Summary

This section contains definitions for the valuation of heavy industrial buildings and structures, oil and gas well resource production equipment, mine resource production equipment and pipelines.

Heavy Industrial Buildings and Structures and Oil & Gas Well Buildings and Structures

The replacement cost new, physical deterioration, functional obsolescence and closure adjustment factor for heavy industrial buildings or structures shall be determined in accordance with the valuation procedures in:

- Chapter 1 – Regulated Property, Section 1.1.7 – Regulated Property, Heavy Industrial Buildings and Structures
- Chapter 3 – Heavy Industrial Improvements; and
- Marshall & Swift Valuation Service.

Buildings and structures located at a Shut-In Single Well Site or a Shut-In Multi-Well Pad Site, as defined in Chapter 4 - Resource Production Equipment, Section 4.1.1 – Oil and Gas Well Resource Equipment, General Rules, shall have a 99% shut-in allowance applied to the buildings and structures replacement cost new as per Section 3.1.13.

Oil and Gas Well Resource Production Equipment

The replacement cost new, physical deterioration, downtime allowance, and production adjustment factor for oil and gas well resource production equipment shall be determined in accordance with valuation procedures in Chapter 4 - Resource Production Equipment, Section 4.1 - Oil and Gas Well Resource Production Equipment.

Mine Resource Production Equipment

The replacement cost new, physical deterioration, downtime allowance, and downtime adjustment factor for mine resource production equipment shall be determined in accordance with the valuation procedures in Chapter 4 - Resource Production Equipment, Section 4.2 - Mine Resource Production Equipment.

Pipelines

The replacement cost new, physical deterioration, and volume adjustment factor for pipelines shall be determined in accordance with the valuation procedures in Chapter 5 - Pipelines.

Summary

This section contains the valuation procedures for determining the replacement cost new for heavy industrial buildings and structures.

Use of Rate Schedules

Where a rate schedule does not state the units of comparison, the units of comparison are dollars per square foot ($/sq.ft.).

Where a rate schedule does not contain a rate, factor or multiplier for a specific dimension or size, mathematical interpolation of the next highest and next lowest rate, factor or multiplier is used to calculate the required rate, factor or multiplier.

Where a rate schedule contains an extension rate, the extension rate is applied to all units of comparison greater than the next lowest size or dimension.

Measurement of Buildings and Structures

All building and structure measurements are imperial or metric standards. Linear measurements are determined to the nearest half foot.

The floor area of a building or structure or a section of a building or structure includes the interior partitions, elevators, stairways and exterior walls.

The floor area of a building or structure or a section of a building or structure is measured to the outside finished surface of the exterior walls, unless otherwise specified.

Unit of Comparison

The units of comparison should be imperial or their metric equivalent.

The following are the units of comparison and their application for determining the replacement cost new of buildings and structures.

Type	Units of Comparison	Abbreviation
Section Area	Square Feet	sq.ft.
Unit Area	Square Feet	sq.ft.
Floor Area	Square Feet	sq.ft.
Surface Area	Square Feet	sq.ft.
Base Area	Square Feet	sq.ft.
Building Volume	Cubic Feet	cu.ft.
	Bushels	bushels
Tank Volume	Imperial Gallons	imp. gal.
	U.S. Gallons	USG
	Imperial Barrels	barrels
	Cubic Meters	M^3
Bin Volume	Bushels	bushels
Elevator Volume	Bushels	bushels
Structure Volume	Pounds per Hour	lb./hr.
Structure Height	Feet	ft.
Structure Length	Feet	ft.
Perimeter	Feet	ft.
Structural Unit	Unit	unit
Reservoir	Acre Foot	a.f.
	Imperial Gallons	imp. gal.
	U.S. Gallons	USG
Power Generation	$Megawatt_{ac}$ or $Kilowatt_{ac}$	MW_{ac} or kW_{ac}

General

The replacement cost new of heavy industrial buildings or structures shall be determined by calculating the cost of construction using the calculator method, unit-in-place cost method, segregated cost method or trended original cost method. The methods shall be applied in accordance with the valuation procedures in the Marshall & Swift Valuation Service, or in the case of non-standard buildings and structures in Chapter 3 - Heavy Industrial Improvements, Non-standard Buildings and Structures.

Climate Rating

When using the Marshall & Swift Valuation Service for the calculator method, the unit-in-place cost method and the segregated cost method, the extreme climate cost adjustments shall be used for heating, ventilation and air conditioning (HVAC).

Calculator Method

The calculator method for determining replacement cost new is used where a heavy industrial building or structure can be classified in accordance with the classification guidelines in the Marshall & Swift Valuation Service, Calculator Method or in the case of non-standard buildings and structures in Chapter 3 - Heavy Industrial Improvements, Non-standard Buildings and Structures.

The replacement cost new using the calculator method is determined by application of the following calculation procedure:

1. Determine the occupancy code for the building or structure;
2. Determine the building attributes required to calculate the replacement cost new from the classification and calculation procedures for the specific occupancy code; and
3. Calculate the replacement cost new in accordance with the calculation procedures for the specific occupancy code.

Unit-in-place Cost Method

The unit-in-place cost method for determining replacement cost new shall be used where a specific heavy industrial building or structure attribute cannot be classified in accordance with the classification guidelines for the calculator method, and can be classified in accordance with the unit-in-place classification guidelines, rate schedules, and calculation procedures in the Marshall & Swift Valuation Service, Unit-In-Place Costs, Sections 51 to 67.

Where a building or structure cannot be classified in accordance with the classification guidelines for the calculator method, the replacement cost new shall be determined by application of the following calculation procedure:

1. Determine the structural components that comprise the building or structure;
2. Determine the unit-in-place cost for each structural component;
3. Calculate the replacement cost new for each structural component by multiplying the unit-in-place cost by the number of units; and
4. Calculate the replacement cost new of the building or structure by summing the replacement cost new of the structural components.

Segregated Cost Method

The segregated cost method for determining replacement cost new shall be used where a specific heavy industrial building or structure attribute cannot be classified in accordance with the classification guidelines for the calculator method, or the unit-in-place cost method, and can be classified in accordance with the segregated cost classification guidelines, rate schedules, and calculation procedures in the Marshall & Swift Valuation Service, Segregated Method.

