



Oil & Gas Valuation Case Study: Ultra Petroleum [UPL] and its Acquisition of the Uinta Basin Acreage – SHORT Recommendation

NOTES AND DISCLAIMERS:

First, please do not construe this as “investment advice.” We are **NOT** recommending that you invest in any of these companies. This is a tutorial about how to *research* and *pitch* companies that you think are interesting, and how to use what we’ve learned in this course to support your arguments.

So please keep in mind that this is not investment advice, legal advice, or any other type of advice other than “how to research and structure an investment pitch” advice.

Recommendation

I recommend **shorting** Ultra Petroleum [UPL], an independent E&P producer, which currently trades at \$18.83 per share, because it is overvalued by approximately 30-40%, its recently announced Uinta Basin acreage acquisition reduces its implied share price by ~10%, it has overstated its average EUR per well, and even if its D&C costs and operating expenses decline by 20%, it would still be undervalued by only 10-20% in the best case scenario.

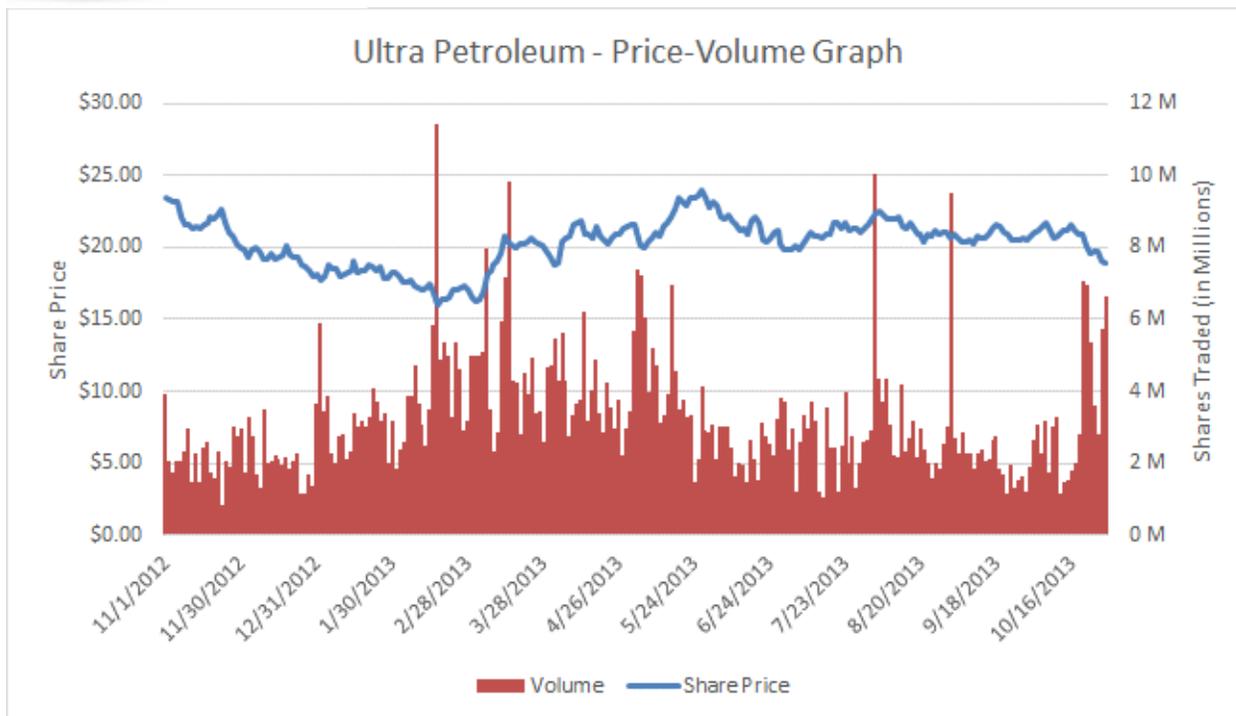
Based on the points above, the company’s intrinsic value is unlikely to exceed its current share price unless long-term natural gas prices increase by over 25%. If natural gas prices stay in their current range, the company is almost certainly overvalued by close to 50%. And even if natural gas prices increase by 15-20%, the company is still overvalued by at least 25%.

Catalysts to reduce its share price in the next 6-12 months include the close of its recently announced \$650 million Uinta Basin acquisition, the release of new reserve or drilling reports, and the possible halt to drilling in the Marcellus shale.

