

Summary

This section contains the formulas, rules, and principles, and the rate schedules and calculation procedures for determining the assessed value of oil and gas well resource production equipment, and buildings located at an oil or gas well site.

Description

Resource production equipment includes the fixtures, machinery and other appliances by which petroleum oil or gas is produced to the surface, stored, transported from a well site or a battery or gas handling site, or is compressed.

Resource production equipment does not include the fixtures, machinery and other appliances by which petroleum oil or gas is stored at a battery site, or is compressed where the gas is, for the most part, a by-product of petroleum oil production.

Oil or Gas Well Site

The area of land on or under which is located the resource production equipment used to raise or pump the oil or gas to the surface, the resource production equipment used to inject air, water, steam or gas to enhance the production of a well, resource production equipment used to test or collect well productivity where wells and testing/collection equipment are connected on the same parcel of land, or the resource production equipment at a water source well, that was operated for 30 or more days in the 12 month period ending July 1 of the preceding year to which the assessment roll relates.

The resource production equipment located at an oil well site includes the pumping equipment, wellhead assembly, tubing and rods, flow lines, manifolds and well accessories.

The resource production equipment located at a gas well site includes the wellhead assembly, tubing, chemical equipment, water handling equipment, metering equipment, flow line and manifold.

The resource production equipment located at an oil or gas multi-well pad site includes the equipment for an oil or gas well site along with production testing or collection equipment (meters, separators, manifold, flow line, etc.).

The resource production equipment used to inject air, polymer, water, steam or gas to enhance the production of a well, and the resource production equipment at a water source well, includes the pumping equipment, wellhead assembly, tubing and rods, metering equipment, control valves, flow lines, manifolds, cable and well accessories.

New Well Site

An oil or gas well site that was drilled in the 12 month period ending July 1 of the preceding year to which the assessment roll relates.

Swabber Well Site

An oil or gas well site where on July 1 of the preceding year to which the assessment roll relates, the resource production equipment used in the preceding year has been removed from the site, with the exception of the wellhead, and has not been replaced with any other on-site resource production equipment.

Shut-In Single Well Site

The area of land on or under which is located the resource production equipment used to raise or pump the oil or gas to the surface, the resource production equipment used to inject air, water, steam or gas to enhance the production of a well, or the resource production equipment at a water source well, that was operated for less than 30 days in the 12 month period ending July 1 of the preceding year to which the assessment roll relates.

Shut-In Multi-Well Pad Site

The area of land on or under which is located resource production equipment used to raise or pump the oil or gas to the surface and resource production equipment used to test or collect well productivity where wells and testing/collection equipment are connected on the same legal subdivision (LSD) of the same legal land description. All resource production equipment, both for production and testing/collection, have operated for less than 30 days in the 12 month period ending July 1 of the preceding year to which the assessment roll relates.

Observation Well Site

The area of land on or under which is located the resource production equipment used to monitor an oil or gas well to enhance the production of the well.

Gas Storage Well Site

The area of land on or under which is located the resource production equipment used to inject gas into a gas cavern or sub surface formation and to pump gas from a gas cavern or subsurface formation.

Flow Line

A flow line is resource production equipment consisting of a line of pipe used to transport oil or gas within a well site to a battery or gas handling site.

Replacement Cost New

The replacement cost new of oil and gas well resource production equipment and buildings located at an oil or gas well site, or a new well site shall be determined by the standard unit method.

For the purposes of identifying the presence and classification of oil and gas well resource production equipment so as to determine its replacement cost new using the standard unit method, the assessor shall use and rely upon information reported by the Saskatchewan Ministry of the Economy and/or its Minister (or any successor of either) in the administration of *The Oil and Gas Conservation Act* and corresponding regulation (or any successor legislation), to the extent such information is available.

The replacement cost new of oil and gas well resource production equipment located at a swabber well site or shut-in single well site or shut-in multi-well pad site or observation well site shall be limited to the wellhead assembly which shall be determined in accordance with the wellhead assembly specifications in Chapter 4 - Resource Production Equipment, Section 4.1.3 - Oil and Gas Well Resource Production Equipment, Well Classification

The replacement cost new of oil and gas well resource production equipment located at an observation well site or gas storage well site, and the replacement cost new of flow lines shall be determined by the unit-in-place method.

The trended original cost method for determining replacement cost new shall be used where the replacement cost new of specific oil or gas well resource production equipment cannot be determined by the standard unit method or the unit-in-place method.

The trended original cost shall include all direct and indirect costs. Direct costs include materials, labour, supervision, equipment rentals, and utilities. Indirect costs include architectural and engineering fees, building permits, title and legal fees, insurance, interest and fees on construction loans, taxes incurred during construction, advertising and sales expenses, and overhead and profit. Trended original costs shall be determined free on board (FOB) the oil or gas well site as of January 1, 2023.

Standard Unit Method

The replacement cost new shall be determined as follows:

1. Determine the classification of the well.
2. Determine the resource production equipment needed to operate a substitute well. The substitute well must perform the same function as the well being valued.

3. Calculate the replacement cost new of the resource production equipment located at the well by summing the replacement cost of the substitute resource production equipment.

Unit-In-Place Method

The replacement cost new shall be determined as follows:

1. Determine the type of resource production equipment using the rating guide.
2. Determine the features requiring a unit-in-place lump sum or percentage adjustment.
3. Calculate the replacement cost new of the resource production equipment by adjustment of the base rate by the unit-in-place adjustments.

Trended Original Cost Method

The replacement cost new shall be determined as follows:

1. Determine the original construction cost of all the resource production equipment at the facility.
2. Determine the direct and indirect costs requiring an adjustment.
3. Determine the direct and indirect cost factor for oil and gas resource production equipment required to adjust construction costs to January 1, 2023.
4. Calculate the construction cost of all the resource production equipment at the facility by adjusting the original construction cost for any direct or indirect costs requiring adjustment and multiplying the adjusted original construction cost by the comparative cost index.
5. Determine replacement cost of resource production equipment that can be separately identified and rated by the unit-in-place method.
6. Calculate the replacement cost of the resource production equipment that cannot be separately identified by subtracting the replacement cost of separately identified components from the construction cost of all the resource production equipment at the facility.

Physical Deterioration

The amount of physical deterioration for oil and gas well resource production equipment, buildings and structures shall be determined using the lifetime depreciation method. No allowance shall be made for functional and economic obsolescence, except as may be accounted for in the downtime allowance or the production adjustment factor.

Lifetime Depreciation Method

The amount of physical deterioration shall be 40 percent. When calculating replacement cost new less depreciation no additional allowance shall be made for physical deterioration except as may be accounted for in the production adjustment factor.

Downtime Allowance

The downtime allowance for oil and gas well resource production equipment shall be determined by the schedule of rates method.

The downtime allowance shall account for the loss in value due to under-utilization of the resource production equipment. This includes any loss in value due to differences in replacement cost and differences in the amount of depreciation, that have not been taken into account using the procedures in this Manual.

Schedule of Rates Method

The downtime allowance shall be 10 percent. When calculating replacement cost new less depreciation and downtime, no additional allowance shall be made for downtime except as may be accounted for in the production adjustment factor.

Production Adjustment Factor

The production adjustment factor for oil and gas well resource production equipment, buildings and structures located at an oil or gas well site, and flow lines shall be determined by the schedule of rates method.

The production adjustment factor shall account for the loss in value due to under-utilization of the resource production equipment, buildings and structures. This includes any loss in value due to differences in replacement cost and differences in the amount of depreciation, that have not been taken into account using the procedures in this Manual.

A production adjustment factor shall not be applied to the oil and gas well resource production equipment, buildings and structures located at a new well site, swabber well site, shut-in single well site, shut-in multi-well pad site, observation well site, or gas storage well site.

Schedule of Rates Method

The production adjustment factor shall be 0.75 for qualified resource production equipment, buildings, structures and flow lines.

Qualifying Production Level

The production adjustment factor shall be applied to resource production equipment, buildings, structures and flow lines located at an oil or gas well site. The factor shall be a three year average of production from a 36 month period ending July 1 of the preceding year to which the assessment roll relates.

The average production of the well shall be determined as follows:

1. Determine the volume of oil or gas produced by the well during the 12 month period of July 1 to June 30 for each of the three years.
2. Determine the number of days the well was operated during the 12 month period of July 1 to June 30 for each of the three years.
3. Calculate the production of the well for each year by dividing the volume of oil or gas produced by the well for the year by the number of days the well was operated during the year.
4. Calculate the average production of the well by summing the production of the well for the three years and dividing by three.

