Opportunities and Challenges of Developing the Mancos Shale Resource, Piceance Basin, western Colorado

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Chairman Lamborn, Ranking Member Lowenthal, and Members of the Committee, thank you for providing me the opportunity to testify before you today.

I am Vice President, Production for Gunnison Energy LLC. I am a fourth generation native of Glenwood Springs, Colorado, and attended the Colorado School of Mines to earn a Bachelor of Science degree in Petroleum Engineering. I have worked in the oil and gas industry for 40 years and have substantial knowledge of the Piceance Basin.

Gunnison Energy LLC is a privately held oil and gas producer based in Denver, Colorado, since 2001. We own working interests in about 130,000 acres of mostly federal and some fee lands in Delta and Gunnison Counties, in the southeastern portion of the Piceance Basin. Our wells produce natural gas from shallow Cameo coal seams, Mesaverde sandstones, and the deep Mancos shale. Gas produced from our wells is transported from our leases north to a market hub near Meeker, Colorado where it is sold on a daily basis. An affiliated company, Oxbow Mining, owns a recently shuttered underground coal mine on the southern end of our lease area, near Somerset, Colorado. This mine at one time produced more than 5 million tons per year of very high quality steaming coal, and employed several hundred coal miners.

We have drilled and completed 7 Mancos shale gas wells, 3 vertical wells and 4 horizontal wells to date. We have had a steep learning curve in figuring out how to effectively drill and complete these wells. Our most recent Mancos shale well has a 4000 foot lateral and was completed with a 16 stage slickwater fracture stimulation treatment. To date it has produced over 2 Billion cubic feet of gas and is expected to produce over 10 Billion cubic feet during its 30-year life. It is a commercial producer even at today's low natural gas prices. In one of our vertical wells, we individually tested 6 separate intervals of the Mancos shale for gas production, and proved the lower 2200 feet of the Mancos shale as capable of strong gas production.

Gas production from the Mancos shale is not new. For more than 50 years, gas has been produced from shallow wells located on the west side of the basin, north of Grand Junction, an area called the Douglas Creek Arch, with the wells completed in a thin sandy bench in the shale. Around 2005, the oil and gas industry began exploring the other deeper portions of the Mancos shale, focusing on an 800 foot thick interval near the bottom, called the Niobrara. To date, about 100 wells have been drilled into the deep Mancos, mostly completed in the Niobrara portion, about 40 vertical and 60 horizontal completion wells. Cumulative production from these wells is about 125 Billion cubic feet of gas and 215,000 barrels of oil, and current production is about 70 million cubic feet per day. The majority of these wells were drilled by Encana and WPX Energy, but there are Mancos shale producing wells scattered across the entire basin, indicating that nearly all of the basin area may prove productive. The wells keep getting better; one of the most recently completed wells has produced 3 Billion cubic feet of gas in less than a year, and has an estimated ultimate recovery of about 25 Billion cubic feet, making it one of the best shale wells ever completed in the US.

In 2014, we commissioned an independent petrophysical study of the Mancos shale gas resource across our leasehold. This involved detailed analyses of the shale rock properties and a calculation of rock porosity, water saturation, and adsorbed gas content. The study showed that the Mancos in our area likely contains more than 500 Billion cubic feet per square mile of gas in place. We have extrapolated this estimate across the entire Piceance basin and accounted for overpressuring in the shale to about 3,000 Trillion cubic feet of natural gas in place. This is about twice the amount of gas in the entire Marcellus shale, in about 5% of the surface area. What is remarkable about the Mancos shale is its thickness – it averages more than 4000 feet thick across the basin, about 20 times thicker than the other major gas shale plays in the US, such as the Marcellus, Barnett and Hayneville. This great thickness will require multiple horizontal wells placed at about 400 to 500 foot vertical intervals to effectively drain the gas from the shale. But with multiple well pad drilling techniques, this can be accomplished with much less surface disturbance than the other shale plays across the country, enabling recovery of gas under several square miles of land from wells drilled from a single well pad.