Key investment risks include the newly acquired Utah wells proving more productive than expected, Marcellus shale drilling continuing unabated, D&C costs and operating expenses falling more substantially than expected due to improved technology, and improved well spacing, which would increase the effective EUR per well.

We can mitigate these risks via call options and by setting a strict buy-stop order after shorting the company’s stock.

Company Background



Ultra Petroleum [UPL] is a leading natural gas-focused exploration & production (E&P) company based in the US, with operations primarily in the Pinedale and Jonah fields of Wyoming, and the Marcellus shale of Pennsylvania. It recently announced a \$650 million acquisition of additional producing wells and acreage in the Uinta Basin of Utah.

Prior to the acquisition, UPL had approximately 3.1 Tcfe of Proved Reserves, 9.9 Tcfe of 2P Reserves, and 16.3 Tcfe of 3P Reserves. In its most recent fiscal year prior to the acquisition, the company generated over \$800 million in revenue from 257 Bcfe of production and recorded an operating loss of \$2.8 billion, primarily due to an impairment charge from the ceiling test (excluding the charge, operating income would have been ~\$100 million).

UPL sets itself apart from other independent E&P firms by aiming to be the lowest-cost producer, with industry-low all-in costs and F&D costs per Mcfe of production. It also aims to be FCF-positive at all times and targets 20%+ IRRs on new plays and acquisitions.

As of the time of this acquisition, UPL traded at an EV / Proved Reserves value of \$1.53 per Mcfe, and an EV / TTM Annual Production value of \$20.12 per Mcfe.

In our "Base Case" Net Asset Value (NAV) Model, with \$4.50 long-term gas prices assumed (a ~22% uplift to current prices), UPL's implied value is a 2-3% premium to its share price.



Investment Thesis

Currently, the market views Ultra Petroleum [UPL] as a fairly standard independent E&P producer, and has taken many of its claims about its reserves and average EUR per well at face value.

It has not given it much credit for being a low-cost producer because of persistent, extremely low natural gas prices.

UPL's valuation multiples are in-line with its peer independent E&P producers, but we believe the stock is priced imperfectly for the following reasons:

1. The company has significantly **overstated** its EUR per "average" well in its future PUD, PROB, and POSS drilling locations, but the market hasn't factored this in yet. Risk-adjusting the company's claimed 3P Reserves by 25% implies that it's appropriately valued at its current share price, but we believe a discount closer to 40% is justified. Such a discount would reduce its implied share price to approximately \$10.00 – \$12.00, which is **35-45%** lower than its current market price.
2. There is significantly **less upside** to reduced D&C costs and operating expenses than the company has led us to believe. Reducing its LOE per Mcfe expense by upwards of **20%** only adds approximately **\$1.50** to its intrinsic value, making it appropriately valued right now; reducing its D&C costs per well by even **20-25%** only adds **\$2.00 – \$3.00** to its share price, which would make it slightly undervalued right now. In our view, however, D&C costs are unlikely to decline that much, that quickly, given historical trends.
3. There's a significant chance that **drilling in Pennsylvania will stop or be reduced**, depending on near-term gas prices, because UPL has partnered with much larger companies there – such as Shell and Anadarko. If we assume no drilling in Pennsylvania for the next 5 years, the company would be overvalued by **~5%**; if drilling there stops altogether for the next 40+ years, it would be **overvalued by closer to 30%**.

Each of these reasons will make a substantial impact on the company's valuation (in the case of reasons #1 and #3 above), or will make far less of an impact than what the market has currently priced in (for reason #2).

Even if some of these reasons turn out to be incorrect, any one of the factors above represents a significant difference from the current market view of the stock and could result in potential upside from a short position.



If **all** of the factors above turn out to be incorrect, then Ultra Petroleum is valued appropriately at its current stock price and a short position would represent little downside risk.

Catalysts

Catalysts in the next 6-12 months include:

- The close of the \$650 million Uinta Basin acquisition.
- The release of new reserve reports from the company's existing regions.
- The possible halt to drilling in the Marcellus shale of Pennsylvania.

For the first catalyst, the price paid for the Uinta Basin acquisition (\$650 million) exceeds the NPV of the after-tax cash flows from the region by approximately \$200 million in our Base Case scenario.