Oil Wells

Well Area (Abbreviation)	Crude Type	Qualifying Production Level	
		barrels/day	m ³ /day
Weyburn (WE)	Light	1.05	0.166
	Medium	1.09	0.173
Swift Current (SC)	Light	0.73	0.116
	Medium	1.43	0.228
	Heavy	2.58	0.410
Kindersley (KD)	Light	0.56	0.090
	Heavy	2.87	0.456
North Battleford - South (NB-S)	Heavy	3.11	0.495
North Battleford - North (NB-N)	Heavy	3.11	0.495

Gas Wells

Well Area (Abbreviation)	Qualifying Production Level	
	cu.ft./day	m ³ /day
Weyburn (WE)	14,952	423.39
Swift Current (SC)	11,562	327.40
Kindersley (KD)	13,096	370.85
North Battleford - South (NB-S)	14,952	423.39
North Battleford - North (NB-N)	14,952	423.39

Calculation Procedure

Resource Production Equipment at an Oil or Gas Well Site

Description	Document No.	Page No.
Standard Unit Resource Production Equipment [a), b), c)]		
a) Determine Well Characteristics		
a ₁ . Well Area	4.1.3	1
a ₂ . Well Type	4.1.3	1
a ₃ . Crude Type	4.1.3	2
a ₄ . Completion	4.1.3	2
a ₅ . Depth	4.1.3	2
a ₆ . Rated Volume	4.1.3	2
a ₇ . Facility Type	4.1.3	2
a ₈ . Days Operated	4.1.3	2
b) Determine Substitute Well Features	4.1.3	3-18
c) Base Rate = (c ₁ + c ₂ + c ₃ ... + c ₉)		
c ₁ . Pumping Equipment Rate	4.1.5	1-5
c ₂ . Wellhead Assembly Rate	4.1.4	1
c ₃ . Tubing and Rods Rate	4.1.7	1
c ₄ . Chemical Equipment Rate	4.1.13	1
c ₅ . Water Handling Equipment Rate		
c ₅ = (c _{5.1} + c _{5.2})		
c _{5.1} Separator Rate	4.1.8	1-2
c _{5.2} Scraper Traps Rate	4.1.22	1
c ₆ . Metering Equipment Rate	4.1.10	1-2
c ₇ . Control Valves Rate	4.1.11	1-2
c ₈ . Manifold Rate	4.1.21	1
c ₉ . Flow Line Rectifier Rate	4.1.15	1
d) Unit-in-Place Resource Production Equipment	4.1.1	2
e) Trended Original Cost Resource Production Equipment	4.1.1	3
f) Replacement Cost New = (c + d + e)		
g) RCN less Physical Deterioration and Downtime		
Allowance = f x (1 - (g ₁ + g ₂))		
g ₁ . Physical Deterioration	4.1.1	3
g ₂ . Downtime Allowance	4.1.1	3
h) Production Adjustment Factor	4.1.1	3-5
i) Assessed Value = (g x h)		

The calculation procedure for oil and gas well buildings on an oil or gas well site is found on Document 3.1.3, Page 1.

Description

The comparative cost factors are used to determine the replacement cost of oil and gas well resource production equipment valued by the trended original cost method.

Application

The trended original cost method shall be used when the individual components of resource production equipment cannot be determined or estimated.

The trended original cost method shall not be used to determine the replacement cost of resource production and equipment located at an oil or gas well site, or to determine the replacement cost of resource production equipment that can be separately identified and rated.

Comparative Cost Factor

The comparative cost factor shall be used to calculate the replacement cost new of resource production equipment as of January 1, 2023.

Factors

Year	Comparative Cost Factor
1940 and older	
1941	
1942	
1943	
1944	
1945	
1946	
1947	
1948	
1949	
1950	
1951	
1952	
1953	
1954	
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1972	
1973	

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Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Comparative Cost Factor

Year	Comparative Cost Factor
1974	
1975	
1976	
1977	
1978	
1979	
1980	
1981	
1982	
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1985	
1986	
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2010	
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2017	
2018	
2019	
2020	
2021	
2022 and newer	

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Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Well Classification

Well Characteristics

This section describes the formulas, rules and procedures for determining the classification of resource production equipment located at an oil or gas well site. Oil and gas well resource production equipment shall be classified in accordance with the following well characteristics:

Well Area	Depth
Well Type	Rated Volume
Crude Type	Facility Type
Completion	Days Operated

Well Area

The well areas shall be:

Well Area (Abbreviation)	Description
Weyburn (WE)	All municipalities east of the third meridian, from R.M. 1 to R.M. 371 inclusive, except R.M. 282.
Swift Current (SC)	All municipalities west of the third meridian, from R.M. 43 to R.M. 261 inclusive.
Kindersley (KD)	All municipalities west of the third meridian, from R.M. 282 to R.M. 382 inclusive, including R.M. 372.
North Battleford - South (NB-S)	All municipalities from R.M. 394 to R.M. 555 inclusive.
North Battleford - North (NB-N)	All municipalities from R.M. 561 to R.M. 622 inclusive and the Northern Administrative District.

Well Type

The well types shall be:

Oil	Polymer Injection
Oil (New)	Gas Injection
Gas	Continuous Steam Injection
Gas (New)	Cyclic Steam Injection
Air Injection	Water Source
Water Injection	Water Source (New)

Oil (New) and Gas (New) wells are those wells located on a new well site that was drilled in the 12 month period ending July 1 of the year immediately preceding the year to which the assessment roll relates.

Crude Type

The crude types shall be:

- Light
- Medium
- Heavy

Completion:

The completion types shall be:

- Vertical
- Horizontal

Depth

The depth of an oil or gas well shall be determined by measuring the distance from the kelly bushing to the average depth of the perforations in the well casing, or in the case of a horizontal well, the distance from the kelly bushing to the kick off depth.

Rated Volume

The volume for an oil well shall be determined based on the combined volume of oil and water produced.

The volume for a water source well shall be determined based on the volume of water produced.

The period July 1 to June 30 of the year immediately preceding the year to which the assessment roll relates, shall be used to determine the volume and days operated.

The rated volume shall be determined by application of the following formula:

$$RV = \text{volume} \div \text{days operated}$$

where: RV = rated volume
 volume = number of barrels of oil and/or water produced by the well
 days operated = number of days the well was operated

Facility Type

The facility types shall be:

Type	Description
Tanks	Used to store oil on site until it is transferred to a battery.
Flow Lines	Used to transfer oil directly to a battery or gas directly to a gas plant, satellite or compressor station.

Days Operated

The number of days that the well was operated during the period July 1 to June 30 of the year immediately preceding the year to which the assessment roll relates.

Shut-In Reporting Period

The shut-in status for single well sites and multi-well pad sites shall be determined from the 12 month period ending July 1 of the year immediately preceding the year to which the assessment roll relates.

Pumping Units

All oil well pumping units shall be conventional or hydrabeam.

Water Handling Equipment

Type	Description	Rate (\$)
1	20% of meter cabinet 10% - 125 – 260 psi 12"x5' vertical two phase separator 60% - 2" receiving and launching trap without bypass 70% - test leads	13,670
2	125 – 260 psi 24"x10' vertical two phase separator 3" receiving and launching trap with bypass	67,540

Metering Equipment

Type	Description	Rate (\$)
1	- One 300 psi gas, dry flow recorder chart 100" with 2 pens 50% of one 3" 300 psi senior quick change 50% of one 3" 300 psi simplex	16,270

Water Handling Buildings

Type	Description	Rate (\$)
1	10% - 8' height, 64 sq.ft. metal shed with lining and insulation, floor and heat 10% - 40 barrel open top plastic pop tank 10% - 120 barrel open top plastic pop tank	2,390
2	8' height, 64 sq.ft. metal shed with lining and insulation, floor and heat 300 barrel lap welded steel stock tank with open top	59,210

Chemical Equipment

Type	Description	Rate (\$)
1	Alcohol drip (9 imp. gal. tank)	2,020

Substitute Well Features: Weyburn Well Area - Light Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical Wells
 - New wells ... 160 pumping unit
 - All other vertical well pumping units:

Rated Volume (barrels/day)	Depth (ft.)			
	<3000	3000 to <4800	4800 to <5700	≥ 5700
< 3	40	114	114	228
3 to < 10	57	114	114	228
10 to < 75	57	160	160	320
75 to < 120	80	160	228	320
120 to < 200	PC-120	228	320	456
≥ 200	PC-120	320	456	640
Rated volume = oil per day + (water per day ÷ 2)				

2. Horizontal Wells
 - New wells ... 456 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 120	160
120 to < 200	228
200 to < 300	456
300 to < 450	456
450 to < 600	640
≥ 600	912
Rated volume = oil per day + (water per day ÷ 2)	

3. Prime Mover ... electric motor.

Wellhead Assembly

Vertical ... threaded 2000 lbs.

Horizontal ... flanged 2000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 2⅞" tubing plain steel; ¾" rod

Horizontal ... 2⅞" tubing plain steel; ¾" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Well Accessories

Cathodic protection rectifier.

