How to Calculate a Transportation UCA:

Below is an example of how to calculate a transportation Unbundling Cost Allocation (UCA). This is not the only method by which the UCAs may be calculated. Other methods may be used provided they are in accordance with appropriate regulations. Regardless of the method used to unbundle, you are still subject to audit. ***(Updated February 1, 2017)***

Data Collection

1) Obtain a map displaying the transportation system including compressor stations, dehydration units, and direction of flow.

    a. From this map, create a list of all major units in the transportation system and draw a simplified schematic.

2) Determine the Marketable Conditions for the system by finding the mainline pipeline (or pipelines) downstream from your transportation system (most commonly after a gas processing plant). Determine each mainline requirement for pressure, CO_2, H_2S and H_2O. Some mainlines might also have a "total acid gas" or "total inert gas" specification. **These values are your Marketable Condition requirements for each mainline**.

3) Obtain costs for the equipment in the transportation system

    a. Costs associated with capital investment (equipment, building costs and installation).

    b. Costs associated with operations, maintenance and overhead.

    c. For a complete list of information needed, refer to the equipment on the **List of Engineering Data Needs**

    d. Match equipment costs to the list and schematic from #1a, making sure that there are no inconsistencies

4) Obtain gas composition data for each compressor station, dehydrator, sweetening unit and measurement point(s) within the transportation system for the following (as appropriate):