That \$200 million differential reduces the company's implied share price by approximately \$1.50, or **5-10%**, depending on the long-term natural gas price case.

Catalyst #2 is critical because our investment thesis is based on substantial evidence that the company has overstated its EUR per well across regions and reserve types.

A EUR differential of 10-20% less than what the company has stated means that its Risked 3P Reserves would be approximately 60-70% of its stated 3P Reserves. Even if gas prices increase to the \$4.00 to \$4.50 range, the implied share price under those scenarios is a **15-45%** discount to the current market price.

For the halt to drilling in the Marcellus shale, we'll show a scenario in which drilling stops for 5 years due to larger JV partners such as Anadarko backing out, and also a scenario in which the company stops drilling there altogether and all the NAV from Marcellus is "pushed out" 40+ years into the future.

In the first case, the company is only modestly overvalued (~5%), but in the second case it is overvalued by closer to **30%**.

To determine the per-share impact from all these catalysts, we rely primarily upon the Net Asset Value (NAV) Model because public comps and precedent transactions are not as accurate for a company that just made a significant acquisition.

Also, the NAV Model supports a greater depth and breadth of assumptions, which are important since investment thesis requires the tweaking of many different numbers.



The full assumptions for this NAV Model will be described in the Valuation section, but here we present the summary output from the model in different cases.

- **Assumptions:**

- Risked 3P Reserves are ~75% of the company's stated 3P Reserves;
- Wells Drilled and CapEx match company estimates;
- Long-term gas prices range from \$3.50 to \$5.50; and
- The \$650 million Utah acquisition closes.

Here is what the company's NAV / Share looks like in the "Base Case" scenario, with the assumptions laid out above:

Category:	Unrisked Bcfe	Reserve Credit	Risked Bcfe	Base Case:	@ Other Long-Term Gas Prices:		
					\$	\$	\$
					3.50	4.50	5.50
Total Asset Value:				\$ 5,471	\$ 4,222	\$ 5,471	\$ 6,719
Less: Net Debt & Preferred:				(1,855)	(1,855)	(1,855)	(1,855)
Less: Price Paid for Uinta Basin Acquisition:				(650)	(650)	(650)	(650)
Net Asset Value:				\$ 2,965	\$ 1,717	\$ 2,965	\$ 4,214
Diluted Shares Outstanding:				153.0	153.0	153.0	153.0
NAV / Share:				\$ 19.38	\$ 11.22	\$ 19.38	\$ 27.54
Current Share Price:				\$ 18.83	\$ 18.83	\$ 18.83	\$ 18.83
Current Share Price Premium / (Discount) to NAV:				(2.9%)	67.8%	(2.9%)	(31.6%)

And then here is what the NAV / Share looks like *without* the Utah acquisition:

Category:	Unrisked Bcfe	Reserve Credit	Risked Bcfe	Base Case:	@ Other Long-Term Gas Prices:		
					\$	\$	\$
					3.50	4.50	5.50
Total Asset Value:				\$ 5,060	\$ 3,812	\$ 5,060	\$ 6,308
Less: Net Debt & Preferred:				(1,855)	(1,855)	(1,855)	(1,855)
Less: Price Paid for Uinta Basin Acquisition:				-	-	-	-
Net Asset Value:				\$ 3,205	\$ 1,956	\$ 3,205	\$ 4,453
Diluted Shares Outstanding:				153.0	153.0	153.0	153.0
NAV / Share:				\$ 20.95	\$ 12.79	\$ 20.95	\$ 29.11
Current Share Price:				\$ 18.83	\$ 18.83	\$ 18.83	\$ 18.83
Current Share Price Premium / (Discount) to NAV:				(10.1%)	47.2%	(10.1%)	(35.3%)

The Utah acquisition therefore **reduces the company's implied NAV / Share by approximately \$1.50, or 5-10%**, in each long-term natural gas price case.



While this is not a huge part of our investment thesis, the fact that the \$650 million price exceeds the NPV of After-Tax Cash Flows from Utah certainly makes the company even more overvalued.

In short, the market was correct when UPL's share price fell by \$2.00+ after the acquisition was announced – and we believe it could fall by more than that in the future.

