



# Public Service Commission

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## Memorandum

**TO:** Mine Operators, Lignite Energy Council, and Other Interested Parties

**FROM:** <sup>JE</sup> Reclamation Division

**DATE:** December 30, 2024

**SUBJECT:** Revised Policy Memorandum No. 16 and annual update of variable costs

Attached is the updated version of Policy Memorandum No. 16 and the July 2024 variable costs appendix to the Reclamation Division's Reclamation Cost Estimating Guidelines used for calculating worst-case bond amounts for mining permits.

During the administrative portion of the December 30, 2024 special Commission meeting, the Commission approved the updates to Policy Memorandum No. 16 to revise the method used to calculate maintenance costs in the Hourly Equipment Cost Estimating for Large Mine Fleet sheet. The maintenance costs were updated using Caterpillar's maintenance cost data. Historically, the Reclamation Division used Caterpillar's maintenance cost data but transitioned away from it when Caterpillar ceased publishing the maintenance data in the CAT Performance Handbook following 2004. With this update, the Reclamation Division will annually request maintenance cost data from a local Caterpillar dealer. Additional minor updates, including clarifications and references in the policy, have also been included. The equipment nomenclatures "T", "G", "M", "K", and "F" have been removed from the equipment models due to recent updates from Caterpillar.

The updated variable cost appendix contains the variable costs as of July 1, 2024. Several of the variable cost items changed with this update and the average hourly rates for equipment used at the large mines decreased an average of 4.92% over the July 1, 2023 rates. The attached Appendix includes a breakdown of the hourly equipment rates for 2024. A comparison of the 2023 and 2024 hourly equipment rates is also attached for your convenience.

Mining companies will not be required to update all current worst-case reclamation cost estimates using the July 2024 rates. However, for new and pending permit and revision applications that propose a new or revised worst-case reclamation scenario, these applications should use the updated variable costs attached to this memo.

The equipment list prices, suggested residual values, and maintenance costs were obtained from Butler Machinery. The fuel cost, an average weekly cost over the past 12 months, was obtained from Fleet Services with the North Dakota Department of Transportation. Tire prices are based

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on information received from Pomp's Tire Service and Lignite Tire Service. Seed prices are based on information received from Chesak Seed House and custom farm work rates are based on 2024 average rates published by the NDSU Extension Service.

For small mines, the \$1.47 per cubic yard rate increased to \$3.80 per cubic yard based on the bids the Commission's AML Division received over this past year. Due to this increase, the worst-case reclamation cost estimates for the small mines will need to be recalculated.

#### Attachments

memo industry\2024\Pmemo16\_maint\_cost\_update\_12-30-24

# **APPENDIX**

## **VARIABLE COSTS**

**Of**

**POLICY MEMORANDUM NO. 16 TO MINE OPERATORS**

**RECLAMATION COST ESTIMATING GUIDELINES**

**July 1, 2024 Data**

### **Per Cubic Yard Earth-moving Cost for Small Mines**

Costs for backfilling, grading, and suitable plant growth material respread where the total quantity to be moved is 500,000 cubic yards or less will be calculated at a rate of \$3.80 per cubic yard. (This rate will be reviewed and updated on July 1 of each year.)

### **Equipment Prices**

The following equipment prices were furnished on July 31, 2024 by Tyler Freuer of Butler Machinery as the current list price delivered as commonly equipped for reclamation work. These prices include a 5% discount and no taxes.

<b><u>Item</u></b>	<b><u>List Price Discounted (\$)</u></b>
D11 Tractor w/ U Dozer & Ripper	3,017,000
D10 Tractor w/ U Dozer & Ripper	1,838,000
D9 Tractor w/ U Dozer & Ripper	1,486,000
657 Scraper w/ Push-Pull	2,376,000
637 Scraper w/ Push-Pull	1,725,000
993 Wheel Loader w/ 19 CY Bucket	3,965,000
777 End Dump Truck	2,148,000
16 Motor Grader w/ Ripper	1,416,000

### **Replacement Tire Prices**

The following tire prices are the average cost based on information provided by Pomp's Tire Service on July 12, 2024 and Lignite Tire Service on July 15, 2024. Lignite Tire Service did not provide a quote for a 37.25 R35(E-3) tire.