    a. CO_2

    b. H_2S

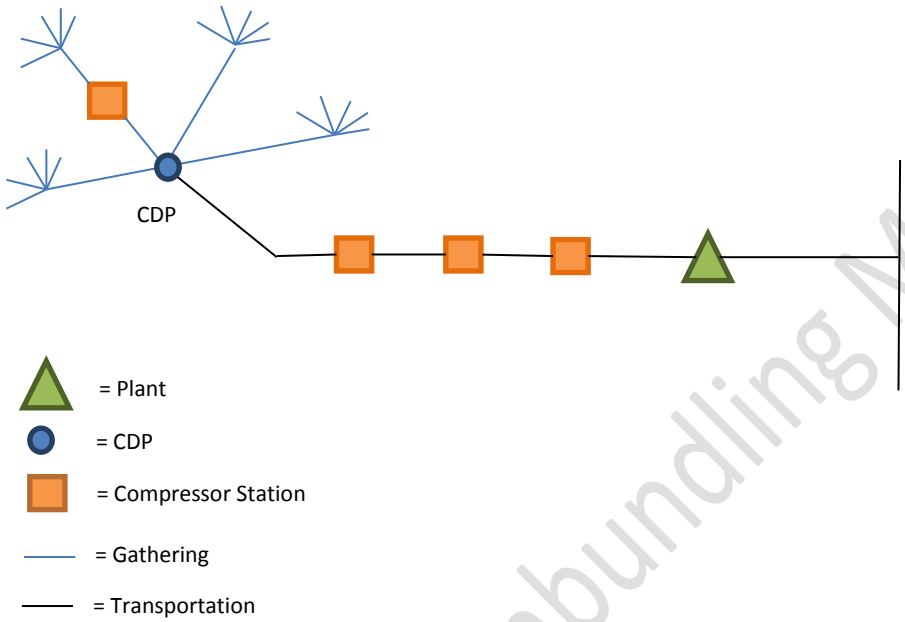
    c. H_20

Suggested Unbundling Method

d. Compressor discharge pressure

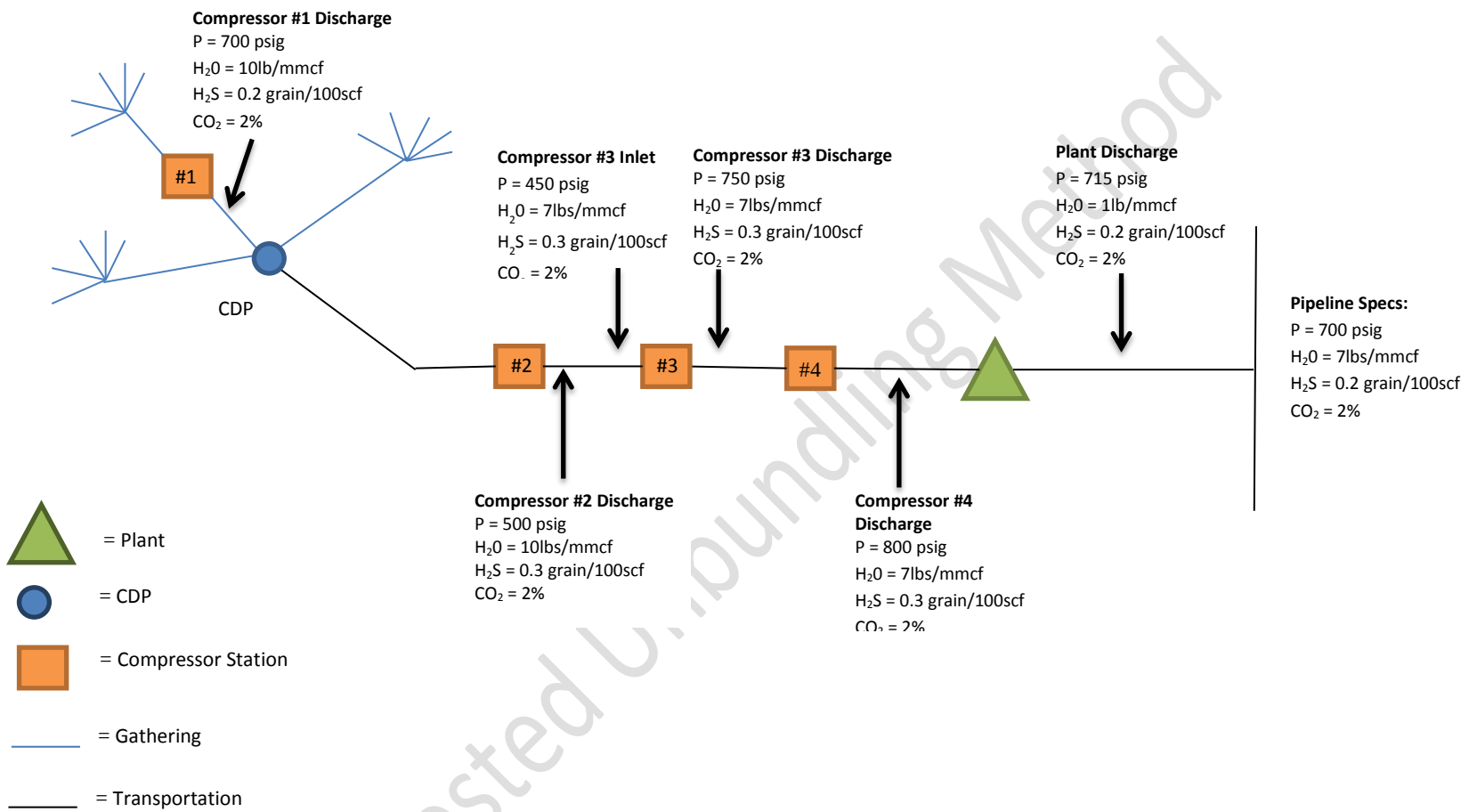
Compile and Organize Data

5) Take the map from #1, and identify the Central Delivery Point (CDP). Assign everything upstream of the CDP as 'Gathering' and everything downstream of the CDP and before the plant as 'Transportation'.



6) Populate the map with values obtained from #2 and #4 above.

Suggested Unbundling Method



Suggested Compounding Method

7) Classify compressor stations, sweetening and dehydration units as allowed, non-allowed and partially allowed based on the Marketable Condition Rule. The Marketable Condition Rule states that lessees must compress, remove sulfur, carbon dioxide and water content to mainline specifications at no cost to the lessor. The first piece of equipment to reach any of the marketable condition variables is not allowed. Once the mainline specifications have been met for pressure, water, CO_2, H_2S content, etc., downstream equipment that performs the same function is allowed. For example, after pressure has reached Marketable Condition, all downstream compressor stations in the transportation system are allowed.