For the second catalyst, please refer to the sensitivity table below, which shows how a discount or premium to the company-provided average EUR per well number impacts the implied share price:

		EUR Differentials vs. Baseline Assumptions for Each Region:										
		(25.0%)	(20.0%)	(15.0%)	(10.0%)	(5.0%)	0.0%	5.0%	10.0%	15.0%	20.0%	25.0%
Long-Term Gas Prices:	\$ 5.50	\$ 17.21	\$ 19.28	\$ 21.35	\$ 23.41	\$ 25.48	\$ 27.54	\$ 29.61	\$ 31.67	\$ 33.74	\$ 35.81	\$ 37.87
	5.25	15.59	17.57	19.55	21.54	23.52	25.50	27.49	29.47	31.45	33.43	35.42
	5.00	13.96	15.86	17.76	19.66	21.56	23.46	25.36	27.26	29.16	31.06	32.96
	4.75	12.34	14.15	15.97	17.79	19.61	21.42	23.24	25.06	26.87	28.69	30.51
	4.50	10.71	12.45	14.18	15.91	17.65	19.38	21.12	22.85	24.59	26.32	28.06
	4.25	9.09	10.74	12.39	14.04	15.69	17.34	19.00	20.65	22.30	23.95	25.60
	4.00	7.46	9.03	10.60	12.17	13.74	15.30	16.87	18.44	20.01	21.58	23.15
	3.75	5.83	7.32	8.81	10.29	11.78	13.26	14.75	16.24	17.72	19.21	20.69
	3.50	4.21	5.61	7.01	8.42	9.82	11.22	12.63	14.03	15.43	16.84	18.24
	3.25	2.58	3.90	5.22	6.54	7.86	9.18	10.50	11.83	13.15	14.47	15.79
	3.00	0.96	2.29	3.63	4.97	6.31	7.64	8.98	10.32	11.66	13.00	14.34

Conclusion = Even if EUR is modestly overstated, the company is clearly overvalued at its current share price.

The bottom-line is that if gas prices stay where they're at, the company is overvalued by anywhere from **35% to 70%**; if gas prices increase modestly, to the \$4.00 – \$4.50 range, the company is still overvalued by anywhere from **25% to 60%**.

There is substantial evidence to support the company-provided EUR per well figures being overstated – for example:

- The company never directly states its average EUR per well in each region, but in its investor presentations it shows sensitivity tables that **do** imply a specific range for wells in each region:

Pinedale's Profitable Well Economics



Robust Reinvestment Opportunities						
Reserve Size (Bcfe)						
Well Cost (\$/MM)	Reserve Size (Bcfe)					
	4.0	5.0	6.0	7.0		
	\$4.4	26%	44%	65%	92%	
	\$4.2	29%	47%	70%	102%	
\$4.0	32%	54%	79%	112%		

Economics at \$4.00/Mcf wellhead price

- ...but if you assume the mid-point of the company-provided range, the total 3P Reserves add up to **28.0 Tcfe**. But the company has disclosed only **16.3 Tcfe** of 3P Reserves!
- Therefore, either the **potential future drilling locations** in each region are overstated, the **EUR per well ranges** are overstated, or the reserves are greatly *understated* (unlikely).
- When analysts have asked the company about its average EUR per well, it has repeatedly dodged the question or given extremely wide ranges. Witness this exchange from the earnings call following the Utah acquisition:

Leo Mariani - RBC Capital Markets - Analyst

Hey, guys. Can you maybe talk to these differences in EURs that you use, and I guess your range is pretty wide at 100 to 360. Can you give us some more color around that, and is there an average number you guys might have on the 38 wells? And it looks like this field is just oil. Is there any associated gas at all? Can you talk to that?

Mike Watford - Ultra Petroleum Corp - Chairman, President & CEO

I'll let you guys, Brad or Jason, answer it. But I'm sorry that we can't just give you an average reserve number across the whole field. (Laughter). It doesn't work that way.

- In this particular case, the range given in its presentation is 100 MBO to 360 MBO – this would be like a company in another industry saying that its average expected selling price for a new product might be between \$100 and \$360!



- And, finally, if you back into the implied numbers for the PUD, PROB, and POSS Reserve totals in each region by using the company-provided EUR per well figures, the totals exceed the stated 3P Reserves in the given region:

Region:	Future Net Wells:	Future Gross Wells:	Gross EUR (Bcfe):	Implied PUD/PROB/POSS	
				3P Net Reserves (Bcfe):	Net Reserves (Bcfe):
WY	2,900.0	5,000.0	4.3	9,600.0	12,448.4
PA	1,700.0	3,340.0	7.7	7,400.0	13,080.2
UT	575.0	575.0	0.9	543.6	509.1

So once the company releases additional reserve reports or drill results within the next 6-12 months, that could make the market realize this issue with the EUR overstatements (or, equivalently, the potential future drilling locations being overstated).