Building

n/a

Substitute Well Features: Weyburn Well Area - Medium Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical Wells
 - New wells ... 160 Pumping unit
 - All other vertical well pumping units:

Rated Volume (barrels/day)	Depth (ft.)			
	< 3000	3000 to < 4800	4800 to < 5700	≥ 5700
< 3	40	114	114	228
3 to < 10	57	114	114	228
10 to < 75	57	160	160	320
75 to < 120	80	160	228	320
120 to < 200	PC-120	228	320	456
≥ 200	PC-120	320	456	640
Rated volume = oil per day + (water per day ÷ 2)				

2. Horizontal Wells
 - New wells... 640 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 120	160
120 to < 200	228
200 to < 300	456
300 to < 450	456
450 to < 600	640
≥ 600	912
Rated volume = oil per day + (water per day ÷ 2)	

3. Prime Mover ... electric motor.

Wellhead Assembly

Vertical ... threaded 2000 lbs.

Horizontal ... flanged 2000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 2 7/8" tubing plain steel; 3/4" rod

Horizontal ... 2 7/8" tubing plain steel; 3/4" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Well Accessories

Cathodic protection rectifier.

Building

n/a

Substitute Well Features: Swift Current Well Area - Light Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications.

Pumping Equipment

1. Vertical Wells
 - New wells ... 40 pumping unit
 - All other vertical well pumping units:

Rated Volume (barrels/day)	Depth (ft.)		
	< 2000	2000 to < 4500	≥ 4500
< 1.7	25	40	40
≥ 1.7	25	40	40
Rated volume = oil per day + (water per day ÷ 0.67)			

2. Horizontal Wells
 - New wells ... 456 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 120	160
120 to < 200	228
200 to < 300	456
300 to < 450	456
450 to < 600	640
≥ 600	912
Rated volume = oil per day + (water per day ÷ 2)	

3. Prime Mover ... electric motor.

Wellhead Assembly

Vertical... threaded 2000 lbs.

Horizontal... flanged 2000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 2 7/8" tubing plain steel; 5/8" rod

Horizontal ... 2 7/8" tubing plain steel; 3/4" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Building

n/a

Substitute Well Features: Swift Current Well Area - Medium Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical Wells
 - New wells ... 114 pumping unit
 - All other vertical well pumping units:

Rated Volume (barrels/day)	Depth (ft.)		
	< 2000	2000 to < 4500	≥ 4500
< 7	40	114	114
7 to < 190	57	114	114
≥ 190	228	228	228
Rated volume = oil per day + (water per day ÷ 1.5)			

2. Horizontal Wells
 - New wells ... 640 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 120	160
120 to < 200	228
200 to < 300	456
300 to < 450	456
450 to < 600	640
≥ 600	912
Rated volume = oil per day + (water per day ÷ 2)	

3. Prime Mover ... electric motor.

Wellhead Assembly

Vertical ... threaded 2000 lbs.

Horizontal ... flanged 2000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 2 7/8" tubing plain steel; 5/8" rod

Horizontal ... 2 7/8" tubing plain steel; 3/4" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Building

n/a

Substitute Well Features: Swift Current Well Area - Heavy Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical wells
 - New wells ... 160 pumping unit
 - All other vertical well pumping units ... 160 pumping unit
 - Related Volume = oil per day
2. Horizontal Wells
 - New wells ... PC-54 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 180	PC-54
180 to < 500	PC-64
≥ 500	PC-80
Rated volume = oil per day + (water per day ÷ 7)	

3. Prime Mover

Facility Type	Prime Mover
Tank	Gas Motor
Flow Line	Electric Motor

Wellhead Assembly

Vertical ... flanged 2000 lbs.

Horizontal ... flanged 2000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 3½" tubing plain steel; 1" rod

Horizontal ... 3½" tubing plain steel; 1" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Building

Facility Type	Building	Rate (\$/unit)
Tank	64 sq.ft. pump shack	9,160
Flow Line	n/a	

Substitute Well Features: Kindersley Well Area - Light Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical Wells
 - New wells ... 40 pumping unit
 - All other vertical pumping well units:

Rated Volume (barrels/day)	Depth (ft.)		
	< 2000	2000 to < 4500	≥ 4500
< 1.7	25	40	40
≥ 1.7	25	40	80
Rated volume = oil per day + (water per day ÷ 0.67)			

2. Horizontal Wells
 - New wells ... 456 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 120	160
120 to < 200	228
200 to < 300	456
300 to < 450	456
450 to < 600	640
≥ 600	912
Rated volume = oil per day + (water per day ÷ 2)	

3. Prime Mover... electric motor.

Wellhead Assembly

Vertical ... threaded 2000 lbs.

Horizontal ... flanged 2000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 2 3/8" tubing plain steel; 5/8" rod

Horizontal ... 2 7/8" tubing plain steel; 3/4" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Building

n/a

Substitute Well Features: Kindersley Well Area - Heavy Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical Wells
 - New wells ... 160 pumping unit
 - All other vertical well pumping units ... 160 pumping unit
 - Rated Volume = oil per day
2. Horizontal Wells
 - New wells ... PC-54 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 180	PC-54
180 to < 500	PC-64
≥ 500	PC-80
Rated volume = oil per day + (water per day ÷ 7)	

3. Prime Mover

Facility Type	Prime Mover
Tank	Gas Motor
Flow Line	Electric Motor

Wellhead Assembly

Vertical ... flanged 2000 lbs.

Horizontal ... flanged 2000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 2½" tubing plain steel; ⅞" rod

Horizontal ... 3½" tubing plain steel; 1" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Building

Facility Type	Building	Rate (\$/unit)
Tank	64 sq.ft. pump shack	9,160
Flow Line	n/a	

Substitute Well Features: North Battleford (South) Well Area - Heavy Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical Wells

- New wells ... PC-15 pumping unit
- All other vertical well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 30	PC-10
30 to < 80	PC-15
80 to < 120	PC-28
120 to < 180	PC-54
≥ 180	PC-64
Rated volume = oil per day + (water per day ÷ 3)	

2. Horizontal Wells

- New wells ... PC-54 pumping unit
- All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 180	PC-54
180 to < 500	PC-64
≥ 500	PC-80
Rated volume = oil per day + (water per day ÷ 7)	

3. Prime Mover

Facility Type	Prime Mover
Tank	Gas Motor
Flow Line	Electric Motor

Wellhead Assembly

Vertical ... flanged 2000 lbs.

Horizontal ... flanged 2000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 3½" tubing plain steel; 1" rod

Horizontal ... 3½" tubing plain steel; 1" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Building

Facility Type	Building	Rate (\$/unit)
Tank	64 sq.ft. pump shack	9,160
Flow Line	n/a	

Section: Oil & Gas Well Resource Production Equipment
Resource Production Equipment
Subject: Well Classification
Substitute Well Features: North Battleford (North) Well Area - Heavy Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical Wells
 - New wells ... PC-15 pumping unit
 - All other vertical well pumping units:

Rated Volume (barrels/day)	Depth (ft.)		
	< 1000	1000 to < 2000	≥ 2000
< 9.0	40	80	PC-15
≥ 9.0	57	PC-15	PC-15
Rated volume = oil per day + (water per day ÷ 3)			

2. Horizontal Wells
 - New wells ... PC-54 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 180	PC-54
180 to < 500	PC-64
≥ 500	PC-80
Rated volume = oil per day + (water per day ÷ 7)	

3. Prime Mover

Facility Type	Prime Mover
Tank	Gas Motor
Flow Line	Electric Motor

Wellhead Assembly

Vertical ... flanged 2000 lbs.

Horizontal ... flanged 2000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 3½" tubing plain steel; 1" rod

Horizontal ... 3½" tubing plain steel; 1" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Building

Facility Type	Building	Rate (\$/unit)
Tank	64 sq.ft. pump shack	9,160
Flow Line	n/a	

Section: Oil & Gas Well Resource Production Equipment
Resource Production Equipment
Subject: Well Classification
Substitute Well Features: Swift Current and Weyburn Well Area - Gas Wells

The resource production equipment required to operate a substitute gas well that performs the same function as the gas well being valued shall be determined in accordance with the following specifications:

Description	Specifications	
Tubing	1” diameter, plastic - Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string	
Wellhead assembly	- Threaded, 1000 pound pressure - Dual wellhead for multi-zone completions	
Chemical equipment	60% of Type 1	
Water handling buildings	100% of Type 1	
Water handling equipment	100% of Type 1	
Metering equipment	10% of Type 1	
Rated Volume = gas per day		
Total Rate (\$) (Excludes tubing, flow line and manifold)	Threaded, 1000 pound pressure	36,650
	Dual wellhead	38,980

Substitute Well Features: Kindersley Well Area - Gas Wells

The resource production equipment required to operate a substitute gas well that performs the same function as the gas well being valued shall be determined in accordance with the following specifications:

Description	Specifications	
Tubing	• 2⅜” diameter, plain steel • Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string	
Wellhead assembly	• Threaded, 2000 pound pressure • Dual wellhead for multi-zone completions	
Chemical equipment	None	
Water handling buildings and equipment	65% of Type 2	
Metering equipment	80% of Type 1	
Rated volume = gas per day		
Total Rate (\$) (Excludes tubing, flow line and manifold)	Threaded, 2000 pound pressure	120,700
	Dual wellhead	123,620

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Well Classification

Substitute Well Features: North Battleford (South) Well Area - Gas Wells

The resource production equipment required to operate a substitute gas well that performs the same function as the gas well being valued shall be determined in accordance with the following specifications:

Description	Specifications	
Tubing	• 2⅜” diameter, plain steel • Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string	
Wellhead assembly	• Threaded, 2000 pound pressure • Dual wellhead for multi-zone completions	
Chemical equipment	100% of Type 1	
Water handling buildings and equipment	55% of Type 2	
Metering equipment	80% of Type 1	
Rated volume = gas per day		
Total Rate (\$) (Excludes tubing, flow line and manifold)	Threaded, 2000 pound pressure	110,050
	Dual wellhead	112,970

Substitute Well Features: North Battleford (North) Well Area - Gas Wells

The resource production equipment required to operate a substitute gas well that performs the same function as the gas well being valued shall be determined in accordance with the following specifications:

Description	Specifications	
Tubing	• 2⅜” diameter, plain steel • Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string	
Wellhead assembly	• Flanged, 2000 pound pressure • Dual wellhead for multi-zone completions	
Chemical equipment	100% of Type 1	
Water handling buildings and equipment	48% of Type 2	
Metering equipment	80% of Type 1	
Rated volume = gas per day		
Total Rate (\$) (Excludes tubing, flow line and manifold)	Flanged, 2000 pound pressure	103,510
	Dual wellhead	112,920

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Well Classification

Substitute Well Features: Air, Polymer, Water and Gas Injection Wells

The resource production equipment required to operate a substitute air, water or gas injection well that performs the same function as the injection well being valued shall be determined in accordance with the following specifications:

Description	Specifications	
Tubing	• 2$\frac{7}{8}$" tubing, plain steel • Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string	
Wellhead assembly	Threaded, 2000 pound pressure	
Metering equipment	1 - 2" floco meter	
Control valves	1 - 3" choke 1 - pressure control switch	
Well accessories	All wells east of the third meridian: cathodic protection rectifier	
Building	20 sq.ft. fibreglass wellhead shelter	
Total Rate (\$) (Excludes tubing, flow lines and manifolds)	All wells east of the third meridian	70,710
	All wells west of the third meridian	53,440

Substitute Well Features: Continuous Steam Injection Wells

The resource production equipment required to operate a substitute continuous steam injection well that performs the same function as the injection well being valued shall be determined in accordance with the following specifications:

Description	Specifications	
Tubing	• 3$\frac{1}{2}$" tubing, lined • Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string	
Wellhead assembly	Flanged, 3000 pound pressure	
Metering equipment	1 - 3" turbine meter and totalizer	
Control valves	1 - 3" choke	
Total Rate (\$) (Excludes tubing, flow lines and manifolds)		88,020

Substitute Well Features: Cyclic Steam Injection Wells

The resource production equipment required to operate a substitute cyclic steam injection well that performs the same function as the injection well being valued shall be determined in accordance with the following specifications:

Description	Specifications
Tubing and rods	• 3½" tubing, lined; 1" rods • Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string
Pumping equipment	67% of a conventional 160 pumping unit with electric motor
Wellhead assembly	Flanged, 3000 pound pressure
Metering equipment	3 - 3" turbine meters and totalizers
Control valves	1 - 3" choke
Total Rate (\$) (Excludes tubing, rod, flow lines and manifolds)	
246,170	

Substitute Well Features: Water Source Wells

The resource production equipment required to operate a substitute water source well that performs the same function as the water source well being valued shall be determined in accordance with the following specifications:

Tubing and Rods

1. New Wells
 - 2 7/8" tubing, plain steel; 7/8" rod
 - Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string
2. Rated volume < 150,000 imp. gal./day
 - 2 7/8" tubing, plain steel; 7/8" rod
 - Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string
3. Rated volume ≥ 150,000 imp. gal./day
 - 2 7/8" tubing plain steel
 - Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string for depth of well

Description	Specifications	
	New Wells and Wells Rated Volume < 150,000 imp. gal./day	Rated Volume ≥ 150,000 imp. gal./day
Pumping equipment	• PC-15 pumping unit • 50% of 1 - variable frequency drive	• Submersible pumping unit 400 series 100 stage • Submersible pump motor 456 series 80 hp • Switchboard 100 hp • Transformer 75 kva • Size 4 submersible pump cable x well depth x 1.05 • 50% of 1 - variable frequency drive
Wellhead assembly	Threaded, 2000 pound pressure	Threaded, 2000 pound pressure
Metering equipment	None	None
Control valves	• 1 - 3" choke • 1 - pressure control switch	• 1 - 3" choke • 1 - pressure control switch
Well accessories: cathodic protection	All wells east of the third meridian	All wells east of the third meridian
Building	None	20 sq.ft. fibreglass wellhead shelter with heat
Total Rate (\$) (Excludes tubing, rod, cable, flow lines and manifolds)	All wells east of the third meridian	179,750
	All wells west of the third meridian	162,480
		282,230
		264,960

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Well Classification

Substitute Well Features: Heavy Crude Steam Assisted Gravity Drainage (SAGD) Oil Wells (entire Province)

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical SAGD Wells

- New wells ... PC-15 pumping unit
- All other vertical well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 30	PC-10
30 to < 80	PC-15
80 to < 120	PC-28
120 to < 180	PC-54
≥ 180	PC-64
Rated volume = oil per day + (water per day ÷ 3)	

2. Horizontal SAGD Wells

- New wells ... 456 pumping unit
- All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 180	PC-54
180 to < 500	PC-64
500 to < 600	320
600 to < 800	456
≥ 800	640
Rated volume = oil per day + (water per day ÷ 7)	

3. Prime Mover

Facility Type	Prime Mover
Tank	Gas Motor
Flow Line	Electric Motor

Wellhead Assembly

Vertical ... flanged 3000 lbs.

Horizontal ... flanged 3000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 3½" tubing plain steel; 1" rod

Horizontal ... 4½" tubing plain steel; 1" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Building

Facility Type	Building	Rate (\$)
Tank	64 sq.ft. pump shack	9,160
Flow Line	n/a	

Section: Oil & Gas Well Resource Production Equipment

Subject: Wellhead Assembly

Description

A typical wellhead assembly is made up of a casing head, tubing head and Christmas tree. The wellhead may be screwed onto the casing or it may be an assembly that is bolted together. These are called the threaded or flanged wellheads respectively.

Rates

The rates for well head assembly are dollars per unit.

Type	Size			
	Series 400 W.P. ≤ 1000 psi	Series 600 W.P. 2000 psi	Series 900 W.P. 3000 psi	Series 1500 W.P. 5000 psi
Pumping Oil or Water				
Single Flanged	19,230	22,100	22,900	37,370
Single Threaded	16,930	19,190	19,840	31,860
Dual Flanged	33,870	38,970	41,100	41,570
Dual Threaded	19,160	30,000	35,620	35,440
Flowing Oil & Gas				
Single Flanged	22,190	27,630	35,850	35,900
Single Threaded	17,750	25,300	32,440	32,730
Dual Flanged	30,790	37,040	43,470	43,500
Dual Threaded	20,080	28,220	31,560	31,640
Injection - Air, Polymer, Water and Gas				
Flanged	22,280	27,630	36,500	36,500
Threaded	17,600	25,300	32,940	32,730
Dual Threaded	20,080	28,220	31,560	31,640
Injection - Steam				
Flanged	48,620	48,230	48,030	48,030
Steam Injection & Pumping				
Flanged	69,460	69,000	68,650	68,510
Tubingless (Casing Head)				
Flanged	17,160	18,860	18,640	18,960
Threaded	11,440	12,110	12,570	12,840

Section: Oil & Gas Well Resource Production Equipment

Subject: Wellhead Assembly

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Pumping Units

Conventional and Hydrabeam

This is the typical horsehead or grasshopper counterbalance unit. The rods are raised by carrier bar at the horsehead end of the waling beam. On the downstroke, the weight of the rod assembly is counterbalanced by large weights. The pivot point of the assembly is in the middle of the walking beam.

Rates

The rates for conventional and hydrabeam pumping units are in dollars per unit.

