



# Public Service Commission

## State of North Dakota

---

### COMMISSIONERS

Julie Fedorchak  
Randy Christmann

600 East Boulevard, Dept. 408  
Bismarck, North Dakota 58505-0480  
Web: [www.psc.nd.gov](http://www.psc.nd.gov)  
E-mail: [ndpsc@nd.gov](mailto:ndpsc@nd.gov)  
Phone: 701-328-2400  
ND Toll Free: 1-877-245-6685  
Fax: 701-328-2410  
TDD: 800-366-6888 or 711

## Memorandum

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

**FROM:** <sup>ZAB</sup> Zanna A. Brinkman, Director - Reclamation Division  
Jonathan Emmer, Assistant Director - Reclamation Division

**DATE:** December 30, 2021

**SUBJECT:** Annual update of variable costs contained in Policy Memorandum No. 16 to Mine Operators - Reclamation Cost Estimating Guidelines

Attached is the July 2021 variable cost update to the Reclamation Division's Reclamation Cost Estimating Guidelines used for calculating worst-case bond amounts for mining permits. This annual update contains the variable costs as of July 1, 2021. 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 0.02% over the July 1, 2020 rates. The attachment includes a breakdown of the hourly equipment rates for 2021. A comparison of the 2020 and 2021 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 2021 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 and suggested residual values 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 on information received from Pomp's Tire Service. Seed prices are based on information received from Chesak Seed House and custom work farm rates are based on 2020 average rates published by the NDSU Extension Service.

For small mines, the rate will be \$1.20 per cubic yard based on the bids the Commission's AML Division received this year. No updates to the worst-case reclamation cost estimates will be required this year for small mines.

Attachments

### **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 \$1.20 per yard. (This rate will be reviewed and updated on July 1 of each year.)

### **Equipment Prices**

The following equipment prices were furnished on November 12, 2021 by Greg O'Shea 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>
D11T Tractor w/U Dozer & Ripper	2,910,000
D10T Tractor w/U Dozer & Ripper	1,920,000
D9T Tractor w/U Dozer & Ripper	1,370,000
657G Scraper w/Push-Pull	2,272,000
637G Scraper w/Push-Pull*	1,570,000
993K Wheel Loader with 15 CY Bucket	3,500,000
777F End Dump Truck	2,200,000
16M Motor Grader w/Ripper	1,230,000

### **Replacement Tire Prices**

The following tire prices are based on information provided by Pomp's Tire Service on December 14, 2021.

<b><u>Equipment</u></b>	<b><u>Tire Size</u></b>	<b><u>Price Each (\$)</u></b>
657G Scraper	40.5/75 R39 (E-3)	16,277
637G Scraper	37.25R35 (E-3)	11,404
16M Motor Grader	23.5 R25 (E-4)	2,230
993K Wheel Loader	50/65 R51 (L-5)	78,778
777F End Dump Truck	27.00R49 (E-4)	14,259

### **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>
D11T Tractor w/U Dozer & Ripper	50	1,455,000
D10T Tractor w/U Dozer & Ripper	50	960,000
D9T Tractor w/U Dozer & Ripper	50	685,000
657G Scraper w/Push-Pull	50	1,136,000
637G Scraper w/Push-Pull*	50	785,000
16M Motor Grader w/Ripper	50	615,000
993K Wheel Loader W/15 CY Bucket	50	1,750,000
777F End Dump Truck	50	1,100,000

### **Prime Interest Rate**

The prime interest rate to be used for the calculation of interest on reclamation equipment under this update is 3.25% for July 1, 2021 to June 30, 2022. The total interest rate to be used for calculations is 5.25% as determined according to item III(A) of this guideline.

### **Fuel Cost**

The cost of fuel for reclamation equipment from July 1, 2021 to June 30, 2022 is based on the average retail price from June 1, 2020 to June 30, 2021 obtained from the Fleet Services Division of the the North Dakota Department of Transportation is \$1.681 per gallon. Federal and state taxes are excluded from this price.