Trended Original Cost Method

The trended original cost method for determining replacement cost new shall be used where a specific heavy industrial building or structural attribute cannot be classified in accordance with the classification guidelines for the calculator method, the unit-in-place cost method or the segregated cost method.

Both direct costs and indirect costs shall be included where the replacement cost new of a heavy industrial building or structure is determined by the trended original cost method.

Direct costs shall include all labour and materials; site preparation, grading and excavation for the foundation; and connection of utilities that are directly related to the building or structure.

Indirect costs related to the building or structure shall include architectural and engineering fees, permits and plans; survey fees, net sales taxes, service charges and interest on building funds during construction; building supervision and overhead costs, contractor's profit, worker's compensation and unemployment insurance costs; fire and liability insurance, temporary equipment and facilities, and security charges related to the construction of the building or structure.

Costs excluded from the determination of replacement cost new by the trended original cost method are as follows:

- land improvement costs, subdivision and development costs, studies for the project, appraisal or other consulting fees, including:
    - costs related to the purchase or assembly of land and related legal fees, and
    - property taxes, demolition, storm drain charges or rough site grading;
- financing discounts or bonuses, start-up costs, feasibility overhead, and fixture and equipment purchases;
- site improvement costs such as signs, landscaping, paving, walls, lighting, swimming pools or other recreational facilities;
- off site costs including roads, streets and other infrastructure, acreage and subdivision development fees, connection charges, environmental impact or other assessments;
- furnishings, fixtures or equipment not included in the general building contract;
- marketing or real estate expenses to create occupancy; and
- costs considered specialized tenant improvements.

The replacement cost new for heavy industrial buildings and structures using the trended original cost method is determined by application of the following calculation procedure:

1. Determine the original construction cost of the building or structure;
2. Determine the direct and indirect costs requiring an adjustment;
3. Determine the comparative cost factor (see Document 3.1.5) for commercial buildings required to adjust construction costs to January 1, 2023; and
4. Calculate the replacement cost new of the building or structure 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.

Summary

This section contains the calculation procedures used to calculate the assessed value for heavy industrial buildings and structures after the Replacement Cost New (RCN) has been determined.

Heavy Industrial Buildings and Structures

The following calculation procedure shall be used for heavy industrial buildings and structures.

Description	Document No.	Page No.
(a) Replacement Cost New (RCN)	3.1.2	1-4
(b) Cost Factor	3.1.4	1
(c) RCN x Cost Factor = a x b		
(d) RCN Less Physical Deterioration = c x (1-(d_1 x d_2)) d_1. Physical Deterioration d_2. Condition Rating	 3.1.8 3.1.8	 1-4 5-6
(e) RCN Less Physical Deterioration, Functional Obsolescence and Closure Adjustment Factor = (d -(d x e_1)) x e_2 e_1. Functional Obsolescence Factor e_2. Closure Adjustment Factor	 3.1.9 3.1.10 or 3.1.11	 1 1
(f) Assessed Value = e		

Oil & Gas Well Buildings and Structures

The following calculation procedure shall be used for oil and gas well buildings and structures on an oil or gas well site.

Description	Document No.	Page No.
(a) Replacement Cost New (RCN)	3.1.2	1-4
(b) Cost Factor	3.1.4	1
(c) RCN x Cost Factor = a x b		
(d) RCN Less Physical Deterioration = c x (1- d_1) d_1. Physical Deterioration	 3.1.8	 1-4
(e) RCN Less Physical Deterioration and Production Adjustment Factor = d x e_1 e_1. Production Adjustment Factor	 4.1.1	 3-5
(f) Assessed Value = e		

Description

This section contains the valuation procedures for determining the cost factor for all heavy industrial buildings and structures.

Cost Factor Formula

The cost factor is calculated by the following formula:

Cost Factor = Current Cost Multiplier x Local Multiplier x Saskatchewan Cost Factor

Marshall & Swift Valuation Service Commercial Current Cost Multipliers

Calculator Method
When using the calculator method use the Marshall & Swift Valuation Service current cost multipliers in Section 99, page 3, Current Cost Multipliers, Calculator Cost Sections, Central, dated 10/2022.

Segregated Method
When using the segregated method use the Marshall & Swift Valuation Service current cost multipliers in Section 99, page 3, Current Cost Multipliers, Segregated Cost Sections, Central, dated 10/2022.

Unit-in-place Method
When using the unit-in-place method use the Marshall & Swift Valuation Service current cost multipliers in Section 99, page 3, Current Cost Multipliers, Unit-In-Place Cost Sections 51 to 67, Central, dated 10/2022.

Marshall & Swift Valuation Service Commercial Local Multipliers

Apply the Marshall & Swift Valuation Service local multipliers from Section 99, page 5, Local Multipliers, Canada, Saskatchewan, dated 10/2022.

The Canadian Tax Removal adjustment in Section 99, page 5, shall not be applied in the determination of Replacement Cost New (RCN) and Assessed values in Saskatchewan.

Saskatchewan Cost Factor

The Saskatchewan Cost Factor is 1.00

Cost Factor

The Cost Factor (Current Cost Multiplier x Local Multiplier x Saskatchewan Cost Factor) for the following building and structures is 1.00:

- Oil & Gas Well Tanks (S880)
- Oil & Gas Well Buildings (S881)
- Conveyor Gallery (S933)
- Wind Turbine (S940)
- Solar Farm (S941)

Description

This section contains the valuation procedures for determining the comparative cost factor for heavy industrial buildings and structures.

Application

Where the replacement cost new for heavy industrial buildings and structures is determined by the trended original cost method, the comparative cost factor shall be applied to adjust the original construction cost to January 1, 2023.

The trended original cost method is used where a specific building or structural attribute cannot be classified in accordance with the classification guidelines for the calculator method, the unit-in-place cost method or the segregated cost method.

Comparative Cost Factor

Year	Class				
	A	B	C	D	S
	Fireproofed Steel Frame	Reinforced Concrete Frame	Masonry Bearing Walls	Wood Frame	Metal Frame
2022 & newer					
2021					
2020					
2019					
2018					
2017					
2016					
2015					
2014					
2013					
2012					
2011					
2010					
2009					
2008					
2007					
2006					
2005					
2004					
2003					
2002					
2001					
2000					
1999					
1998					
1997					
1996					

Year	Class				
	A	B	C	D	S
	Fireproofed Steel Frame	Reinforced Concrete Frame	Masonry Bearing Walls	Wood Frame	Metal Frame
1995					
1994					
1993					
1992					
1991					
1990					
1989					
1988					
1987					
1986					
1985					
1984					
1983					
1982					
1981					
1980					
1979					
1978					

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Description

This section contains the valuation procedures for determining building height adjustments for various types of heavy industrial buildings.