<b><u>Equipment</u></b>	<b><u>Tire Size</u></b>	<b><u>Price Each (\$)</u></b>
657 Scraper	40.5/75 R39 (E-3)	22,582
637 Scraper	37.25 R35 (E-3)	18,187
16 Motor Grader	23.5 R25 (E-4)	5,327
993 Wheel Loader	50/65 R51 (L-5)	81,657
777 End Dump Truck	27.00 R49 (E-4)	15,119

**Residual Values for Reclamation Equipment**

The following are residual percentages and values to be used for determining the cost per hour of reclamation equipment. Values shown were obtained from Butler Machinery.

<b><u>Item</u></b>	<b><u>Percentage of Original Cost</u></b>	<b><u>Residual Value (\$)</u></b>
D11 Tractor w/ U Dozer & Ripper	44	1,327,500
D10 Tractor w/ U Dozer & Ripper	52	950,000
D9 Tractor w/ U Dozer & Ripper	47	700,000
657 Scraper w/ Push-Pull	42	1,000,000
637 Scraper w/ Push-Pull	48	825,000
16 Motor Grader w/ Ripper	53	750,000
993 Wheel Loader w/ 19 CY Bucket	39	1,550,000
777 End Dump Truck	44	950,000

**Prime Interest Rate**

The prime interest rate to be used for the calculation of interest on reclamation equipment under this update is 8.00% for July 1, 2024 to June 30, 2025. The total interest rate to be used for calculations is 10.00% as determined according to item III(A) of this guideline.

**Fuel Cost**

The cost of fuel for reclamation equipment from July 1, 2024 to June 30, 2025 is based on the average retail price from June 1, 2023 to June 30, 2024 obtained from the Fleet Services Division of the the North Dakota Department of Transportation is \$2.843 per gallon. Federal and state taxes are excluded from this price.

**Wages and Benefits**

Wage rates effective May 1, 2024 through April 30, 2025 were obtained from the International Union of Operating Engineers Local 49. Rates for workers compensation, unemployment benefits, and social security were obtained from the applicable North Dakota state agencies.

Hourly Rate for Labor - Group 3 Heavy Industrial	38.30
Pension, Health, Welfare, & Apprenticeship/Hour - Group 3	23.55
Insurance - Assumed 1% of Hourly Rate	0.38
Social Security - 7.65% of Hourly Rate	2.93
*Workers Compensation – 0.799% of Hourly Rate	0.31
$[\$477.42 / (\$38.30 \times 2080 \text{ hrs} \times 0.75)] = 0.00799 \text{ or } 0.799\%$	
*Unemployment – 7.38% of Hr. Labor	2.83
$[(0.0968 \times \$43,800) / (\$38.30 \times 2080 \text{ hrs} \times 0.75)] = 0.0738 \text{ or } 7.38\%$	
 Total Hourly Operator Cost (*based on 40-hour week, 9 months per year)	 68.30

**Custom Farm Work Rates**

The following custom farm rates are taken from the publication "2024 North Dakota Custom Rates Part I – Early Season Operations" (August 2024) published by the NDSU Extension Service.

<b><u>Item</u></b>	<b><u>Rate/Acre (\$)</u></b>
Chisel Plowing	15.03
Small Grain Seeding	18.26
Application of Dry Fertilizer	9.22

**Fertilizer**

The cost of 11-52-0 fertilizer for use in reclamation is \$815 per ton. This price is based on the rate provided by Hefty Seed Company on October 22, 2024.

**Trees**

The cost of planting trees and shrubs on reclaimed land is based on rates obtained from the Mercer County Soil Conservation District, Beulah, ND. Price includes planting.

