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The desire to develop clean energy resources, including wind energy and advanced coal (e.g., gasification with carbon dioxide sequestration), is driving the expansion of electrical power generation in Wyoming and surrounding states. For example, Wyoming's wind energy generation capacity has expanded 14-fold from 1999-2009. Although much of this new electricity production is delivered to market through existing transmission lines, additional transmission capacity is required for continued growth. With relatively small local electricity loads, much of the new power generation will be exported to other markets, primarily in Southwestern states. To get this desirable, low-cost power to market, new transmission lines are proposed in the Rocky Mountain states. Wyoming currently has seven large-scale, power-exporting transmission lines proposed.¹

New transmission lines require substantial easements across both private and public land. Private landowners are often opposed to transmission lines on their land due to fears of inadequate compensation and negative aesthetic and health impacts. Landowners affected by transmission development may feel slighted compared to the relatively lucrative lease payments received by landowners hosting wind turbines. The compensation structure for wind energy typically includes yearly lease payments as opposed to one-time payments for transmission. Also, some transmission developers can utilize the power of eminent domain to complete projects on private lands, often providing a price ceiling for private developers. A more complete discussion of eminent domain for transmission lines and wind energy is presented in the forthcoming University of Wyoming Cooperative Extension Service bulletins *Ranching, Farming, and Recreating in the Shadow of Wind Farms in Wyoming: The Potential Role of Eminent Domain* and *Ranching, Farming and Recreating in the Shadow of Wind Farms in Wyoming: Transporting Wind Power*.

Information on the type of payment and the amount of compensation received by public land management agencies for transmission line easements provides a useful example for landowners facing transmission development. This bulletin summarizes the transmission payment information for the U.S. Department of Interior, Bureau of Land Management (BLM), U.S. Department of Agriculture, Forest Service (FS), and state of Wyoming lands administered by the Office of State Lands and Investments (OSLI). Negotiated rates and formulas are public information that can better prepare landowners who are approached by well-informed transmission developers. This publication is not intended to serve as a guide. Many aspects of appropriate and fair easements, such as bonding and duration, are not addressed in this publication.

¹ Wyoming Infrastructure Authority. "Projects." <<http://wyia.org/projects/transmission-projects/>>. Accessed August 20, 2010.

Bureau of Land Management and Forest Service Rates and Methods

The BLM and FS are the two largest land managers in Wyoming, managing more than 42 percent of the state. Under the Federal Land Management Policy Act of 1976 (FLPMA), BLM lands are managed for multiple uses, including grazing, timber harvesting, mining, wildlife, recreation, and energy development. The BLM recognizes electric transmission as a valid energy development easement, granted as a right-of-way. The easement allows an entity to operate the transmission line on BLM lands without taking permanent ownership of the land. The FS utilizes the same rate schedule and methods as the BLM. In cases of transmission siting that affects both FS and BLM lands, a single major project coordinator administers the process for both agencies. Eminent domain cannot be utilized on federal lands.

The BLM and FS use a formula that collects annual payments from transmission line owners over the life of the project, although easements are generally not offered into perpetuity. The generic formula used to calculate rental payments is as follows:²

$$\text{Annual rental payment} = \text{Area impacted (acres)} \times \text{Encumbrance factor} \times \text{Rate of return} \times \text{Annual adjustment factor} \times \text{Zone value (per acre)}$$

The area impacted is defined by the total footprint of the transmission line. The encumbrance factor represents the impact to the productive value of the land. According to BLM regulations, transmission lines reduce the potential output of the land by 50 percent; the transmission line owner must reimburse the BLM for 50 percent of the productive value of the land. The rate of return is a measure of the value of the capital controlled by the BLM. The rate is based upon the 10-year average (1998-2008) of bond yield on a 30-year U.S. Treasury security. Currently, the rate used by the BLM is 5.27 percent. The annual adjustment factor accounts for inflation. It is based upon the 10-year average, prior to the release of the most recent National Agricultural Statistics Service (NASS) Census of Agriculture, of the Implicit Price Deflator for Gross Domestic Product (IPD-GDP). This measure is currently 1.9 percent.³

The most complicated factor is zone value. This value is based upon the average countywide value of agricultural land according to NASS. Each county in Wyoming has a different zone value. The BLM assumes that 20 percent of the value of each acre accounts for non-agricultural features or improvements, such as buildings and ponds. The resulting per-acre zone values are 80 percent of the value specified

² From the U.S. Department of Interior regulations – CFR 2806.20 (b)

³ Detailed information provided in the Federal Register / Vol. 73, No. 212 / Friday, October 31, 2008, pg. 65040

by NASS. The BLM then assigns a fixed value for each zone. In Wyoming, all counties with values of \$251-\$500 are Zone 2 with a BLM assigned value of \$500 (Table 1).

Table 1: 2007 Zone Values (per-acre) for Wyoming (valid 2009-2015)

County	80% of NASS Value	Zone	Zone Value
Albany	\$377	2	\$500
Big Horn	\$702	3	\$1,000
Campbell	\$312	2	\$500
Carbon	\$251	2	\$500
Converse	\$275	2	\$500
Crook	\$478	2	\$500
Fremont	\$733	3	\$1,000
Goshen	\$478	2	\$500
Hot Springs	\$587	3	\$1,000
Johnson	\$309	2	\$500
Laramie	\$388	2	\$500
Lincoln	\$918	3	\$1,000
Natrona	\$267	2	\$500
Niobrara	\$302	2	\$500
Park	\$664	3	\$1,000
Platte	\$490	2	\$500
Sheridan	\$629	3	\$1,000
Sublette	\$810	3	\$1,000
Sweetwater	\$143	1	\$250
Teton	\$1,460	4	\$1,500
Uinta	\$470	2	\$500
Washakie	\$456	2	\$500
Weston	\$354	2	\$500

The zone payments are critical to determining rental payments based upon the amount of land encumbered by the transmission line. Larger transmission lines impact more land, so they would pay more rental fees. For example, a 230 kilovolt (kV) line requires a smaller easement than a 500 kV line.