8) If the first piece of equipment to reach marketable conditions also exceeds the specifications, such as the pressure for compressor station #3 in the map above, use the following equations to calculate the allowed percentage for compressor stations, amine units and dehydrators. (Note: There are two equations for calculation of the allowable percentage for compressors. When supportable data is available for both the inlet and outlet pressures for each compressor station, then use Option #1. If inlet pressure data to each compressor station is not available, and only outlet pressure is available, then use Option #2):

$$\textbf{Allowed Percentage (dehydrator and amine units):}$$

$$\left(\frac{Marketable\ Condition\ Specification - Outlet\ Measurement}{Inlet\ Measurement}\right) \times 100$$

$$\textbf{Option \#1: Allowed Percentage (compressors):}$$

$$\left(\frac{Discharge\ Pressure\ of\ Compressor - Marketable\ Condition\ Pressure}{Discharge\ Pressure\ of\ Compressor - Inlet\ Pressure\ of\ Compressor}\right) \times 100$$

$$\textbf{Option \#2: Allowed Percentage (compressors):}$$

$$\left(\frac{Discharge\ Pressure\ of\ Unit - Marketable\ Condition\ Pressure}{Discharge\ Pressure\ of\ Unit}\right) \times 100$$

Example from map above (the rest of this method uses Option #1):

$$\text{Allowed Percentage of Compressor Station \#3} = \left(\frac{750\ psig - 700\ psig}{750\ psig - 450\ psig}\right) \times 100 = 17\%\ allowed$$

9) All compressors that are within the transportation system and downstream of compressor station #3 are allowed since marketable condition has been met for pressure.

10) Organize costs from #3 into the following categories:

    a. Individual compressor stations

    b. Individual dehydration units

Suggested Unbundling Method

c. Field sweetening units

d. Pipe

e. Meters

f. Gathering

g. Everything else

Example from map:

Asset Description	Cost ($)	Function
Compressor #2	274,500.00	Compression
Compressor #3	1,180,406.60	Compression
Compressor #4	746,177.56	Compression
Dehydrator #2	58,241.30	Dehydration
Dehydrator #3	722,636.95	Dehydration
Dehydrator #4	581,556.72	Dehydration
Pipe	20,292.70	Pipe
Pipe	30,373.02	Pipe
Pipe	15,591.66	Pipe
Pipe	11,070.06	Pipe
Pipe	16,730.28	Pipe
Meter	132,006.42	Meters
Meter	26,958.98	Meters
Meter	48,935.99	Meters
Meter	48,935.99	Meters
Compressor #1	60,600.00	Gathering
Dehydrator #1	19,125.39	Gathering
Pipe	41,248.18	Gathering
Pipe	24,783.51	Gathering
Meter	28,033.21	Gathering

11) Using the Marketable Condition data gathered in #2, the map and the methods outlined in #7, #8 and #9 classify each compressor station, dehydrator and field-sweetening unit into allowed and non-allowed categories. Other assets are classified as follows:

a. All transportation pipes (downstream of CDP) are allowed

b. All costs relating to pipe maintenance are allowed

c. All meters are non-allowed

d. All gathering is non-allowed

12) Determine whether your transportation system uses Depreciation and Return on Undepreciated Capital Investment (RUC) or Initial Depreciable Capital Investment multiplied by the BBB Rate to determine transportation UCAs. Refer to 30 CFR §1206.154(i)(3) for Federal Gas or §1206.178(b)(2) for Indian Gas.

13) The Return on Undepreciated Capital Investment is calculated by taking the undepreciated capital balance (beg. year) times a rate of return (The industrial rate for Standard & Poor's BBB bond)

14) Calculate UCA's using the following equations:

$$\text{UCA for allowed Transportation (using Depreciation and RUC method)} = \left[\frac{\text{Total Yearly Depreciation and RUC of Allowed Units} + \text{Allowable Operating and Maintanence}}{\text{Total Yearly Depreciation and RUC of all Units} + \text{Total Operating and Maintanence}}\right]$$

$$\text{UCA for allowed Transportation (using Initial Capital Investment method)} = \left[\frac{(\text{Total Initial Capital Investment of Allowed Units}) * \text{BBB Rate} * 1.3 + \text{Allowable Operating and Maintanence}}{(\text{Total Initial Capital Investment of all Units}) * \text{BBB Rate} * 1.3 + \text{Total Operating and Maintanence}}\right]$$