Gear Box Torque Rating (x 1000) (lb.)	Without Prime Mover (2)	Electric Prime Mover (1)		Gas Prime Mover (1)	
		Rate	Range (hp)	Rate	Range (hp)
25	47,190	59,600	5	101,720	9 - 12
40	52,430	63,950	6	104,900	9 - 12
57	62,430	75,400	5 - 10	120,750	9 - 12
80	67,410	81,100	5 - 10	131,160	9 - 19
114	111,970	123,540	7.5 - 15	181,820	13 - 19
160	122,200	133,770	15 - 25	202,200	20 - 29
228	144,310	161,960	20 - 40	242,320	20 - 39
320	172,990	188,750	30 - 60	296,940	30 - 59
456	215,210	234,040	40 - 75	357,540	40 - 99
640	249,170	270,160	50 - 75	433,190	60 - 99
912	293,940	322,560	60 - 100	516,780	60 - 149
1280	475,950	508,730	70 - 125	720,200	100 - 199
Rates include: - prime mover where noted - belt - rod rotator - concrete base - bottom hole pump - frame extension and side rails - polish rod - beam chemical injector at 50% - counter weights - pressure switch - stuffing box - installation					
NOTE: 1) Costs include: - per electrified site - \$12,540 - per gas operated site - propane vessel and/or scrubber with self-feed gas at \$14,920 2) Cost without Prime Mover: - electrical and propane vessel costs are not included and must be added if these rates are used. - apply these rates to non-typical installations 3) Strap jacks and slant jacks: - increase conventional pumping unit cost by 20%					

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Pumping Units

Unitorque and Air-Balanced Beam

The entire walking beam for unitorque and air-balanced beam pumping units moves up and down with the pivot point at the end of the beam. Unitorque pumping units have a counterweight system similar to conventional pumping units. The air-balanced beam pumping units have no counterweights. The downstroke is cushioned by a very large air-supplied “shock absorber”. There will be a small compressor mounted on the pumping unit to feed the unit.

Rates

The rates for unitorque and air-balanced beam pumping units are dollars per unit.

Gear Box Torque Rating (x 1000) (lb.)	Without Prime Mover (2)	Electric Prime Mover (1)		Gas Prime Mover (1)	
		Rate	Range (hp)	Rate	Range (hp)
114	122,720	134,290	7.5 - 15	180,680	13 - 19
160	148,650	160,220	15 - 25	226,650	20 - 29
228	172,040	189,690	20 - 40	269,730	20 - 39
320	203,410	222,350	30 - 60	332,470	30 - 59
456	238,800	262,230	40 - 75	392,820	40 - 99
640	265,590	291,430	50 - 75	507,540	60 - 99
912	324,510	362,430	60 - 100	592,130	60 - 149
Rates include: - prime mover where noted - belt - rod rotator - concrete base - bottom hole pump - frame extension and side rails - polish rod - beam chemical injector at 50% - counter weights - pressure switch - stuffing box - installation					
NOTE: 1) Costs include: - per electrified site - \$12,500 - per gas operated site - propane vessel and/or scrubber with self-feed gas at \$14,870 2) Cost without Prime Mover: - electrical and propane vessel costs are not included and must be added if these rates are used - apply these rates to non-typical installations					

Submersible Pumping Equipment

Submersible pumps have the major working system suspended at the bottom of the well bore inside the tubing. This system is identified on the surface by heavy electric cable emerging from the top of the wellhead.

Motor Rates

The motor rates for submersible pumping equipment are in dollars per unit.

Rating (hp)	Rate		
Series Minimum Casing	375 4½"	456 5½"	540 6⅝"
7.5	50,760	47,750	
10.0	59,760	51,080	
15.0	66,900	56,420	
19.5	71,710	62,510	
22.5	75,610	66,790	
25.0	84,620	68,980	
30.0		74,670	59,030
40.0		86,100	63,770
50.0		98,030	72,180
60.0		102,750	82,010
70.0		113,410	88,570
80.0		124,420	96,180
90.0		135,250	102,880
100.0		145,020	107,810
110.0		155,070	114,260
120.0		164,430	120,330
130.0			128,650
150.0			142,930
160.0			151,540
180.0			166,830
200.0			183,160
225.0			200,690
NOTE: 1) Series number refers to outside diameter size of motor or pump, eg. series 456 is 4.56 inches O.D. 2) Motors and pumps can be stacked, eg. in 4½" casing, to achieve 100 hp, 4 - 25 hp motors are stacked. 3) Generally, the pump is the value of the motor. This can be used as a guide if proper size information is not available.			

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Pumping Units

Pump Rates

The pump rates for submersible pumping equipment are in dollars per unit.

Stages	Length (ft.)	Rate			
Series Barrels/Day Minimum Casing		338 400-1500 4½"	400 280-4000 5½"	540 2000-7000 6⅝"	540 10000 6⅝"
≤ 20	2.1	17,170	17,000	16,890	16,560
21 - 40	3.5	21,250	17,170	21,850	29,880
41 - 60	4.9	25,450	20,030	25,250	34,750
61 - 80	6.3	29,460	23,240	28,390	39,490
81 - 100	7.8	33,370	26,150	31,600	43,950
101 - 120	9.1	37,150	29,060	34,720	50,460
121 - 140	10.5	40,970	31,970	37,810	53,080
141 - 160	11.9	44,370	34,370	40,420	56,860
161 - 180	13.3	47,590	36,780	43,030	60,490
181 - 200	14.7	50,620	39,110	45,330	63,960
201 - 220	16.1		42,010	48,550	68,690
221 - 240	17.5		44,990	51,780	73,290
241 - 260	18.9			58,020	77,910
261 - 280	20.4			61,390	82,610
> 280	21.8			64,900	87,270

Switchboards

The switchboard rates for submersible pumping equipment are in dollars per unit.

Rating (hp)	Rate
25	18,600
50	21,060
100	24,530
200	37,340
1000	62,250
1500	63,960
2000	65,790

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Pumping Units

Transformers

The transformer rates for submersible pumping equipment are in dollars per unit.

Size (kVA)	Rate
50	15,160
75	15,990
100	21,070
125	22,740
150	27,750
200	39,580
250	42,940

Cable

The cable rates for submersible pumping equipment are in dollars per linear foot.

Size	Power (hp)	Rate
1	> 200	42.69
2	150 - 200	37.03
4	< 150	27.70

Progressive Cavity (PC)

Pump Rates

The pump rates for progressive cavity pumping units are in dollars per unit.

Size (m ³ /100 rpm)	Rate
10	87,070
12	89,330
15	92,220
28	96,840
54	104,840
64	114,190
80	118,480
95	121,410
120	142,830
Rates Include: - drive system (gas or electric prime mover, hydraulic or electric skid) - bottom hole pump (rotor, stator) - installation	

Variable Frequency Drive

The rate for a variable frequency drive shall be \$66,520 per unit.

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Prime Movers

Description

Prime movers include electric and gas motors used to provide power to pumping units.

Triple-Rated Motors

The triple-rated motor prime mover rates are in dollars per unit.

Size		Controller Size	Rate
(hp)	(kW)		
10.0 / 7.5 / 5.0	7.5 / 5.6 / 3.7	1	9,280
15.0 / 10.0 / 7.5	11.2 / 7.5 / 5.6	2	12,820
20.0 / 15.0 / 10.0	14.9 / 11.2 / 7.5	2	14,080
25.0 / 20.0 / 15.0	18.6 / 14.9 / 11.2	2	17,090
30.0 / 25.0 / 15.0	22.4 / 18.6 / 11.2	3	18,730
40.0 / 30.0 / 20.0	29.8 / 22.4 / 14.9	3	23,420
50.0 / 40.0 / 30.0	37.3 / 29.8 / 22.4	3	27,150
60.0 / 50.0 / 40.0	44.8 / 37.3 / 29.8	4	31,460
75.0 / 60.0 / 50.0	56.0 / 44.8 / 37.3	4	38,340
100.0 / 75.0 / 60.0	74.6 / 56.0 / 44.8	4	43,790
125.0 / 100.0 / 75.0	93.3 / 74.6 / 56.0	4	46,010
Rates include: - 3 phase - 1200 RPM - fan-cooled motor - 60 Hz - class F insulation - controller - 460 volt - totally enclosed - installation			

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Prime Movers

Single-Rated Motors

The single-rated motor prime mover rates are in dollars per unit.

Size (hp)	Rate
1.0 – 2.0	6,700
3.0 – 5.0	7,000
7.5 – 10.0	8,110
15.0 – 20.0	11,570
25.0 – 30.0	14,850
40.0	17,650
50.0	18,940
60.0	23,420
75.0	25,850
100.0	37,920
125.0	43,100
150.0	48,660
200.0	64,320
250.0	77,170
Rates include: - 3 phase - 1200 RPM - fan-cooled motor - 60 Hz - class F insulation - controller - 460 volt - totally enclosed - installation	

Gas Engines

The gas engine prime mover rates are in dollars per unit.