Considering a Wyoming-specific example aids in understanding the complex federal rental payments structure:

Converse County, Wyoming (Zone 2) for 2010

Right-of-way (RoW) length = 5,280 feet (one linear mile)

Right-of-way width = 125 feet

Right-of-way acres = $((5,280 \text{ feet} \times 125 \text{ feet})/43,560 \text{ ft}^2/\text{acre}) = 15.2$ acres

Annual rental payment = 15.2 acres (RoW Acres) \times 0.5 (encumbrance factor) \times 0.0527 (rate of return) \times 1.019⁹ (inf) \times 1.025 (adj) \times \$500 (fed rate)
= \$243.16 annually for the use of 15.2 acres
(\$15.99/acre)

Assuming a continued 1.9 percent annual adjustment factor and no changes in zone value based upon subsequent Censuses of Agriculture, the federal agency would receive \$20,263 over a 50-year period, or \$405.26 per acre.

Notes: The value 1.019⁹ reflects the nine years (shown by the exponent) of inflation adjustment from the 2002 base. The correction factor of 1.025, dictated by BLM calculations, accounts for increased inflation rates in 2002, 2003, and 2004 before the annual rate of 1.9 percent was adopted.

The federal agency is also compensated for the effort of approving permits and conducting environmental analyses. If the time required is greater than 50 hours, the rates are based upon actual costs. As this payment is offered as compensation for services rendered, it is not considered an additional revenue stream that would be comparable to a private landholder.

Wyoming Office of State Lands and Investments Rates and Methods

The Office of State Lands and Investments (OSLI) administers nearly 6 percent of the total land in Wyoming with parcels of land distributed across the state. With the mission of providing funds to education, OSLI considers the granting of easements for overhead transmission wires an acceptable use of state lands. Unlike private lands, eminent domain cannot be utilized on state lands.

In an effort to reduce administrative costs and improve efficiency, OSLI requires one-time payments for the right to cross state lands with a transmission line. The developer provides the width of the easement based upon industry standards for the size of line. The duration of the transmission easement is required to match the life of the associated generation project, or a maximum of 99 years. Based upon an informal survey of other land agencies, the OSLI uses the following guidelines for easements (Table 2):

Table 2: Guidelines for transmission easement annual payment for Wyoming Office of State Lands and Investments property

Width of easement	Value per rod	Value per acre
Up to 100'	\$75	\$1,980
101' to 150'	\$85	\$1,496
151' to 200'	\$113	\$1,491.60
201' to 300'	\$127.50	\$1,122
301' to 350'	\$140	\$1,065

Note: One rod equals 16.5 feet.

These guidelines can be altered based upon special site characteristics, such as exceptional agricultural productivity or aesthetic value. Other lessees of the OSLI land also receive a one-time payment as compensation for the inconvenience of transmission construction. For example, a grazing lessee would be compensated for lost forage and added difficulty managing livestock during construction.

Comparing a one-time payment to an annual payment is difficult; however, it is feasible if the time-value of money is considered. Assuming an annual real interest rate of 3.1 percent (5 percent return less 1.9 percent inflation), the following example is akin to the BLM /USFS example:

15.2 acres (one linear mile by 125 feet wide) in Converse County

One-time payment = 15.2 acres × \$1,496

= \$22,739.20

The real annual returns of this one-time payment, if invested, would **average** \$137.70 per acre per year (\$2,093 total per year) over a 50-year period, increasing from \$46.38 per acre (\$705 total) in 2011 to \$206.98 per acre (\$3,146 total) in 2051. This assumes that the principle, the one-time payment, is never spent.

Summary and Conclusion

The methods used by public land agencies to determine compensation for electric transmission line placement is not intended as a direct guide for private landowners; however, it does provide a basis for comparison. Federal and state landholders are transparent in their permitting and compensation process and provide clear examples of methods and rates. Using a detailed formula of land values and lost productivity, the BLM and FS collect a relatively small annual payment as compensation for easements. The state of Wyoming OSLI collects a one-time payment of a significantly higher annualized value than the payments received by federal entities. The theoretical example of a 15.2-acre easement in Converse County yielded a \$243.16 annual payment to the BLM or a one-time \$22,739.20 payment to the state of Wyoming. On a per-acre basis, the BLM initially received \$15.99/acre, while the state of Wyoming received the equivalent of \$46.38 per acre in the first year. Importantly, neither entity is subject to eminent domain laws.

Although the compensation rates and methods utilized by public entities are not intended to serve as a guide for private landowners, the information can provide a useful comparison to terms offered by private developers. With readily available information concerning payments by transmission line developers often unavailable, payments to public landholders can provide a basis for evaluating the fairness of transmission line compensation offers. Landowners should always seek competent legal advice before signing easements.

For additional information and a list of sources, please contact Milton Geiger at (307) 766-3002 or mgeiger1@uwyo.edu.

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