Application

Building height adjustments that may be applied are:

- storey height;
- section height; and
- building height (total number of storeys).

Storey Height

Storey height is the vertical height of the exterior wall, which is measured as follows:

- in a flat roof one storey building, the vertical distance from the top of the floor to the top of the roof;
- in a slant roof building, the average vertical distance from the floor to the top of the roof;
- in a one storey standard gable roof building, the vertical distance from the top of the floor to the top of the exterior wall;
- in a multi-storey building, the vertical distance from the top of the floor to the top of the next floor above; and
- for non-standard or high pitched roofs, by dividing the cubic volume of the building section by the area of the building.

Where the storey height varies from the standard storey height for the building, a storey height factor shall be applied.

The standard storey height and the storey height factor are specified in the structural components and adjustments sections for the specific occupancy codes to which they apply.

Section Height

Section height is the number of storeys in a section of a building, where each storey is constructed to the same construction standard.

Building Height (Total Number of Storeys)

Building height is the total number of storeys for all portions of a building that are attached vertically, excluding below ground portions such as basements. The building height factor shall be applied to all storeys including below ground portions.

The units of measure for building height shall be the number of storeys.

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Website: http://www.sama.sk.ca

Building Height (Total Number of Storeys)	Factor	Building Height (Total Number of Storeys)	Factor
1		26	
2		27	
3		28	
4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		≥ 50	

Description

This section contains the valuation procedures for determining incomplete construction adjustments for various types of heavy industrial buildings and structures.

Application

The incomplete construction adjustment shall be used to adjust the replacement cost new of buildings or structures that are under construction.

Where the base rate is adjusted for a missing building component, an incomplete construction adjustment for the missing component shall not be included in the calculation of replacement cost new.

Where a building is under construction and the base rate is not adjusted for a missing component, the incomplete construction factor shall be determined using the following formula:

$$\text{Incomplete Construction Factor} = \frac{\text{(Total Construction Cost – Costs Incurred to Date)}}{\text{Total Construction Cost}}$$

Summary

This section contains the valuation procedures for determining the amount of physical deterioration for heavy industrial buildings and structures.

Application

Physical deterioration is the loss in value from replacement cost new due to wear and tear, decay and structural defects caused by the forces of nature.

Some causes of physical deterioration are normal use, breakage, neglect, infestation of insects, dry rot, moisture, and climatic elements. The occurrence of physical deterioration is dependent on the quality of the workmanship and materials used to construct the building or structure, and the use, abuse and general maintenance of the building or structure since its construction.

Formulas, Rules and Principles

The physical deterioration and condition rating schedules account for all curable and incurable physical deterioration and normal functional obsolescence not accounted for in the replacement cost new of the building or structure.

No additional allowance shall be made for physical deterioration except as may be accounted for in the calculation of the production adjustment factor for oil and gas well site buildings and structures.

Where the total percentage amount of physical deterioration is equal to or greater than the replacement cost new of the building or structure, the amount of physical deterioration is 99 percent.

Physical deterioration may be determined by the age-life method or lifetime method.

Age-Life Method

The age-life method is used where the actual or effective age of the building or structure is known or can be estimated, and the condition of the building or structure can be determined or estimated.

‘Actual age’ is the number of years elapsed since an original structure was built.

‘Effective age’ is the typical age of structures equivalent to the one in question with respect to condition and utility and reflects the remaining economic life of the building or structure. Effective age can be either shorter or longer than actual age.

‘Economic life’, with respect to a building or structure, means the period during which a given building or structure is expected to contribute (positively) to the value of the total property. This period is typically shorter than the period during which the improvement could be left on the property, that is, its physical life. Renovation, remodelling, or rehabilitation can extend a building's physical life and can have an effect on its remaining economic life.

The amount of physical deterioration is determined by application of the following calculation procedure:

1. Determine the normal life expectancy for the class and type of building or structure;
2. Determine the effective age and the percentage amount of deterioration for the class and type of building or structure using the physical deterioration schedules;
3. Determine the condition and condition factor using the condition rating schedule; and
4. Calculate the total percentage amount of physical deterioration by multiplying the amount of physical deterioration from the physical deterioration schedule by the condition factor from the condition rating schedule.

Lifetime Method

The amount of physical deterioration by the lifetime method for heavy industrial buildings and structures is 40%. The condition rating is 1.0.

The lifetime method is used for the following heavy industrial buildings and structures:

Non-standard heavy industrial buildings and structures:

1. Marshall & Swift Valuation Service

    - Secure Storage Shed: Section 17, page 25
    - Farm Storage: Section 17, pages 54 to 55
    - Tanks: Section 61
    - Miscellaneous Industrial Costs: Section 62, pages 5 to 6

2. SAMA's 2023 Cost Guide

    - Chapter 7: Commercial Tanks and Reservoirs
    - Chapter 8: Commercial Cylindrical Bin (S840)
    - Chapter 8: Commercial Hopper Bin (S841)
    - Chapter 8: Utility Bin (S842)
    - Chapter 8: Utility Hopper Bin (S843)
    - Chapter 9: Stack (S852)
    - Chapter 9: Incinerator (S853)
    - Chapter 9: Mill Incinerator (S854)
    - Chapter 9: Brick Incinerator (S855)
    - Chapter 9: Tower (S860)
    - Chapter 9: Guyed Tower (S861)

3. Saskatchewan Assessment Manual (2023 Base Year)

    - Chapter 3: Oil and Gas Well Tanks (S880)
    - Chapter 3: Oil and Gas Well Buildings (S881)
    - Chapter 3: Utility Tunnel (S932)
    - Chapter 3: Wind Turbine (S940)
    - Chapter 3: Solar Farm (S941)

Commercial Building and Structure Physical Deterioration Schedule

Use the physical deterioration schedule in the Marshall & Swift Valuation Service Section 97, Depreciation – Commercial Properties dated December 2020 except for occupancy codes that use a life expectancy from the Specified Commercial Building Life Expectancy Table.