Example using Depreciation and RUC method (from map above):

Equipment Costs					
Asset Description	**Depreciation and RUC***	**Function**	**Percent Allowed**	**Allowed Depreciation and RUC**	**Non-Allowed Depreciation and RUC**
Compressor #2	$2,700.00	Compression	0%	$0.00	$2,700.00
Compressor #3	$11,800.00	Compression	17.0%	$2,006.00	$9,794.00
Compressor #4	$7,400.00	Compression	100%	$7,400.00	$0.00
Dehydrator #2	$582.00	Dehydration	0%	$0.00	$582.00
Dehydrator #3	$7,226.00	Dehydration	0%	$0.00	$7,226.00
Dehydrator #4	$5,815.00	Dehydration	100%	$5,815.00	$0.00
Pipe	$202.00	Pipe	100%	$202.00	$0.00
Pipe	$303.00	Pipe	100%	$303.00	$0.00
Pipe	$155.00	Pipe	100%	$155.00	$0.00
Pipe	$110.00	Pipe	100%	$110.00	$0.00
Pipe	$167.00	Pipe	100%	$167.00	$0.00
Meter	$1,320.00	Meters	0%	$0.00	$1,320.00
Meter	$269.00	Meters	0%	$0.00	$269.00
Meter	$489.00	Meters	0%	$0.00	$489.00
Meter	$489.00	Meters	0%	$0.00	$489.00
Compressor #1	$600.00	Gathering	0%	$0.00	$600.00
Dehydrator #1	$191.00	Gathering	0%	$0.00	$191.00

Pipe	$412.00	Gathering	0%	$0.00	$412.00
Pipe	$247.00	Gathering	0%	$0.00	$247.00
Meter	$280.00	Gathering	0%	$0.00	$280.00
Total:	$40,757.00			$16,158.00	$24,599.00

** Depreciation and RUC values are for illustrative purposes only, yours will vary depending on BBB rates, depreciation methods, equipment life, etc.*

Operating and Maintenance Cost				
Description	**Category**	**Percent Allowed**	**Total Annual Operating and Maintenance**	**Allowed Annual Operating and Maintenance**
Pipeline maint.	Pipeline	100%	$80,500	$80,500
Compressor #2 maint.	Compression	0%	$5,200	$0
Compressor #3 maint.	Compression	17.0%	$6,700	$1,139
Compressor #4 maint.	Compression	100%	$2,900	$2,900
Dehydrator #2 maint.	Dehydration	0%	$2,300	$0
Dehydrator #3 maint.	Dehydration	0%	$7,300	$0
Dehydrator #4 maint.	Dehydration	100%	$7,200	$7,200
		Total:	$112,100	$91,739

15) Sum all the items in the allowed category and the non-allowed category (as shown above)

16) Calculate UCA's using the equations from #13:

Example from map above:

$$\text{UCA for allowed Transportation (using Depreciation and RUC method)}$$

$$= \left[\frac{\text{Total Yearly Depreciation and RUC of Allowed Units} + \text{Total Allowable Operating and Maintanence}}{\text{Total Yearly Depreciation and RUC of all Units} + \text{Total Operating and Maintanence}}\right]$$

$$= \left[\frac{\$16{,}158 + \$91{,}739}{\$40{,}757.00 + \$112{,}100}\right] = 71\% \text{ allowed}$$

17) Allowed and non-allowed UCAs should be calculated for each mainline in the system.

Repeat the above procedure for each mainline.

Suggested Unbundling Method

18) Apply the allowed UCAs to calculate your Transportation Allowance when reporting and paying royalties.

Note: The above UCA calculation is an example of the simplest case scenario. If your transportation system varies significantly from the above example and you need assistance please refer to 30 CFR §1206.156 - §1206.157 for Federal gas and 30 CFR §1206.177 – §1206.178 for Indian gas. If you need further assistance, please send an e-mail to **onrrunbundling@onrr.gov.**

For a more complete list of what might be asked by ONRR in our attempt to unbundle see the **List of Accounting and Cost Data Needs** and **List of Engineering Data Needs**

Suggested Unbundling Method