Even if the company simply releases its drilling results from the newly acquired acreage in Utah, that could also led to a price correction because the market may start doubting its EUR estimates in other regions.

Finally, catalyst #3 – the halt to drilling in the Marcellus shale of Pennsylvania – is a distinct possibility because Ultra Petroleum is partnered with much larger companies there, such as Anadarko, and they may cut back on drilling unless gas prices rise to much higher levels.

Announcing even a temporary halt to drilling there could make a significant impact on the company’s share price, even if it does not plan to stop drilling forever – because investors may start doubting its future plans and discounting the region’s contribution to the company’s value.

In this NAV model, we have made the following assumptions for drilling in the PUD + PROB + POSS locations in Pennsylvania:

- **\$3.50 Long-Term Gas Price Case:** 40 wells initially, rising to 100 wells per year by Year 5 and staying there for 22 years.
- **\$4.50 Long-Term Gas Price Case:** 45 wells initially, rising to 135 wells per year by Year 5 and staying there for 22 years.
- **\$5.50 Long-Term Gas Price Case:** 25 wells initially, rising to 75 wells per year by Year 5 and staying there for 22 years.



The impact of halting or reducing the drilling in Pennsylvania is similar in all the long-term gas price cases.

Therefore, to reduce the number of Excel paste-ins, we will focus on the \$4.50 long-term gas price case and show what happens when the company stops drilling for 5 years vs. when it stops drilling indefinitely into the future.

- **5-Year Case:** Here, the company drills 0 wells for the next 5 years in PA, but it resumes drilling 100 wells per year in Year 6.

Category:	Unrisked Bcfe	Reserve Credit	Risked Bcfe	Base Case:	@ Other Long-Term Gas Prices:			
					\$ 3.50	\$ 4.50	\$ 5.50	
Total Asset Value:				\$ 5,231	\$ 4,041	\$ 5,231	\$ 6,421	
Less: Net Debt & Preferred:				(1,855)	(1,855)	(1,855)	(1,855)	
Less: Price Paid for Uinta Basin Acquisition:				(650)	(650)	(650)	(650)	
Net Asset Value:				\$ 2,726	\$ 1,536	\$ 2,726	\$ 3,915	
Diluted Shares Outstanding:				153.0	153.0	153.0	153.0	
NAV / Share:				\$ 17.82	\$ 10.04	\$ 17.82	\$ 25.59	
Current Share Price:				\$ 18.83	\$ 18.83	\$ 18.83	\$ 18.83	
Current Share Price Premium / (Discount) to NAV:				5.7%	87.5%	5.7%	(26.4%)	

In this case, the company is overvalued by approximately 5-6% at its current share price.

- **Indefinite Case:** Here, the company simply stops drilling in PA altogether and the planned wells are only drilled in Year 40 and beyond, effectively reducing the NPV of after-tax cash flows to a very low number.

Category:	Unrisked Bcfe	Reserve Credit	Risked Bcfe	Base Case:	@ Other Long-Term Gas Prices:			
					\$ 3.50	\$ 4.50	\$ 5.50	
Total Asset Value:				\$ 4,753	\$ 3,922	\$ 4,753	\$ 5,585	
Less: Net Debt & Preferred:				(1,855)	(1,855)	(1,855)	(1,855)	
Less: Price Paid for Uinta Basin Acquisition:				(650)	(650)	(650)	(650)	
Net Asset Value:				\$ 2,248	\$ 1,417	\$ 2,248	\$ 3,079	
Diluted Shares Outstanding:				153.0	153.0	153.0	153.0	
NAV / Share:				\$ 14.70	\$ 9.26	\$ 14.70	\$ 20.13	
Current Share Price:				\$ 18.83	\$ 18.83	\$ 18.83	\$ 18.83	
Current Share Price Premium / (Discount) to NAV:				28.1%	103.3%	28.1%	(6.4%)	

In all likelihood, the actual outcome will be somewhere in between these two cases – so a halt to drilling in PA might reduce the company's implied share price by **10-20%**.