Properties built in 2023 or newer are assigned an effective age of '0'.

For commercial buildings and structures, the following construction classes are used to assign life expectancies from the Specified Commercial Building Life Expectancy Table. The class of construction is the basic subdivision in the Marshall & Swift Valuation Service, dividing all buildings into basic cost groups by type of framing.

Construction Class	Construction Class Description
C	Concrete Frame (Masonry) Exterior Wall
D	Wood Frame Exterior Wall
P	Pole Frame Exterior Wall
S	Steel Frame Exterior Wall
W	Steel Frame Exterior Slant Wall

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Website: http://www.sama.sk.ca

Specified Commercial Building Life Expectancy Table

Occupancy Code	Occupancy Description	Const. Class	Construction Quality			
			Low Cost	Average	Good	Excellent
104	Commodity Warehouse	C				
		D				
		P				
		S				
		W				
123	Seed Processing Storage	D				
		P				
		S				
339	Lumber Storage Shed	D				
		P				
		S				
390	Lumber Storage Building	D				
		P				
		S				
391	Material Storage Building	C				
		D				
		P				
		S				
		W				
420	Bulk Fertilizer Storage	C				
		D				
		P				
		S				
468	Material Storage Shed	C				
		D				
		P				
		S				
		W				
471	Light Commercial Utility Building	C				
		D				
		P				
		S				
		W				
554	Shed Office Structure	C				
		D				
		P				
		S				
555	Light Commercial Quonset	D				
		P				
		S				
556	Bulk Oil Storage	D				
		P				
		S				

Condition Rating Schedule

The condition of buildings and structures is determined by taking into consideration the remaining economic life of both short-lived and long-lived items.

Short-lived items have a shorter life than the basic structure, for example roofing, interior finish, floor coverings, heating system and plumbing fixtures.

Long-lived items are in the basic structure of the building and are not usually replaced during the economic life of the building. Long-lived items include such things as the foundation, frame, floor and roof structure, piping, heat ducts, insulation and electrical wiring.

The condition factor for heavy industrial buildings and structures is determined by application of the following condition rating schedule:

Description	Condition Factor
Remodelling: Extensive remodelling has occurred in recent years. No functional inadequacies of any consequence. Long-lived items: Long-lived items have had good maintenance, remodelling, or renovation where necessary. Maintenance: Above normal regular general maintenance has occurred. All items that can normally be repaired or refinished have recently been corrected. Short-lived items: All major short-lived items are in like-new condition.	0.5
Remodelling: Some remodelling has occurred in recent years. Little evidence of functional obsolescence and a high degree of utility. Long-lived items: Long-lived items have had good maintenance, remodelling or renovation where necessary. Maintenance: Above normal regular general maintenance has occurred. Short-lived items: Most major short-lived items are in like-new condition.	0.6
Remodelling: Some remodelling has occurred since construction of the original building. Little evidence of functional obsolescence and a high degree of utility. Long-lived items: Long-lived items have been repaired where necessary. No visible evidence of deterioration. Maintenance: Normal regular general maintenance has occurred. Many items have been overhauled and repaired as they've shown signs of wear. Short-lived items: Many of the major short-lived items are in like-new condition, while others are well maintained and some may require minor repair.	0.7
Remodelling: Utility is above the standard. Long-lived items: Long-lived items have been repaired where necessary. Maintenance: Normal regular general maintenance has occurred. No obvious maintenance required. Short-lived items: A few major short-lived items are in like-new condition, while others are well maintained and some may require minor repair.	0.8

Description	Condition Factor
Remodelling: Building is substantially in its original state. Long-lived items: Most long-lived items have been repaired where necessary. Maintenance: Normal regular general maintenance has occurred. Short-lived items: A few major short-lived items are in like-new condition, while others are well maintained and some may require minor repair.	0.9
Irrespective of the following description, new or recently built buildings are considered to be in average condition. Remodelling: Building is substantially in its original state. Utility is standard for properties with a similar class and usage. Long-lived items: Most long-lived items have been repaired where necessary. Maintenance: Normal regular general maintenance has occurred. May have some evidence of deferred maintenance as a few minor repairs and refinishing are needed. Short-lived items: A few major short-lived items may require repair or replacement, while others will not require replacement in the short term.	1.0
Remodelling: Building is substantially in its original state. Inadequate building utility and services. Long-lived items: Lack of maintenance of long-lived items has resulted in structural decay and defects. Maintenance: Deferred general maintenance is apparent. Much repair is needed. Short-lived items: Some major short-lived items require repair or replacement, while others show noticeable wear.	1.15
Remodelling: Building is substantially in its original state. Usually contains numerous functional inadequacies. Long-lived items: Lack of maintenance of long-lived items has resulted in structural decay and defects that cannot be economically repaired. Maintenance: General maintenance has been neglected. Short-lived items: Most short-lived items need major repairs or replacement.	1.3

Summary

This section contains the valuation procedures for determining the amount of functional obsolescence for heavy industrial buildings and structures.

Formulas, Rules and Principles

Functional obsolescence is the loss in value from replacement cost new less physical deterioration due to the inability of the building or structure to adequately perform the function for which it is used.

Functional obsolescence is caused by changes in demand, design and technology that result in a loss in the utility of the building or structure.

No allowance shall be made for functional obsolescence except as may be accounted for in the calculation of functional obsolescence and the calculation of the replacement cost new less physical deterioration.

Functional obsolescence is any functional obsolescence not accounted for in the replacement cost new less physical deterioration. Where there is no functional obsolescence attributed to a building or structure the functional obsolescence factor shall be 1.0.

Functional obsolescence not accounted for in the replacement cost new less physical deterioration shall be accounted for in accordance with the replacement cost method or comparable unit method.

Replacement Cost Method

The amount of obsolescence shall be determined from the replacement cost of a substitute building or structure.

The amount of functional obsolescence shall be determined by application of the following calculation procedure:

1. Determine the replacement cost new less physical deterioration of the building or structure with the functional obsolescence;
2. Determine the replacement cost new less physical deterioration of a substitute building or structure without the obsolescence; and
3. Calculate the functional obsolescence factor by dividing the replacement cost new less physical deterioration of the substitute building or structure by the replacement cost new less physical deterioration of the building or structure with the functional obsolescence.