Trees:	\$50/100 feet
Weed Fabric Barrier:	\$90/100 feet

## Seed

All seed prices were provided by Chesak Seed House on July 9, 2024. Seed prices are highly variable and may not reflect prices of seed later this year or next spring.

<u>Native Variety</u>	<u>\$/lb (PLS)</u>	<u>Introduced Variety</u>	<u>\$/lb (PLS)</u>
Big bluestem	4.90	Crested wheatgrass	3.62
Blue Grama	19.50	Intermediate wheatgrass	3.75
Canada wildrye	7.80	Pubescent wheatgrass	3.00
Green needlegrass	3.75	Reed canarygrass	8.70
Indian grass	7.00	Russian wildrye	10.73
Little bluestem	10.40	Smooth bromegrass	3.38
Prairie sandreed	21.45	Tall wheatgrass	2.55
Sand bluestem	26.65	<u>Legumes</u>	
Sideoats grama	28.80	Alfalfa	2.82
Slender wheatgrass	3.60	Sweetclover (yellow)	3.53
Switchgrass	4.20	Sweetclover (white)	5.15
Buffalo grass	28.00		
Thickspike wheatgrass	6.80		
Western wheatgrass	7.84		
Prairie Junegrass	40.60		

<b>Hourly Cost Estimation 2024 - Large Mine Fleet</b>										
Estimated Ownership yrs =	7	Insurance rate =	0.0075	Fuel Cost/gal \$ =	2.84					
Annual Use hrs =	3,000	Sales Tax rate =	0.05	Union Labor - Group 3 base =	38.30					
Total Life hrs/yrs =	20,000	Unemployt constructn rate	0.0968	Union Labor - Group 3 total =	68.30					
Interest rate =	0.100	Unemployt salary cap =	43,800	WSI Premium Charge =	477.42					
Equipment Type	Dozers			Scrapers		Grader	Water wagon	Loader	Truck	
	D11	D10	D9	657	637	16		993	777	
<b>Ownership Costs:</b>										
Delivered price \$	3,017,000	1,838,000	1,486,000	2,376,000	1,725,000	1,416,000	1,416,000	3,965,000	2,148,000	disc 5%
Tire replacement \$	0	0	0	90,329	72,746	31,961	31,961	326,628	90,713	
Adjusted price \$	3,017,000	1,838,000	1,486,000	2,285,671	1,652,254	1,384,039	1,384,039	3,638,372	2,057,287	
Residual Value \$	1,327,500	950,000	700,000	1,000,000	825,000	750,000	750,000	1,550,000	950,000	
Residual Value %	44	52	47	42	48	53	53	39	44	
Value to be recovered \$	1,689,500	888,000	786,000	1,285,671	827,254	634,039	634,039	2,088,372	1,107,287	
Equipment cost per hour \$	84.48	44.40	39.30	64.28	41.36	31.70	31.70	104.42	55.36	
Interest cost \$/hr	57.47	35.01	28.30	45.26	32.86	26.97	26.97	75.52	40.91	
Insurance cost \$/hr	4.31	2.63	2.12	3.39	2.46	2.02	2.02	5.66	3.07	
Sales tax cost \$/hr	7.54	4.60	3.72	5.94	4.31	3.54	3.54	9.91	5.37	
<b>Hourly ownership cost</b>	<b>153.79</b>	<b>86.63</b>	<b>73.44</b>	<b>118.87</b>	<b>81.00</b>	<b>64.24</b>	<b>64.24</b>	<b>195.52</b>	<b>104.72</b>	
<b>Operating Costs:</b>										
Fuel consumption (gal/hr)	22.8	16.3	11.7	26.1	23.6	4.7	4.7	23.1	12.1	
Fuel cost (\$/hr)	64.82	46.34	33.26	74.20	67.09	13.36	13.36	65.67	34.40	
Tire life (hrs)	0	0	0	5,000	5,000	10,000	10,000	10,000	10,000	
Tire cost (\$/hr)	0.00	0.00	0.00	18.07	14.55	3.20	3.20	32.66	9.07	
Overhaul/Repair/Undercarriage (\$/hr)	115.15	55.38	36.65	50.45	51.03	24.56	24.56	54.39	43.42	
Maintenance & Lube (\$/hr)	13.94	7.10	5.71	10.10	7.97	8.13	8.13	12.33	14.66	
Wear items, GET (\$/hr)	17.72	10.85	8.51	3.36	2.22	1.03	1.03	5.72	0.00	
<b>Hourly operating cost</b>	<b>211.63</b>	<b>119.67</b>	<b>84.13</b>	<b>156.18</b>	<b>142.86</b>	<b>50.28</b>	<b>50.28</b>	<b>170.78</b>	<b>101.55</b>	
Operators hourly wage (\$)	74.64	74.64	74.64	74.64	74.64	74.64	74.64	74.64	74.64	
Total hourly rate	440.06	280.94	232.22	349.69	298.50	189.15	189.15	440.94	280.91	
Overhead and profit @15%	66.01	42.14	34.83	52.45	44.78	28.37	28.37	66.14	42.14	
<b>Total Estimated Hourly Cost:</b>	<b>506.07</b>	<b>323.08</b>	<b>267.05</b>	<b>402.15</b>	<b>343.28</b>	<b>217.53</b>	<b>217.53</b>	<b>507.08</b>	<b>323.05</b>	