Group #	Size (hp)	Rate
1	9 - 12	44,130
2	13 - 19	57,960
3	20 - 29	78,000
4	30 - 39	97,690
5	40 - 59	129,060
6	60 - 99	154,010
7	100 - 149	241,960
8	150 - 199	267,630
NOTE: Deduct \$4,530 if no electric starter in groups #1 to #4.		
Rates include: - twin-disk clutch - condensing radiator with fan - pressure lubrication - combination gas-gasoline carburetor - adjustable sub-base - miscellaneous pipe fittings - power take off - heavy flywheel - regulator - air cleaner - engine starter - installation		

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Tubing and Rods

Description

The bottom hole pump is suspended from the surface by a series of 20 foot steel or fibreglass rods that are threaded together. The most common size for the tubing is 2 $\frac{7}{8}$ inches (plain) in diameter and for the rod it is $\frac{7}{8}$ inches in diameter.

Rates

The rates for tubing and rods are dollars per lineal foot.

Tubing

Size (in.)	Steel		Plastic
	Plain	Lined	
$\leq 1\frac{1}{2}$	7.10		2.52
2	7.89		
2 $\frac{3}{8}$	8.55	9.54	
2 $\frac{7}{8}$	9.76	17.28	
3 $\frac{1}{2}$	13.62	18.76	
4	18.25	23.47	
4 $\frac{1}{2}$	24.58	30.14	

Rods

Size (in.)	Rate
$\frac{5}{8}$	3.47
$\frac{3}{4}$	4.30
$\frac{7}{8}$	5.41
1	6.47

Description

A separator is a vertical or horizontal vessel through which the emulsion is passed to split liquids and gases. Centrifugal action created by baffles inside the unit causes the split to occur.

Vertical Two-Phase Separators

The rates for vertical two-phase separators are in dollars per unit.

Diameter (in.)	Height (ft.)
	6
125-260 psi Working Pressure	
≤ 16	24,740
> 16 to ≤ 24	46,610
> 24 to ≤ 36	75,610
> 36 to ≤ 48	110,570
> 48 to ≤ 60	139,390
Rates include:	
- 1 oil dump valve	- 1 gauge glass assembly
- 1 liquid level controller	- 1 safety relief valve
- 1 pilot gas supply regulator	- 1 pressure gauge

Vertical Three-Phase Separators

The rates for vertical three-phase separators are in dollars per unit.

Diameter (in.)	Height (ft.)
	8
500-1000 psi Working Pressure	
≤ 16	54,680
> 16 to ≤ 24	68,070
> 24 to ≤ 36	98,790
> 36 to ≤ 42	142,270
Rates include:	
- 2 oil and water dump valves	- 1 safety relief valve
- 1 oil level controller	- 1 pressure gauge
- 1 pilot gas supply regulator	- 1 water level controller
- 1 gauge glass assembly	

Horizontal Two-Phase Separators

The rates for horizontal two-phase separators are in dollars per unit.

Diameter (in.)	Length (ft.)
	10
125-260 psi Working Pressure	
≤ 16	39,230
> 16 to ≤ 24	54,340
> 24 to ≤ 36	69,920
> 36 to ≤ 48	80,750
> 48 to ≤ 60	87,240
Rates include:	
- 1 oil dump valve	- 1 gauge glass assembly
- 1 liquid level controller	- 1 safety relief valve
- 1 pilot gas supply regulator	- 1 pressure gauge

Horizontal Three-Phase Separators

The rates for horizontal three-phase separators are in dollars per unit.

Diameter (in.)	Length (ft.)
	15
500-1000 psi Working Pressure	
≤ 16	64,620
> 16 to ≤ 24	86,960
> 24 to ≤ 36	115,330
> 36 to ≤ 48	154,850
> 48 to ≤ 60	198,990
Rates include:	
- 2 oil and water dump valves	- 1 gauge glass assembly
- 1 oil level controller	- 1 safety relief valve
- 1 pilot gas supply regulator	- 1 pressure gauge
- 1 water level controller	

Description

Heaters and heat exchangers are used to prevent line and equipment from freezing.

Heaters

The rates for direct and indirect heaters are in dollars per unit.

Output Range (BTU)	Rate	
	Indirect	Direct
50,000 - 170,000	57,460	50,160
171,000 - 375,000	58,760	51,920
376,000 - 625,000	64,020	55,340
626,000 - 875,000	71,620	58,830
876,000 - 1,250,000	82,610	70,120
1,251,000 - 1,750,000	98,060	85,530
1,751,000 - 2,500,000	108,060	91,500
2,501,000 - 3,500,000	138,950	130,670
3,501,000 - 4,500,000	168,200	132,220
Rates include: - fire tube - thief hatch - skid - temperature control and high temperature shut down - flame arrestor and stack - expansion pot c/w instruments - soil (not included with direct) - fuel gas manifold c/w burning - installation		

Tubular and Rectangular Plate Heat Exchangers

The rates for tubular and rectangular plate heat exchangers are in dollars per cubic foot.

Face Area (sq.ft.)	Rate (\$/cu.ft.)
≤ 2	2,837
3	2,725
4	2,647
6	2,450
8	2,253
10	2,070
12	1,936
14	1,683
Rates include:	
- standard unit stainless steel plates - installation	
Sample Calculation:	
Face Area = 3 ft. x 4 ft. Length = 8 ft. Volume = 3 ft. x 4 ft. x 8 ft. = 96 cu.ft. Rate = \$1,936 /cu.ft. Value = Volume x Rate = 96 cu.ft. x \$1,936/cu.ft. = \$185,860	

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Meters

Description

Meters are used to calibrate the pressure and volume of a liquid or gas flowing through a flow line or at a gas well.

Dry Flow Meters

The rates for dry flow meters are in dollars per unit.

Type	Rate
Gas, Dry Flow Recorder Chart 100" (≤ 1000 psi)	
1 or 2 pen	7,870
3 pen	10,200

Orifice Fittings and Meter Runs

The rates for orifice fittings and meter runs are in dollars per unit.

Size (in.)	Rate
Senior Quick Change (100 - 600 psi)	
2	11,340
3	13,020
4	15,380
6	19,850
8	23,680
10	28,030
Simplex (150 - 600 psi)	
2	3,040
3	3,780
4	4,620
6	6,840
8	8,830
10	10,720
Rates include:	
- orifice fittings - regulator - pipes - valves and fitting for meter run - installation	

Net Oil Computer and Micro Motion Meter

The rates for net oil computer and micro motion meters are in dollars per unit.

Inlet Size (in.)	Rate
2	52,650
3	55,400
4	66,700
Rates include:	
- capacitance probe - indicator - installation	

Positive Displacement Meter

The rates for positive displacement meters are in dollars per unit.

Line Size (in.)	Rate
Floco Meter	
≤ 2	6,990
3 to 4	10,100
Sampler	4,880
Digital Meter	
1	9,090
2 w/cubic meter readout	12,200

Turbine Meters and Totalizer

The rates for turbine meters and totalizers are in dollars per unit.

Size (in.)	Rate
≤ 2	21,770
3	23,950
Rates include:	
- meter	- fittings
- pipes	- miscellaneous valves
- totalizer	- installation

Cabinet Type Meter Housing (Meter Cabinet)

The rate for a meter cabinet is in dollars per unit.

Type	Rate
Meter Cabinet	24,700
Includes:	
- 1-2 pen dry flow recorder	
- 2 door shed	
- small separator and associated equipment	
- lines, valves, meters, gauges, etc.	
- installation	
- freight	

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Valves and Controls

Description

A valve is a device used to control the rate of flow in a line, to open or shut off a line completely, or to serve as an automatic or semi-automatic safety device.

Valves

The rates for valves are in dollars per unit.

Desurgers

Size (in.)	Rate
≤ 2	10,810
3	14,670
4	18,060

High-low Pressure Shutdown

High-low pressure shutdowns are valued at \$2,450 per unit.

Surface Safety Valves

Type	Typical Model	Rate
Hydr/Elect. actuating	Willis HYG 20 3000#	18,250
	Willis HYG 30 3000#	18,250
	Willis HYG 40 3000#	18,250
Rates include: - valve - actuator and fittings - installation		

Pressure Control Switch

Type	Rate
Presco, Murphy	1,770

Choke

The rates for chokes are in dollars per unit.

Type	Size (in.)	Rate
Low pressure and low volume	≤ 2	1,880
High pressure and high volume	3 - 6	16,040

Description

A pump is used to increase the pressure on a fluid in order to move the fluid through a pipe.

Rates

The rates for pumps are in dollars per unit.