Comparable Unit Method

The comparable unit method may be used where there is insufficient information to establish functional obsolescence by the replacement cost method. The amount of functional obsolescence shall be determined by comparison to other comparable buildings or structures.

The amount of functional obsolescence shall be determined by application of the following formula:

$FUNCT_{SUB} = FUNCT_{COMP}$

where: $FUNCT_{SUB}$ = functional obsolescence for the subject building or structure
$FUNCT_{COMP}$ = functional obsolescence for the comparable buildings and structures

Summary

This section contains the procedures for determining the closure adjustment factor for heavy industrial buildings and structures on heavy industrial property.

Description

The closure adjustment factor shall account for all of the loss in value due to a complete closure of a heavy industrial property.

Application

The closure adjustment factor for heavy industrial buildings and structures shall be determined by the schedule of rates method.

Schedule of Rates Method

1. The closure adjustment factor shall only be applied to heavy industrial buildings and structures.
2. The closure adjustment factor shall only be applied where the processes included in the "heavy industrial property" definition have been completely shut down and the entire property is no longer in operation for at least 12, 24 or 36 consecutive months in the year preceding the assessment roll year to which the assessment relates. The schedule of adjustments is as follows:

Factor	Consecutive months of closure
0.75	12
0.50	24
0.25	36

3. The closure adjustment factor shall not be applied in the following circumstances:
   - To any closed portion or unused area of an operating heavy industrial property;
   - For the reduced production output or reduced operating time of a heavy industrial property;
   - To a heavy industrial property that is under construction;
   - For closure of a heavy industrial property caused by an expansion, upgrade, renovation or labour dispute.
4. The closure adjustment factor of 0.25 shall be applied where a heavy industrial property is permanently closed and all equipment is removed by January 1 of the assessment roll year to which the assessment relates. Prior to making this adjustment, written confirmation is required from the property owner or senior executive representing the owner indicating the property is permanently closed.
5. Properties qualifying for the closure adjustment factor which have functional obsolescence applied shall have the closure adjustment factor adjusted so the combined reduction (functional obsolescence and closure adjustment factor) does not exceed 75% of replacement cost new less depreciation (RCNLD) of the heavy industrial buildings and structures.

Summary

This section contains the procedures for determining the closure adjustment factor for oil or gas non-well facility heavy industrial buildings and structures.

Description

The closure adjustment factor for oil and gas shall account for all of the loss in value due to a complete closure of an oil or gas non-well facility.

Application

The closure adjustment factor for heavy industrial buildings and structures on an oil or gas non-well facility shall be determined by the schedule of rates method.

Schedule of Rates Method

1. The closure adjustment factor for oil and gas shall only be applied to heavy industrial buildings and structures found on an oil or gas non-well facility.
2. The closure adjustment factor for oil and gas shall only be applied when all production related processes at the non-well facility have been completely shut down and the non-well facility is no longer in operation for at least 12 consecutive months in the year preceding the assessment roll year to which the assessment relates. A factor of 0.25 (reduction of 75%) shall be applied to building(s) and structure(s) at the non-well facility.
3. The closure adjustment factor for oil and gas shall only be applied to facilities that fall outside of the definition of an oil or gas well site.
4. The closure adjustment factor for oil and gas non-well facilities shall not be applied in the following circumstances:
   - To any production testing or collection building(s) or structure(s) (i.e. satellites, headers, etc.);
   - To any closed portion or unused area of an operating non-well facility;
   - For the reduced production output or reduced operating time of a non-well facility;
   - To a non-well facility that is under construction; or
   - For closure of a non-well facility caused by an expansion, upgrade, renovation or labour dispute.
5. The closure adjustment factor of 0.25 shall also be applied where a non-well facility is permanently closed and all equipment is removed by January 1 of the assessment roll year to which the assessment relates. Prior to making this adjustment, written confirmation is required from the property owner or senior executive representing the owner indicating the property is permanently closed.
6. Non-well facilities qualifying for the closure adjustment factor, which have functional obsolescence applied, shall have the closure adjustment factor adjusted so that the combined reduction (functional obsolescence and closure adjustment factor) does not exceed 75% of the replacement cost new less depreciation (RCNLD) of the heavy industrial building(s) and structure(s).

Summary

This section contains the criterion to be utilized when determining the valuation methodology for buildings found on an oil or gas non-well facility.

Definition

Oil and gas well buildings located on an oil or gas non-well facility shall be valued using the non-standard heavy industrial building model of Oil and Gas Well Buildings (S881) in Document Number 3.2.3 or valuation procedures from Marshall & Swift Valuation Service.

Rules and Principles

Oil and gas well buildings located on an oil or gas non-well facility shall be valued using Oil and Gas Well Buildings (S881) when the total rateable area of the building is less than 1,000 square feet. Marshall & Swift Valuation Service procedures shall be utilized when a building is greater than or equal to 1,000 square feet.

This criterion shall be applied to buildings with single or multiple uses (e.g. a 1,100 square foot building with 400 square feet of office space and 700 square feet of warehouse space will have both areas assessed using the applicable Marshall & Swift Valuation Service model) and buildings that are attached in a manner where the total rateable area is greater than or equal to 1,000 square feet.

Summary

This section contains the procedures for determining obsolescence for oil and gas well buildings and structures.

Definition

The obsolescence for oil and gas well buildings and structures shall account for the loss in value if the buildings and structures are rendered unusable at a shut-in oil or gas well site.

Application

The well building and structure obsolescence shall be applied to buildings and structures located at shut-in (suspended) well sites if these components have been rendered unusable. The well buildings and structures will be considered shut-in once the well meets the "shut-in single well site" or "shut-in multi-well pad site" definition in Chapter 4 – Resource Production Equipment, Section 4.1.1 – Oil & Gas Well Resource Production Equipment, General Rules.

To qualify for this adjustment the well must be an oil well, gas well, or an oil or gas multi-well pad site, where wells and common buildings, structures and testing/collection resource production equipment are located on the same legal land description of the same legal subdivision, as defined in "oil or gas well site" from Chapter 1 – Formulas, Rules and Principles, Section 1.1.2 – Regulated Property, Rules of Assessment.