We utilized our petrophysical study data to construct a detailed reservoir simulation model, and the model helped us determine how to best develop this enormous resource across our lease area. While the entire 4000 foot thick Mancos interval isn't all the same, we believe most of it will produce natural gas in commercial quantities if properly drilled and completed.

In addition to the Mancos shale, we have begun development of a large shallow coal seam gas resource. And, we have established production from low permeability sandstone reservoirs above the Mancos shale. All of these resources can be efficiently developed using precise directional drilling techniques and proven, safe fracture stimulation processes.

We operate in the North Fork Valley area, on the north side of the North Fork of the Gunnison River. The terrain is challenging, the average elevation is about 7000 feet, and it is very scenic. We strive to minimize our footprint, and work hard to keep our surface facilities clean and neat. We are sensitive to the concerns of our local neighbors, cities and counties, and work hard to address their concerns when they arise. We appreciate the beauty of the area and enjoy being out there. And we believe that we can

develop this enormous natural gas resource safely, efficiently and with a minimal environmental impact, while enabling the continued enjoyment of recreational activities by everyone who visits or lives in the area.

We've worked with the BLM, Forest Service and other federal agencies since we started. We've had our difficulties in getting things accomplished from time to time, and we've sometimes found the BLM to be inconsistent and slow in handling applications we've filed. We are working with two BLM field offices and enjoy and are proud of our relationships with these people. We understand that they and we have a myriad of federal, state and local regulations, rules and guidelines that must be followed to develop and operate on federal lands. In our experience, it costs about 10 times as much to permit a well on federal land versus fee land, and it takes about 10 times as long to get a permit approved, mostly due to the very involved NEPA process.

A big concern for us, and other Piceance basin operators interested in developing the gas resources from the Mancos shale and other formations, is access to federal minerals. In our area, for example, three BLM lease sales have been cancelled and there are multiple tracts of unleased federal lands within our federal units, surrounded by leased tracts. We have nominated these and other highly prospective, accessible federal lease tracts for sale, but the BLM has not authorized any sales in our area in the last few years.

We are also very concerned about the issues Mr. Guinn has described to you in detail, regarding the Thompson Divide area. I know this area well – I used to hike, bike and jeep the many trails and roads in this area, and skied and snowmobiled in the area in the winter. In the center of the area is the Wolf Creek Gas Storage Facility, that stores natural gas produced from local gas wells for delivery to towns such as Glenwood Springs, Carbondale, Basalt and Aspen. A few miles from that gas storage reservoir, in 1981, Chevron drilled a deep exploration well. They ran a drill stem test in the Niobrara while drilling, that produced natural gas at a rate of 7 million cubic feet per day, demonstrating that the Mancos shale has great production potential in the Thompson Divide area. Other wells drilled on nearby lands by our company and others have also demonstrated the enormous production potential of the Mancos shale across this area.

I remember three underground coal mines operating there, and my dad worked at the Coal Basin coal mine near Redstone. It is a scenic area, and should be protected, but the enormous gas resources in the Mancos shale under this area can also be diligently developed from multiwell pads situated along existing roads. Our company operates a large diameter natural gas pipeline that can carry gas produced from wells drilled in the Thompson Divide area; it was installed in 2012 at considerable expense and after a lengthy EIS review process.

The Thompson Divide area isn't the only part of the Piceance Basin that has enormous production potential from the Mancos shale and other formations, and that is environmentally sensitive. The Mancos underlies the entire basin. But as with oil and gas development in and near urban areas, efforts can be made to develop the gas resource with minimal environmental disturbance.

Gunnison has committed itself to taking a balanced approach to energy development in western Colorado. We believe in a constructive approach to working with regulators, stakeholders and those who may oppose our work. We have found that if one is willing to listen, compromise and respect the views of others, responsible development can occur in a manner which is acceptable to all parties. We hope that others will approach work in the Piceance Basin in this manner.

The Piceance Basin Mancos shale could be the largest gas shale resource in the United States. It is a huge energy storehouse. Its exploration and development should be conducted wisely, and because the federal government owns the minerals across the vast majority of the basin area, the BLM and Forest Service have a tremendous responsibility to diligently manage and help recover this very important energy resource for the benefit of all Americans.

Thank you for the opportunity to share this information with you today.

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