<b>2023 - 2024 Variable Costs: Summary of Changes</b>												
				Dozers		Scrapers		Grader	Water	Loader	Truck	
				D11	D10	D9	657	637	16	wagon	993	777
Total Estimated Hourly Cost (\$)												
2023				549.58	381.29	308.09	494.77	391.58	191.35	191.35	505.83	337.76
2024				506.07	323.08	267.05	402.15	343.28	217.53	217.53	507.08	323.05
Change (\$)				-43.51	-58.21	-41.04	-92.62	-48.30	26.18	26.18	1.25	-14.71
Change (%)				-7.9	-15.3	-13.3	-18.7	-12.3	13.7	13.7	0.2	-4.4
<b>Total Average Change 2023 - 2024 (%)</b>				-4.92								

**PSC Reclamation Division Worksheet: 2024 Residual Values for Equipment**

The following table gives estimated heavy equipment values (Caterpillar or equivalent) that are 7 years old with approximately 20,000 hours of operation. Equipment is assumed to have been maintained on a regular schedule and is in working condition. No allowance has been made for inflation, as used equipment values can fluctuate considerably due to condition, location, and market.

<i>Year</i>	<i>2022</i>			<i>2023</i>			<i>2024</i>		
<b>MODEL</b>	<b>COST 5% Discount No Taxes</b>	<b>%</b>	<b>RESIDUAL VALUE</b>	<b>COST 5% Discount No Taxes</b>	<b>%</b>	<b>RESIDUAL VALUE</b>	<b>COST 5% Discount No Taxes</b>	<b>%</b>	<b>RESIDUAL VALUE</b>
<b>DOZERS</b>									
D11	2,980,000	50	1,490,000	3,230,000	40	1,292,000	3,017,000	44	1,327,500
D10	1,980,000	50	990,000	2,100,000	50	1,050,000	1,838,000	52	950,000
D9	1,420,000	48	685,000	1,530,000	50	765,000	1,486,000	47	700,000
<b>SCRAPERS</b>									
657	2,320,000	50	1,160,000	2,320,000	40	928,000	2,376,000	42	1,000,000
637	1,610,000	50	805,000	1,650,000	50	825,000	1,725,000	48	825,000
<b>MOTOR GRADER</b>									
16	1,270,000	50	635,000	1,360,000	60	816,000	1,416,000	53	750,000
<b>LOADER</b>									
993	3,570,000	50	1,785,000	3,850,000	40	1,540,000	3,965,000	39	1,550,000
<b>END DUMP</b>									
777	2,250,000	56	1,250,000	2,250,000	50	1,125,000	2,148,000	44	950,000