The obsolescence will be applied when the tank (i.e. structure) has had its pipeline from the well disconnected, its fittings and connection removed and/or its tank door hot/corner bolted into place.

Schedule of Rates Method

The oil and gas well building and structure obsolescence factor of 0.01 shall be applied to the replacement cost new (RCN) of the qualifying building(s) and structure(s).

Summary

This section contains the rate schedules and calculation procedures for heavy industrial buildings and structures that are not to be valued using the Marshall & Swift Valuation Service.

Definition

Non-standard heavy industrial buildings and structures include the following:

1. Located in this chapter:
    - Oil & Gas Well Tanks (S880)
    - Oil & Gas Well Buildings (S881)
    - Utility Tunnel (S932)
    - Conveyor Gallery (S933)
    - Industrial Pipe Rack (S935)
    - Wind Turbine (S940)
    - Solar Farm (S941)

2. Occupancy Codes located in Chapters 7, 8 and 9 of SAMA's 2023 Cost Guide.

Rates and Calculation Procedures

SAMA's 2023 Cost Guide is to be used to value the occupancy codes located at a heavy industrial property and found in Chapters 7, 8 and 9 of SAMA's 2023 Cost Guide.

Occupancy Description

Tanks may be of various construction and design depending on their particular requirement. They may be steel, either welded or bolted together, fibreglass or concrete. They may be open-topped or closed, cone-bottom or flat, and surface or buried.

Structural Components

Lap Welded Steel Stock Tanks:

Volume (barrels)	Rate ($/tank)	
	Open Top	Closed Top
≤ 50	17,340	20,760
70	23,390	27,020
90	28,110	32,260
100	29,130	33,160
150	37,440	40,490
200	42,680	45,880
210	47,370	48,920
250	49,430	51,120
300	50,920	52,830
400	71,030	72,350
500	75,220	76,690
750	79,940	81,730
1,000	87,250	104,620
5,000	499,530	534,360
10,000	875,400	906,410
20,000	1,556,030	1,665,870
50,000	2,872,760	3,085,150
≥ 100,000	4,999,220	5,548,890

Rates include:

- lap welded steel
- clean out door
- fittings
- installation
- standard deck
- secondary containment
- flanges and valves
- base
- flat bottom
- 300 ft. of pipe
- piles / skid

Rates do not include insulation and heater.

Galvanized and Bolted Painted Stock Tanks:

Volume (barrels)	Rate ($/tank)					
	Galvanized			Bolted Painted		
	Open Top	Cone Deck & Bottom	Flat Bottom	Open Top	Cone Deck & Bottom	Flat Bottom
≤ 100	25,410	27,160	28,120	22,970	28,070	24,800
200	33,220	39,790	41,280	30,050	40,890	36,330
250	35,620	52,050	48,890	32,880	45,390	42,730
500L (low)	48,350	71,800	68,110	41,460	60,550	57,530
500H (high)	62,040	65,620	64,660	52,930	55,870	55,470
750	69,580	81,990	72,920	58,520	80,500	74,870
1,000L (low)	82,950	118,940	98,340	72,660	99,740	85,270
1,000H (high)	81,900	86,910	86,730	65,090	72,650	72,610
1,500	111,600	128,120	120,900	90,710	109,420	101,850
2,000	140,550	158,380	149,590	111,370	134,420	124,880
≥ 5,000	240,760	271,310	256,000	217,300	262,390	243,670

Rates include:

- thief hatch and vacuum valve
- 20 in. dome with cover
- tank flanges and valves
- base
- secondary containment
- flush type extended clean out door
- inside ladder
- foundation bands
- installation

Open Top Plastic Stock Tanks:

Volume (barrels)	Rate ($/tank)
≤ 100	23,830
200	30,120
250	35,910
500L (low)	55,130
500H (high)	45,750
750	54,800
1,000L (low)	75,190
1,000H (high)	71,720
1,500	96,370
2,000	114,930
≥ 5,000	224,770
Rates include: - thief hatch and vacuum valve - 20 in. dome with cover - tank flanges and valves - base - flush type extended clean out door - inside ladder - foundation bands - secondary containment - installation	

In-Ground Steel, Fibreglass or Concrete Tanks:

Volume (barrels)	Rate ($/tank)	
	Closed Top	Open Top
≤ 50	21,490	17,150
100	31,810	25,810
200	44,630	38,640
300	60,110	48,960
400	70,440	57,550
500	78,270	64,420
750	109,080	89,600
1,000	140,890	116,060
1,500	231,150	189,010
2,000	255,960	210,840
≥ 3,000	345,390	283,440

Rates include:
- pipes
- valves
- fittings
- installation

Chemical Storage Tanks:

Volume (imp. gal.)	Rate ($/tank)
≤ 500	5,770
> 500	8,900
Rates include: - tank - valves - fittings - stand - pipes - installation	

Fibreglass Vertical Closed Top Tanks:

Volume (barrels)	Volume (m^3)	Height (ft.) x Width (ft.)	Rate ($/tank)
≤ 90	14.3	8.0 x 10	30,790
100	15.9	8.5 x 10	32,410
140	22.3	10.0 x 10	36,220
150	23.9	10.5 x 10	37,720
200	31.8	11.0 x 11	42,730
210	33.4	11.5 x 11	43,650
300	47.7	11.5 x 16	55,950
400	63.6	11.5 x 21	68,340
500	79.5	11.5 x 27	91,100
750	119.2	15.5 x 22	133,640
≥ 1,000	158.9	15.5 x 30	155,100
Rates include: - tank - secondary containment - freight - installation			

Fibreglass Horizontal Tanks:

Volume (barrels)	Volume (m^3)	Rate ($/tank)
≤ 100	15.9	50,610
150	23.9	69,570
≥ 200	31.8	82,130
Rates include: - tank - secondary containment - freight - installation		

Fibreglass Open Top Tanks:

Volume (barrels)	Volume (m^3)	Rate ($/tank)
≤ 90	14.3	26,890
100	15.9	27,340
140	22.3	29,830
≥ 210	33.4	38,860
Rates include: - tank - secondary containment - freight - installation		

Open Top Plastic Pop Tanks:

Volume (barrels)	Rate ($/tank)
40	4,220
120	11,340
Rates include: - tank - secondary containment - freight - installation	

Propane Vessels (Gas Bullets):

