additional personnel time and focus to adequately address energy development. No matter how much we stretch or rearrange workloads, we will need extra resources to deal with this significant extra workload.

With that, I'll close and try to answer any questions.