

Appendix D: Gas Well Impact Fee



APPENDIX D
Gas Well Impact Fee

This appendix describes the methodology used to establish the fees for impacts to the transportation system caused by gas well drilling activity. As the actual traffic volumes are relatively low, the impacts caused by gas well drilling are related to pavement life rather than roadway capacity. The approach described in this appendix is based on the pavement design life and the pavement wear caused by well drilling traffic.

Pavement design is based on the equivalent single axle load (ESAL) and the equivalent daily load application (EDLA). Each vehicle type has an equivalent load factor based on the relative amount of pavement damage caused by that vehicle type. Table D-1 shows the factors for each vehicle type used in this analysis.

Table D-1 EDLA Vehicle Factors	
Vehicle Class	Factor
Overweight Truck	1.25
Heavy-Duty Truck	1.0
Medium-Duty Truck	0.175
Passenger Car/Pickup	0.0008

The pavement on county roads is typically designed for an annual average daily traffic (AADT) volume of 2,000 vehicle-trips and a life of 20 years. Table D-2 shows the calculated EDLA for this pavement design.

Table D-2 Design EDLA					
Vehicle Class	Percent of AADT	Daily Volume	Factor	Daily EDLA	20-Year EDLA
Heavy Truck	5%	100	1.0	100	730,000
Medium Truck	15%	300	0.175	52.5	383,250
Car/Pickup	80%	1,600	0.0008	1.2	8,760
Total					1,122,010

The typical vehicular traffic required to drill gas wells is taken from the Draft Resource Management Plan Amendment and Environmental Impact Statement for the Roan Plateau Planning Area (2004). The total number of trips per well with the calculated EDLA are shown in Table D-3.

Table D-3 Typical Well Drilling EDLA			
Vehicle Class	Trips	Factor	EDLA
Overweight Truck	88	1.25	110
Medium Truck	668	0.175	117
Pickup, Light Truck	856	0.0008	1
Total			228

Cost of reconstruction for paved county roads is approximately \$1,100,000 per mile, and \$844,000 per mile for reconstruction of gravel surface roads. These costs are based on actual construction costs in recent years and exclude costs for right-of-way, utilities, and major earthwork. Using the design EDLA of 1,122,000 and the cost of \$1,100,000 per mile, the cost is \$.98 per equivalent vehicle-mile for paved roads. The cost per equivalent vehicle-mile for gravel roads is \$.75. This is the basis for setting the impact fee for gas well drilling.

The average length of county road used to access drilling sites is estimated to be 8 miles, 4 miles of which are paved and 4 miles gravel. Each vehicle-trip then results in 8 vehicle-miles of travel with a cost of \$6.92 per equivalent vehicle-trip.

Based on the EDLA of 228 for drilling a well, the appropriate fee per well is \$1,577. The recommended approach is to set a fixed fee per well based on this typical number of trips, traffic mix, and length of road. The County should establish the initial fee based on current costs and then adjust the fee annually based on the Colorado Department of Transportation's Colorado Construction Cost Index. The fee structure should be reviewed every five years and presented to the Board of County Commissioners for approval.

Assuming that 1,000 well permits are issued in one year, the total revenue from the fee would be \$1,577,000 which should be applied to maintenance and reconstruction of the roads directly impacted by the well drilling traffic.