Volume (USG)	Rate ($/tank)
≤ 500	18,340
1,000	24,850
2,000	40,870
6,500	99,500
9,000	120,540
12,000	140,630
15,000	165,750
20,000	207,290
30,000	288,510
45,000	409,540
60,000	530,480
≥ 90,000	779,210
Rates include:	
- painted tank - concrete piers	- saddles - installation

Insulation and Lining:

Volume (barrels)	Rate ($/tank)		
	Urethane	Fibreglass c/w Metal Wrap	Epoxy
≤ 50	2,230	7,810	15,050
65	2,720	8,070	14,990
90	2,720	9,780	19,680
100	3,330	9,780	19,450
165	3,750	11,930	23,420
200	3,910	13,380	25,250
210	4,440	13,960	27,540
240	5,590	15,800	31,210
300	6,200	19,810	41,060
400	6,790	21,980	43,230
500	9,130	24,040	47,220
750	10,910	32,220	64,280
1,000	13,850	38,430	76,640
1,500	16,990	48,740	96,480
2,000	21,630	59,710	118,050
3,000	24,520	75,980	149,980
4,000	28,050	86,100	170,260
5,000	42,600	98,440	194,900
≥ 10,000	57,140	149,360	296,770

Stairways, Walkways and Stiles:

Description	Rate ($/unit)
Stairways	4,670
Walkways	8,450
Stiles	4,620

Tank Gauges:

Description	Rate ($/unit)
Electronic - Gauge Head Assembly (dial type)	12,860
- Hi-low transmitter	4,030
Floating - Gauge Board Assembly (target type)	9,160
- Hi-low float assembly	2,120
Liquid Level Seal (sour gas application)	4,560

Tank Heaters:

Description	Rate ($/unit)
U-Fire Tubes 6"	23,800
U-Fire Tubes 10"	29,000
Straight Fire Tube or Electric	21,750
Rates include: - stack - flame arrestor - burner - installation	

Calculation Procedure

Description	Document No.	Page No.
(a) Base Rate	3.2.2	1-7
(b) Additional Features = (b_1 + b_2 + b_3 + b_4)	3.2.2	
b_1. Insulation and Lining	3.2.2	8
b_2. Stairways, Walkways and Stiles	3.2.2	8
b_3. Tank Gauges	3.2.2	9
b_4. Tank Heaters	3.2.2	9
(c) Replacement Cost New = a + b		

Description

Oil and gas well buildings are metal and wood sheds used to house or shelter the fixtures, machinery, tools and other appliances, and field offices.

Structural Components

Wood Sheds:

Area (sq.ft)	Rate ($/sq.ft.)					
	Frame	Lining & Insulation	Floor	Heating	Electrical	Total
≤ 50	148.80	27.80	17.05	16.70	36.15	246.50
100	138.00	23.25	17.05	16.40	35.80	230.50
200	126.45	20.45	17.05	19.60	34.60	218.15
300	110.60	17.40	17.05	25.00	33.75	203.80
400	96.40	15.00	17.05	24.85	32.85	186.15
500	87.15	13.55	17.00	22.85	31.55	172.10
600	83.10	12.85	17.00	20.10	30.45	163.50
700	81.70	12.50	17.00	18.55	29.50	159.25
800	80.65	12.30	17.00	17.30	28.35	155.60
900	79.50	12.05	16.95	15.90	27.15	151.55
< 1,000	78.60	11.85	16.95	14.15	25.90	147.45

Rates include:

- walls and roof with 2"x4" studs at 16" o.c.
- good siding and asphalt shingles
- 2 standard walk-in doors with panic hardware
- plywood or equivalent sheathing
- adequate electrical service
- 2 standard windows

Metal Sheds:

Area (sq.ft.)	Rate ($/sq.ft.)						
	Frame	Steel Frame	Lining & Insulation	Floor	Heating	Electrical	Total
≤ 100	83.90	21.25	27.20	16.20	13.55	28.80	190.90
500	73.25	21.20	25.15	16.15	10.90	25.35	172.00
700	59.05	21.20	25.05	16.15	7.05	23.60	152.10
< 1,000	56.30	21.00	22.20	16.15	5.45	21.20	142.30

Field Offices:

Area (sq.ft.)	Rate ($/sq.ft.)	Area (sq.ft.)	Rate ($/sq.ft.)
≤ 100	240.80	450	164.50
150	203.35	500	161.95
200	184.60	550	157.20
250	176.00	600	153.25
300	169.10	700	147.20
350	167.80	800	142.05
400	167.15	< 1,000	132.65
Rates include: Standard mobile unit with blocking and adequate electrical and heating. Typical brand names are Atco and Prebilt.			

Miscellaneous Buildings:

Description	Units of Comparison	Rate ($/sq.ft.)
Fibreglass wellhead shelters	Floor area	167.10
Pump shacks	Floor area	143.05

Description	Unit of Comparison	Rate ($/ft.)
Utilidor insulated pipe enclosure	Structure Length	170.30

Adjustments

Storey Height:

Height (ft.)	Factor
8	0.92
10	1.00
12	1.08
14	1.16
16	1.24
18	1.32
20	1.40
≥ 22	1.48

Doors:

Description	Rate ($/unit)
Walk-in Door	2,720
Overhead Door	3,660
Window	1,460
Plumbing (3 fixtures)	5,570

Calculation Procedure

Description	Document No.	Page No.
(a) Base Rate = (a_1 + a_2 + a_3 + a_4 + a_5 + a_6)		
a_1. Frame Rate	3.2.3	1-2
a_2. Steel Frame Rate	3.2.3	1
a_3. Insulation and Lining Rate	3.2.3	1-2
a_4. Floor Rate	3.2.3	1-2
a_5. Heating Rate	3.2.3	1-2
a_6. Electrical Rate	3.2.3	1-2
(b) Section Area		
(c) Value Subtotal = a x b		
(d) Storey Height Factor	3.2.3	3
(e) Additional Features = (±e_1)		
e_1. Door Adjustment	3.2.3	3
(f) Replacement Cost New = (c x d) ± e		

Occupancy Description

Utility tunnels carry utilities between buildings. The rates vary depending on wall thickness.

The rates are averages of reinforced concrete-lined tunnels per cubic foot of tunnel, including drainage.