Centrifugal Pump

Inlet Size (in.)	Rate
1	5,500
2	6,450
3	7,270
4	7,760
5	9,070
6	10,770

Progressive Cavity

Inlet Size (in.)	Rate
1	5,560
2	7,990
3	10,280
4	15,610
6	18,240
8	24,120
NOTE: 1) Add for prime movers 2) The rates above are for 1 stage pumps. To determine the 2 and 3 stage pump rates, 12% of the 1 stage pump rate is added to each subsequent stage.	
Rate include: - pump - base - valves and fittings - installation	

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Pumps

Reciprocating (Plunger) Pumps

Input (hp)	Rate		
	Simplex/ Duplex	Triplex	Quintuplex
3	48,950		
5	49,690		
10	54,480		
< 21		59,340	70,770
21 - 40		74,680	89,120
41 - 70		107,330	173,610
71 - 100		156,110	187,900
101 - 150		191,520	283,210
151 - 250		264,820	291,730
> 250		473,090	476,120
Rates include: - pump - base - prime mover - installation			

Transformer and Injection Pumps

Size (hp)	Rate
10	119,000
20	125,150
30	131,290
50	143,620
100	176,330
250	275,240
500	439,260
750	602,690
1000	765,660
Rates include: - motor - thrust chamber - intake section - pump - shutdown switches - skid - installation	

Description

Chemical injectors are used to add chemicals to prevent freezing, plugging or corrosion or to assist in whatever process is being carried out in the treatment or other cycle.

Rates

The rates for chemical injectors are in dollars per unit.

Description	Size (hp)	Rate
Electric motor driven (add for tanks > 60 imp. gal.)	≤ 2	9,970
	3 and 5	25,200
Multiple head proportioning pump		10,260
Air/gas driven		5,740
Alcohol drip (9 imp. gal. tank)		2,020

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Compressors

Description

Compressors are used to supply air pressure to operate valves, fire flood wells and to transport gas in a flow line.

Instrument Air Compressors

The rates for instrument air compressors are in dollars per unit.

Size		Rate
(hp)	(kW)	
≤ 10	≤ 7.46	45,370
11 - 15	8.20 - 11.19	62,840
16 - 20	11.93 – 14.91	85,810
> 20	> 14.91	93,670
Rates include: - air receiver - explosion-proof motor - dryer and after cooler - installation		

Injection Air Compressors

The rates for injection air compressors are in dollars per unit.

Size (hp)	Rate
400	1,417,970
550	1,812,570
1000	2,881,160
2000	3,258,380
3000	3,863,410
4000	4,546,950
Rates include: - air intake, coolers - fittings and equipment - engine or electric motor - miscellaneous pipes - metering and controls - valves - concrete base - installation	

Natural Gas Compressors

The rates for natural gas compressors are in dollars per horsepower unit.

Description	Rate
Turbine engine/centrifugal (gas plant)	10,530
Reciprocating engine (gas plant)	7,490
Reciprocating or electric (field gathering)	4,990
Rates include: - building - gauge board - filters - electrical equipment - atmospheric-type jacket water cooler - free air and exhaust duct - scrubber - supports - electrical substation - skid or concrete base - suction or discharge bottles - compressor - conductors and conduit - central panel - pumps - intake or exhaust silencer - main switchboard - installation	

Description

Cathodic protection uses a rectifier with a network of wires and anodes installed to create an electric field around flow lines and casing in corrosion prevention.

Rates

The rates for cathodic protection rectifiers are in dollars per unit.

Size (amperage)	Rate
Single well (12 - 16)	17,270
Field system (17 - 25)	25,680
Rates include: - rectifier - conduit and fittings - 2" x 60" steel anodes - cadwelds and handicap - cables - splice kits and connectors - installation	

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Control Panels

Description

Control panels are switches and other devices used to start, stop, measure, monitor or signal the operation of equipment.

Rates

The rates for control panels are in dollars per unit.

Power Rating		Rate
(hp)	(kW)	
≤ 50	< 38	43,470
51 - 450	38 - 336	96,270
451 - 850	337 - 634	166,670
851 - 1500	635 - 1119	289,320
1501 - 2500	1120 - 1865	380,130
2501 - 4000	1866 - 2984	463,170
Rates include: - relays - control circuit gauges - installation		

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Steam Generators

Description

Steam generators are used to inject steam to the producing formation for enhanced oil recovery systems.

Rates

The rates for steam generators are in dollars per unit.

Description	Rate
10,000,000 BTU/hr. unit	
Generator	1,412,390
Water softener and filter	110,560
Trailer	183,360
Building (on trailer)	117,820
Total for Unit	1,824,130
18,500,000 BTU/hr. unit	
Generator	1,411,450
Water softener and filter	110,260
2 Trailers (soft and gen)	286,700
2 Buildings (on trailer)	202,440
Total for Unit	2,010,850
22,000,000 BTU/hr. unit	
Generator	1,451,950
Water softener and filter	123,350
2 Trailers (soft and gen)	268,050
2 Buildings (on trailer)	177,410
Total for Unit	2,020,760
25,000,000 BTU/hr. unit	
Generator	1,605,720
Water softener and filter	132,130
1 Trailers	226,650
1 Buildings	103,370
Total for Unit	2,067,870
50,000,000 BTU/hr. unit schedule 80 to 160	
1,750 to 2,400 psi	
Base, installation, tie-in	2,680,640
Generator	2,947,520
Water softeners and filters	248,810
Materials and accessories	444,170
Total for Unit	6,321,140

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Steam Generators

Description	Rate
≥ 100,000,000 BTU/hr. unit schedule 80 to 160	
1,750 to 2,400 psi	
Base, installation, tie-in	2,935,560
Generator	4,109,130
Water softeners and filters	341,520
Materials and accessories	443,310
Total for Unit	7,829,520
Rates include:	
- softeners - filters - accessories - installation	

Description

Filters are used for cleaning water.

Sand Filter

The rates for sand filters are in dollars per tank unit.

Tank Size (in.)	Imp. Gal. per Minute	Pipe Size (in.)	Rate
20 x 54	30	1½	24,810
24 x 54	40	1½	28,360
30 x 60	60	2	38,090
36 x 60	90	2½	49,270
42 x 60	120	3	76,790
48 x 60	150	3	91,730
60 x 60	250	4	132,410
72 x 60	420	6	198,580
84 x 60	580	6	259,850

Carbon Filter

The rates for carbon filters are in dollars per tank unit.

Tank Size (in.)	Imp. Gal. per Minute	Pipe Size (in.)	Rate
20 x 54	10	1½	22,740
24 x 54	15	1½	26,470
30 x 60	25	2	32,000
36 x 60	35	2	42,180
42 x 60	50	2½	60,450
48 x 60	65	2½	70,610
60 x 60	100	3	94,940
Rates include:			
- concrete base - values and fittings - miscellaneous pipes - installation			

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Industrial Water Softeners

Description

Water softeners are used to soften the water for steam generators.

Rates

The rates for industrial water softeners are in dollars per tank unit.

Single Unit

Softener Tank Width (in.) x Height (in.)	Brine Tank Width (in.) x Height (in.)	Imp. Gal. per Minute	Pipe Size (in.)	Rate	
				Single Units	Duplex Units
20 x 54	24 x 80	55	2	31,880	64,060
24 x 54	30 x 48	75	2½	38,340	77,040
30 x 60	38 x 48	125	3	50,900	102,210
36 x 60	42 x 48	175	4	69,940	140,530
48 x 60	48 x 60	150	3	78,330	157,190
54 x 60	54 x 60	275	4	92,120	184,940
60 x 60	60 x 60	400	4	106,800	214,530
72 x 60	72 x 60	560	6	159,530	320,340
84 x 60	84 x 60	760	6	212,330	426,550
Rates include: - time clock control - specific gravity meter - injectors - valves and fittings - liquid level control - hardness monitor - concrete base - water meters - chemical - miscellaneous pipes - installation Rates do not include pumps and motors.					

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Flow Lines and Service Lines

Description

A flow line is a line of pipe used to transport or conduct oil or gas within a well site to a battery or gas handling site, satellite, gas plant, compressor station, or other facility at which the oil or gas is prepared for pipeline transport.

A service line is a line of pipe used to transport water from a water source well or to transport fuel gas to an oil well site prime mover or to transport water, steam, air, oxygen, acid or carbon dioxide to enhance the recovery of oil from an oil well.

Oil, Gas, Water and Air Lines

The rates for oil, gas, water and air lines are in dollars per lineal foot.

Line Size (in.)	Rate		
	Plastic	Steel	Fibreglass
1	10.27	25.00	
2	12.06	27.51	25.57
3	16.55	33.11	33.25
4	21.76	38.05	44.60
6	36.95	51.91	78.83
8	52.47	70.28	123.35
10	70.84	94.68	150.28
12	90.68	114.82	183.90
14	107.90	124.55	217.52
Rates include: - construction contract - land right-of-way - pipe - exterior coating - damages and pre-staking - engineering - radiographic inspection - legal survey			

Internal Coated Pipes

The rates for internal coated pipes are in dollars per lineal foot.

Pipe Size (in.)	Rate
2	69.55
3	86.11
4	104.87
6	155.03
8	205.11

Steel Pipe with Polyethylene Liner

The rates for steel pipe with polyethylene liner are in dollars per lineal foot.

Pipe Size (in.)	Rate
2	58.93
3	66.26
4	75.15
6	102.91
8	128.08
10	159.92
12	202.34
14	240.47

Steam Service Lines

The rates for steam service lines are in dollars per lineal foot.