### **Wages and Benefits**

Wage rates effective May 1, 2021 through April 30, 2022 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	34.25
Pension, Health, Welfare, & Apprenticeship/Hour - Group 3	20.65
Insurance - Assumed 1% of Hourly Rate	0.34
Social Security - 7.65% of Hourly Rate	2.62
*Workers Compensation – 0.829% of Hourly Rate	0.28
$[\$442.75 / (\$34.25 \times 2080 \text{ hrs} \times 0.75)] = 0.00829$	
*Unemployment – 7.0% of Hr. Labor	2.39
$[(0.0969 \times \$38,500) / (\$34.25 \times 2080 \text{ hrs} \times 0.75)] = 0.0698$	
<b>Total Hourly Operator Cost (*based on 40-hour week, 9 months per year)</b>	<b>60.54</b>

### **Custom Farm Work Rates**

The following custom farm rates are taken from the publication "2020 North Dakota Custom Rates Part I – Early Season Operations" (August 2020) published by the NDSU Extension Service.

<b><u>Item</u></b>	<b><u>Rate/Acre (\$)</u></b>
Chisel Plowing	11.30
Small Grain Seeding	14.28
Application of Dry Fertilizer	6.98

### **Fertilizer**

The cost of 11-52-0 fertilizer for use in reclamation is \$835 per ton. This price is based on the rate provided by Nutrien Ag Solutions on October 4, 2021.

### **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

Seed prices were provided by Chesak Seed House on July 08, 2021. 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	9.00	Crested wheatgrass	3.54
Blue Grama	15.60	Intermediate wheatgrass	4.66
Canada wildrye	4.89	Pubescent wheatgrass	5.33
Green needlegrass	5.60	Russian wildrye	11.80
Indian grass	16.90	Smooth bromegrass	5.05
Little bluestem	11.00	Tall wheatgrass	3.40
Prairie sandreed	25.20	<u>Legumes</u>	
Reed canarygrass	4.40	Alfalfa	2.28
Sand bluestem	19.60	Sweetclover (yellow)	1.79
Sideoats grama	7.15	Sweetclover (white)	3.65
Slender wheatgrass	3.63		
Switchgrass	3.85		
Buffalo grass	28.08		
Thickspike wheatgrass	6.22		
Western wheatgrass	6.15		
Prairie Junegrass	48.00		