Structural Components

Utility Tunnel:

Class	Description	Rate ($/cu.ft.)
A	7" - 10" concrete wall	
B	5" - 7" concrete wall	
C	3" - 5" concrete wall	

Electrical and Mechanical Installations:

Description	Rate ($/cu.ft.)
Electrical / Lighting	
Heating	
Sprinkler	

Calculation Procedure

Description	Document No.	Page No.
(a) Structure Rate = (a_1 + a_2 + a_3 + a_4)		
a_1. Base Rate	3.2.4	1
a_2. Electrical Rate	3.2.4	1
a_3. Heating Rate	3.2.4	1
a_4. Sprinkler Rate	3.2.4	1
(b) Building Volume	3.1.2	1-2
(c) Value Subtotal = a x b		
(d) Incomplete Construction Factor	3.1.7	1
(e) Replacement Cost New = c- (c x d)		

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Website: http://www.sama.sk.ca

Occupancy Description

A conveyor gallery is a structure primarily found in processing operations used for enclosing conveyor belting that interconnects various buildings.

Rates are based on completely installed units including typical wall, roof, floor, and support structure where designated by type.

Structural Components

Conveyor Gallery:

Type	Class	Life Expectancy (Years)	Rate ($/cu.ft.)
Elevated (ELEV)	A	40	38.99
Elevated (ELEV)	B	35	32.04
Elevated (ELEV)	C	35	25.06
Surface (SURF)	A	40	33.42
Surface (SURF)	B	35	26.47
Surface (SURF)	C	35	20.90
Suspended (SUSP)	A	40	33.42
Suspended (SUSP)	B	35	26.47
Suspended (SUSP)	C	35	20.90

Electrical and Mechanical Installations:

Description	Rate ($/cu.ft.)
Electrical	
Heating	
Sprinkler	

Calculation Procedure

Description	Document No.	Page No.
(a) Structure Rate = (a_1 + a_2 + a_3 + a_4)		
a_1. Base Rate	3.2.5	1
a_2. Electrical Rate	3.2.5	1
a_3. Heating Rate	3.2.5	1
a_4. Sprinkler Rate	3.2.5	1
(b) Building Volume	3.1.2	1-2
(c) Value Subtotal = a x b		
(d) Incomplete Construction Factor	3.1.7	1
(e) Replacement Cost New = c- (c x d)		

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Elevated

Occupancy Description

Pipe racks are supporting structures for overhead piping and wiring.

Structural Components

Frame:

Type	Class	Description	Life Expectancy	Base Rate ($/sq.ft.)
5	AA- Excellent	Heavy steel frame	45	24.52
	A-Good	Good steel frame	40	18.86
	B-Average	Average structural steel frame	35	14.44
	C-Low Cost	Light structural steel frame or post	35	11.13

Adjustments

Standard Storey Height: 8 feet
Incomplete Construction: See Doc. No. 3.1.7

Storey Height:

Height (ft.)	Factor	Height (ft.)	Factor	Height (ft.)	Factor
6.00		18.00		55.00	
7.00		19.00		60.00	
8.00		20.00		65.00	
9.00		22.00		70.00	
10.00		24.00		75.00	
11.00		26.00		80.00	
12.00		28.00		85.00	
13.00		30.00		90.00	
14.00		35.00		95.00	
15.00		40.00		100.00	
16.00		45.00		150.00	
17.00		50.00		> 200.00	
See General Rules, Doc. No. 3.1.6					

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Calculation Procedure

Description	Document No.	Page No.
(a) Structure Rate = (a_1)		
a_1. Base Rate	3.2.6	1
(b) Section Area	3.1.2	1-2
(c) Adjusted Building Height Factor = c_1 x c_2 x c_3		
c_1. Storey Height Factor	3.2.6	1
c_2. Total Number of Storeys Factor	3.1.6	2
c_3. Number of Storeys	3.1.6	1
(d) Value Subtotal = a x b x c		
(e) Incomplete Construction Factor	3.1.7	1
(f) Replacement Cost New = d – (d x e)		

Class S (5) Excellent Quality (AA)

Class S (5) Good Quality (A)

Class S (5) Average Quality (B)

Occupancy Description

A horizontal axis wind turbine (HAWT) is a rotary device that extracts energy from the wind for electric power generation for public and /or industrial consumption. A wind turbine can be a single turbine or multiple turbines in a wind farm.

The assessment of a wind turbine is based on the nameplate capacity in megawatts alternating current (MW_{ac}) multiplied by the base rate. Wind turbines typically range in nameplate capacity from 0.50 MW_{ac} to 6.00 MW_{ac}.

The rate includes the fully installed cost of the foundation, tower and nacelle (supporting, housing and sheltering the power generating equipment).

Rates

Wind turbines are valued at \$365,000/$megawatt_{ac}$ or \$365/$kilowatt_{ac}$.

Calculation Procedure

Description	Document No.	Page No.
(a) Structure Rate = a		
a. Base Rate	3.2.7	1
(b) Nameplate Capacity (MW_{ac} or kW_{ac})	3.2.7	1
(c) Value Subtotal = a x b		
(d) Incomplete Construction	3.1.7	1
(e) Replacement Cost New = c – (c x d)		

Horizontal Axis Wind Turbine (0.66 MW_{ac})

Occupancy Description

A solar farm is a collection of fixed, or sun-tracking, devices that extract energy from sunlight for public and/or industrial consumption. A solar farm is ground mounted and composed of multiple rows of photovoltaic (PV) panels supported by racking (support structure) and, typically, a pile foundation.

The assessment of a solar farm is based on the nameplate capacity in megawatts alternating current (MW_{ac}) multiplied by the base rate. Solar farms can range in capacity from 0.1 MW_{ac} to 500.0 MW_{ac}.

The rate includes the fully installed cost of the foundation and racking.

Rates

Solar farms are valued at \$300,000/$megawatt_{ac}$ or \$300/$kilowatt_{ac}$.

Calculation Procedure

Description	Document No.	Page No.
(a) Structure Rate = a		
a. Base Rate	3.2.8	1
(b) Nameplate Capacity (MW_{ac} or kW_{ac})	3.2.8	1
(c) Value Subtotal = a x b		
(d) Incomplete Construction	3.1.7	1
(e) Replacement Cost New = c - (c x d)		

Fixed Tilt Solar Farm (10 MW_{ac})