Pipe Size (in.)	Rate
1	81.72
2	92.87
3	95.50
4	99.84
6	129.47
8	156.11

Description

Manifolds are systems of headers and branch piping that can be used to gather or distribute fluids. Typically manifolds include valves for controlling the on/off flow of fluids.

Rates

The rates for manifolds are in dollars per manifold.

Size (in.)	Rate
1	3,910
2	9,690
3	13,980
4	19,140
6	27,650
8	39,530
10	57,260
12	82,720
14	119,420

Description

Scraper traps are used to insert scrapers to clean out the flow lines and service lines.

Rates

The rates for scraper traps are in dollars per trap or injection unit.

Receiving and Launching Traps

Line Size (in.)	Rate	
	With Bypass	Without Bypass
2	13,720	6,480
3	16,520	7,960
4	19,220	9,230
6	28,810	
8	37,160	
10	53,330	
12	67,560	

Automatic Pig Injection

Line Size (in.)	Rate
2	20,390
3	32,720
4	53,130
Rates include:	
- valves - miscellaneous pipe and fittings - installation	

Summary

This section describes the formulas, rules and principles for determining the assessed value of mine resource production equipment.

Definitions

Mine resource production equipment includes the fixtures, machinery, tools, railroad spur tracks, and other appliances used to extract and produce the ore but does not include equipment used to process or refine the ore.

Shaft linings, safety equipment, shop tools for maintenance service, spare parts, and surplus equipment are not resource production equipment by which a mine is operated.

Formulas, Rules and Principles

The assessed value of mine resource production equipment shall be determined by the replacement cost method established in this section. The replacement cost new shall be determined using the unit-in-place method or the trended original cost method.

The replacement cost of continuous belt conveyors over 1,000 feet in length, and solution mining resource production equipment shall be determined by the unit-in-place method. The unit-in-place base rates account for all direct and indirect costs. No additional adjustments shall be made to the base rates.

The unit-in-place base rates for solution mining resource production equipment shall be determined in accordance with the rates schedules in Chapter 4 – Resource Production Equipment, Section 4.1 – Oil and Gas Well Resource Production Equipment.

The trended original cost shall include all direct and indirect costs. Direct costs include materials, labour, supervision, equipment rentals, and utilities. Indirect costs include architectural and engineering fees, building permits, title and legal fees, insurance, interest and fees on construction loans, taxes incurred during construction, advertising and sales expense, and overhead and profit. Trended original costs shall be determined free on board (FOB) the mine site as of January 1, 2023.

Depreciation shall be determined by calculating the amount of physical deterioration using the lifetime depreciation method. Functional and economic obsolescence shall not be accounted for in the calculation of depreciation. No additional allowance shall be made for depreciation except as may be accounted for in the downtime allowance factor.

The downtime allowance and the downtime allowance factor for mine resource production equipment shall be determined by the schedule of rates method. The downtime allowance and the downtime allowance factor shall account for all the loss in value due to under-utilization of the resource production equipment. This includes any loss in value due to differences in replacement cost and difference in the amount of depreciation, that have not been taken into account using the procedures in this Manual.

Replacement Cost New

The following mine resource production equipment shall be valued:

- Head frame and head house including mechanical and electrical equipment;
- Service and production hoists c/w cages, skips, pulleys, cables, guide ropes and rails, skip load and dump facilities;
- Water control – pipes, pumps, motors;
- Compressed – air service – piping, compressors, motors, controls;
- Personnel and service vehicles;
- Mobile and overhead cranes, forklifts;
- Ventilation systems, fans, ducts;
- Heating and cooling facilities;
- Warning system;
- Production equipment – miners, drag lines, loaders, loading shovels, front-end loaders, ore trucks, ore haulers, scoop trams, conveyor systems and numerous ancillary and auxiliary equipment;
- Drills and blasting equipment;
- Feeders and crushers;
- Roof and floor maintenance equipment, rock bolters, graders, scraper haulers;
- Crawler and wheel tractors c/w dozers and/or buckets;
- Electrical wiring and equipment required to operate plant and equipment; and
- Any other equipment used in the mining operation that is not listed as an exclusion.

The following mine resource production equipment shall not be valued:

- Shaft linings – concrete, steel, wood, etc. (tubing and cribbing);
- Safety equipment – fire, personal, etc.;
- Sharp tools for maintenance and service;
- Spare parts; and
- Surplus equipment.

Unit-In-Place Method

The replacement cost of new conveyors and solution mining resource production equipment shall be determined as follows:

1. Determine the type of resource production equipment using the rating guide.
2. Determine the features requiring unit-in-place adjustment.
3. Calculate the replacement cost of the resource production equipment by adjusting the base rate by the unit-in-place adjustments.

Trended Original Cost Method

The replacement cost new shall be determined as follows:

1. Determine the original construction cost of all the resource production equipment at the facility.
2. Determine the direct and indirect costs requiring an adjustment.
3. Determine the comparative cost index for mine resource production equipment required to adjust construction costs to January 1, 2023.
4. Calculate the construction cost of all the resource production equipment at the facility by adjusting the original construction cost for any direct or indirect costs requiring adjustment and multiplying the adjusted original construction cost by the comparative cost index.
5. Determine replacement cost of conveyors and solution mining resource production equipment that is valued by the unit-in-place method.
6. Calculate the replacement cost new of the resource production equipment by subtracting the replacement cost new of conveyors and solution mining resource production equipment from the construction cost of all the resource production equipment in the facility.

Physical Deterioration

Lifetime Depreciation Method

The amount of physical deterioration shall be 40 percent. When calculating replacement cost less depreciation no additional allowance shall be made for depreciation.

Downtime Allowance

Schedule of Rates Method

The downtime allowance for all mine resource production equipment shall be 10 percent.

Downtime Allowance Factor

Schedule of Rates Method

The downtime allowance factor shall be determined for mine resource production equipment that is not used for 30 days or more in the 12 month period preceding January 1st of the year to which the assessment roll relates.

Periods of time less than 7 consecutive days during which mine resource production equipment is not used shall not be included in the calculation of the number of down days.

The downtime adjustment factor shall be determined by application of the following formula:

$$DAF = 1 - \frac{DD - 30}{365}$$

where: DAF = downtime adjustment factor
DD = number of down days

Calculation Procedure

Description	Document No.	Page No.
a) Conveyor Base Rate	4.2.3	1
b) Unit-in-Place Resource Production Equipment	4.2.1	2
c) Trended Original Cost Resource Production Equipment	4.2.1	3
d) Replacement Cost New = (a + b + c)		
e) RCN less Physical Deterioration and Downtime Allowance = $d \times (1 - (e_1 + e_2))$		
e ₁ . Physical Deterioration	4.2.1	3
e ₂ . Downtime Allowance	4.2.1	3
f) Downtime Allowance Factor	4.2.1	3
g) Assessed Value (e x f)		

Section: Mine Resource Production Equipment

Resource Production Equipment

Subject: Comparative Cost Factor

Description

The comparative cost factors are used to determine the replacement cost new of mine resource production equipment valued by the trended original cost method.

Application

The trended original cost method shall be used when the individual components of resource production equipment cannot be determined or estimated. The trended original cost method shall not be used to determine the replacement cost of conveyors or solution mining resource production equipment.

Comparative Cost Factor

The comparative cost factor shall be used to calculate the replacement cost new of resource production equipment as of January 1, 2023.

Factors

Year	Comparative Cost Factor
1940 and older	
1941	
1942	
1943	
1944	
1945	
1946	
1947	
1948	
1949	
1950	
1951	
1952	
1953	
1954	
1955	
1956	
1957	
1958	
1959	
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1966	
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1970	
1971	
1972	
1973	
1974	

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Section: Mine Resource Production Equipment

Resource Production Equipment

Subject: Comparative Cost Factor

Year	Comparative Cost Factor
1975	
1976	
1977	
1978	
1979	
1980	
1981	
1982	
1983	
1984	
1985	
1986	
1987	
1988	
1989	
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2008	
2009	
2010	
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2013	
2014	
2015	
2016	
2017	
2018	
2019	
2020	
2021	
2022 and newer	

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Section: Mine Resource Production Equipment

Resource Production Equipment

Subject: Conveyors

Description

Conveyors are used to transport ore within a mine facility.

Application

The rate schedule shall be applied to continuous belt conveyors over 1,000 feet in length. Continuous belt conveyors less than 1,000 feet in length and all special design, tripper automatic loading and unloading, extensible, mobile bridge and bridge conveyors shall be valued by the trended original cost method.

Continuous Belt Conveyor

The rates for conveyors are in dollars per lineal foot.

Belt Width (in.)	Rate
24	337
30	396
36	462
42	498
48	621
54	698
60	747
72	888
Rates include: - belting - drives - structure - hardware	

Section: Mine Resource Production Equipment

Resource Production Equipment

Subject: Conveyors