<b>Hourly Cost Estimation 2021 - Large Mine Fleet</b>									
Estimated Ownership yrs =	7	Insurance rate =	0.0075	Fuel Cost/gal \$ =	1.68				
Annual Use hrs =	3,000	Sales Tax rate =	0.05	Union Labor - Group 3 base =	34.25				
Total Life hrs/yrs =	20,000	Unemploymt constructn rate	0.0969	Union Labor - Group 3 total =	54.90				
Interest rate =	0.0525	Unemploymt salary cap =	38,500	WSI Premium Charge =	442.75				
Equipment Type	Dozers			Scrapers		Grader	Water wagon	Loader	Truck
	D11T	D10T	D9T	657G	637G	16M		993K	777F
<b>Ownership Costs:</b>									
Delivered price \$	2,910,000	1,920,000	1,370,000	2,272,000	1,570,000	1,230,000	1,230,000	3,500,000	2,200,000
Tire replacement \$	0	0	0	65,106	45,616	13,378	13,378	315,113	85,554
Adjusted price \$	2,910,000	1,920,000	1,370,000	2,206,894	1,524,384	1,216,622	1,216,622	3,184,887	2,114,446
Residual Value \$	1,455,000	960,000	685,000	1,136,000	785,000	615,000	615,000	1,750,000	1,100,000
Residual Value %	50	50	50	50	50	50	50	50	50
Value to be recovered \$	1,455,000	960,000	685,000	1,070,894	739,384	601,622	601,622	1,434,887	1,014,446
Equipment cost per hour \$	72.75	48.00	34.25	53.54	36.97	30.08	30.08	71.74	50.72
Interest cost \$/hr	29.10	19.20	13.70	22.72	15.70	12.30	12.30	35.00	22.00
Insurance cost \$/hr	4.16	2.74	1.96	3.25	2.24	1.76	1.76	5.00	3.14
Sales tax cost \$/hr	7.28	4.80	3.43	5.68	3.93	3.08	3.08	8.75	5.50
<b>Hourly ownership cost</b>	<b>113.28</b>	<b>74.74</b>	<b>53.33</b>	<b>85.19</b>	<b>58.84</b>	<b>47.21</b>	<b>47.21</b>	<b>120.49</b>	<b>81.37</b>
<b>Operating Costs:</b>									
Fuel consumption gal/hr	23.0	15.5	12.5	30.5	23.0	6.5	6.5	22.0	14.0
Fuel cost \$/hr	38.64	26.04	21.00	51.24	38.64	10.92	10.92	36.96	23.52
Lubricants \$/hr	10.82	7.81	6.76	14.87	10.53	2.80	2.80	13.40	10.26
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	13.02	9.12	1.34	1.34	31.51	8.56
Overhaul \$	70.51	47.21	38.30	57.24	42.61	11.17	11.17	26.52	38.73
Repair + maintenance	70.74	48.04	39.16	64.64	49.89	10.27	10.27	29.91	23.85
Wear items, GEC	9.75	5.97	4.68	1.85	1.22	0.57	0.57	3.15	0.00
<b>Hourly operating cost</b>	<b>200.45</b>	<b>135.06</b>	<b>109.90</b>	<b>202.86</b>	<b>152.01</b>	<b>37.06</b>	<b>37.06</b>	<b>141.46</b>	<b>104.91</b>
Operators hourly wage (\$)	60.54	60.54	60.54	60.54	60.54	60.54	60.54	60.54	60.54
Total hourly rate	374.27	270.34	223.77	348.59	271.39	144.81	144.81	322.49	246.82
Overhead and profit @15%	56.14	40.55	33.57	52.29	40.71	21.72	21.72	48.37	37.02
<b>Total Estimated Hourly Cost:</b>	<b>430.41</b>	<b>310.89</b>	<b>257.33</b>	<b>400.88</b>	<b>312.09</b>	<b>166.53</b>	<b>166.53</b>	<b>370.86</b>	<b>283.84</b>

<b>2020 - 2021 Variable Costs: Summary of Changes</b>											
			Dozers			Scrapers		Grader*	Water	Loader	Truck
			D11T	D10T	D9T	657G	637G	16M	wagon	993K	777F
Total Estimated Hourly Cost (\$)											
2020			433.64	296.50	254.90	415.25	336.18	161.65	161.65	374.09	283.26
2021			430.41	310.89	257.33	400.88	312.09	166.53	166.53	370.86	283.84
Change (\$)			-3.22	14.39	2.44	-14.37	-24.09	4.88	4.88	-3.23	0.57
Change (%)			-0.7	4.9	1.0	-3.5	-7.2	3.0	3.0	-0.9	0.2
<b>Total Average Change 2020 - 2021 (%)</b>			-0.02%								

***PSC Reclamation Division Worksheet: 2021 Residual Values for Equipment***

The following table gives estimated values heavy equipment (Caterpillar or equivalent) items 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>2018</i>			<i>2020</i>			<i>2021</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>									
D 11T	2,500,000	35	875,000	2,500,000	35	875,000	2,910,000	50	1,455,000
D 10T	1,680,000	40	672,000	1,435,000	40	574,000	1,920,000	50	960,000
D 9T	1,143,000	37	425,000	1,151,000	37	425,870	1,370,000	50	685,000
<b>SCRAPERS</b>									
657G	2,000,000	27	540,000	2,000,000	27	540,000	2,272,000	50	1,136,000
637G	1,350,000	38	513,000	1,350,000	27	364,500	1,570,000	50	785,000
657E									
<b>MOTOR GRADER</b>									
16M	1,050,000	47	493,500	1,070,000	45	481,500	1,230,000	50	615,000
<b>LOADER</b>									
993 K	2,900,000	38	1,102,000	3,025,000	35	1,058,750	3,500,000	50	1,750,000
<b>END DUMP</b>									
777F	1,900,000	38	722,000	1,920,000	38	729,600	2,200,000	50	1,100,000
789D	3,250,000	38	1,235,000						
793F	3,450,000	38	1,311,000						