A simple announcement from UPL or its partner companies, or even an announcement from other companies with similar JV agreements in the Marcellus shale, could be the catalyst that makes the market price in the full impact of a possible halt to drilling there.

All of the catalysts above could reduce Ultra Petroleum's share price to our targeted range of **\$11.00 – \$13.00** per share in the next 12 months.

If they all come true and work as expected, the price may be near the lower end of that range, and if one or more is false, there is still potential upside from a short position but the eventual price might be at the higher end of that range.

Finally, if none of the catalysts play out as expected, the company is appropriately valued as it is right now and the stock price would not fall by much, but it would also not rise by much.

Valuation

As stated above, we have relied primarily on the Net Asset Value (NAV) Model to value Ultra Petroleum because of its recent acquisition, and also because it is easier to sensitize and run different scenarios.

Here are the most important assumptions:

- **Commodity Prices:** Gas prices start out at current levels (\$3.70 per Mcf) and scale up to \$4.50 in the Base case, \$5.50 in the Upside case, and \$4.00 in the Mid case; we also have a Stable case for a constant \$4.50 and a Low case for \$2.50, plus an SEC case of \$2.63. Long-term oil prices are constant at \$80.00 in each different gas case.
- **Working Interests and Royalty Rates:** The average WI per well is 58%, 51%, and 100% in WY, PA, and UT, respectively; royalty rates are 0%, 0%, and 18%, respectively.
- **Operating Expenses and D&C Costs:** We have used the company-provided numbers for these, as of the most recent quarter, and assumed that expenses remain at these levels indefinitely into the future.
- **EUR per Well:** We have used the midpoints of the company-provided ranges in each region. So the WY EUR is 4.3 Bcfe, PA is 7.7 Bcfe, and UT is 0.9 Bcfe.
- **Proved Developed Wells:** We assume constant decline rates of 10-12% for PDP wells, so the existing production in WY and PA runs out just past the 20-year mark.
- **PUD + PROB + POSS Wells:** We extrapolated decline rate and IP rate data from company estimates and 3rd party sources. The decline rate is always very steep in the first 4-5 years and then stabilizes after that.



- **PUD + PROB + POSS Drilling:** In the Base Gas Case, we set the numbers to match the company-provided CapEx estimates in each region: approximately 175 wells drilled per year over the long-term in WY and 100 per year over the long-term in PA. In the High Gas Case, the figures climb to 190 and 135, respectively, and in the Low Gas Case the numbers are 160 and 75, respectively. Utah is a 47 wells per year for 12 years, regardless of gas prices, since it's oil-based and is being used for cash flow.
- **Reserve Credits:** In the Base Case, we apply a 100% credit to all Proved Reserves (PDP, PDNP, and PUD), a 50% credit to PROB reserves, and a 10% credit to POSS reserves. However, these credits can be as high as 75% depending on the toggle we select.
- **Taxes:** We assume a lower effective tax rate of 1.5% for the first 2 years, due to the Impairment Charge, followed by a 35.0% rate for each year after that.
- **Discount Rate:** The industry-standard discount rate of 10% was used.

Here's the summary page for the NAV by region and reserve type in the Base Case:

Category:	Unrisked	Reserve	Risked	Base	@ Other Long-Term Gas Prices:		
	Bcfe	Credit	Bcfe	Case:	\$ 3.50	\$ 4.50	\$ 5.50
PDP	1,916	100.0%	1,916	\$ 3,281	\$ 2,919	\$ 3,281	\$ 3,642
PDNP	132	100.0%	132	263	263	263	263
PUD	2,115	100.0%	2,115	1,675	1,336	1,675	2,015
PROB	13,718	50.0%	6,859	2,247	1,070	2,247	3,425
POSS	10,116	10.0%	1,012	115	72	115	158
Pre-Tax Asset Value:	27,997		12,033	\$ 7,581	\$ 5,660	\$ 7,581	\$ 9,502
NAV by Reserve Type and Region (for PROB and POSS Reserves):							
PD	2,048	100.0%	2,048	\$ 3,544	\$ 3,182	\$ 3,544	\$ 3,905
PUD	2,115	100.0%	2,115	1,675	1,336	1,675	2,015
WY	11,463	33.1%	3,800	1,198	544	1,198	1,852
PA	12,045	33.1%	3,993	998	432	998	1,564
UT	325	24.0%	78	167	167	167	167
Pre-Tax Asset Value:	27,997		12,033	\$ 7,581	\$ 5,660	\$ 7,581	\$ 9,502
Less: NPV of G&A:				(251)	(251)	(251)	(251)
+ / - NPV of Hedges:				1	1	1	1
Less: NPV of Cash Taxes:				(2,139)	(1,466)	(2,139)	(2,811)
After-Tax Asset Value:				\$ 5,193	\$ 3,944	\$ 5,193	\$ 6,441
Plus: Value of Undeveloped Acreage:				278	278	278	278
Total Asset Value:				\$ 5,471	\$ 4,222	\$ 5,471	\$ 6,719
Less: Net Debt & Preferred:				(1,855)	(1,855)	(1,855)	(1,855)
Less: Price Paid for Uinta Basin Acquisition:				(650)	(650)	(650)	(650)
Net Asset Value:				\$ 2,965	\$ 1,717	\$ 2,965	\$ 4,214
Diluted Shares Outstanding:				153.0	153.0	153.0	153.0
NAV / Share:				\$ 19.38	\$ 11.22	\$ 19.38	\$ 27.54
Current Share Price:				\$ 18.83	\$ 18.83	\$ 18.83	\$ 18.83
Current Share Price Premium / (Discount) to NAV:				(2.9%)	67.8%	(2.9%)	(31.6%)



To get a sense of our projections for individual wells, here's an example of the IP rates, decline rates, and other assumptions for each PUD, PROB, and POSS well in Wyoming:

Production Schedules for New Wells Drilled, by Reserve Type						
PUD - Total Production (Net) (Mmcfe)						
365-Day Production @ IP Rate:		2,810.5		Adj. Factor:	0.0%	
Year 1 % Production % 365 Days @ IP Rate:		30.0%		Base EUR:	4,293	
Period	Gross Type Curve			Total (Mmcfe)	Decline Rate:	Pre-Adjust. Total:
	Gas (Mmcf)	Oil (MBbl)	NGLs (MBbl)			
0	811	5	-	843		843
1	359	2	-	373	(55.7%)	373
2	256	2	-	267	(28.6%)	267
3	206	1	-	214	(19.9%)	214
4	174	1	-	181	(15.3%)	181
5	152	1	-	159	(12.4%)	159
6	136	1	-	142	(10.5%)	142
7	124	1	-	129	(9.1%)	129
8	114	1	-	119	(8.0%)	119
9	106	1	-	110	(7.1%)	110
10	99	1	-	103	(6.5%)	103
11	93	1	-	97	(5.9%)	97
12	88	1	-	92	(5.4%)	92
13	84	1	-	87	(5.0%)	87
14	80	1	-	83	(4.7%)	83
15	76	1	-	80	(4.4%)	80
16	73	0	-	76	(4.1%)	76
17	70	0	-	73	(4.0%)	73
18	68	0	-	70	(4.0%)	70
19	65	0	-	67	(4.0%)	67
20	62	0	-	65	(4.0%)	65
21	60	0	-	62	(4.0%)	62
22	57	0	-	60	(4.0%)	60
23	55	0	-	57	(4.0%)	57
24	53	0	-	55	(4.0%)	55
25	51	0	-	53	(4.0%)	53
26	49	0	-	50	(4.0%)	50
27	47	0	-	48	(4.0%)	48
28	45	0	-	46	(4.0%)	46
29	43	0	-	45	(4.0%)	45
30	41	0	-	43	(4.0%)	43
31	40	0	-	41	(4.0%)	41
32	38	0	-	39	(4.0%)	39
33	36	0	-	38	(4.0%)	38
34	35	0	-	36	(4.0%)	36
35	34	0	-	35	(4.0%)	35
36	32	0	-	33	(4.0%)	33
37	31	0	-	32	(4.0%)	32
38	30	0	-	31	(4.0%)	31
39	28	0	-	30	(4.0%)	30
40	27	0	-	28	(4.0%)	28
Subtotal:	4,129	27	-	4,293		4,293
Remainder:	0	0	-	0		0
Total:	4,129	27	-	4,293		4,293



The “Adjustment Factor” above is used for sensitivity analysis purposes, and it allows us to adjust up and down assumptions such as the EUR per well and IP Rate.

Next, we’ll look at the key drivers that impact our investment thesis and go through the “most likely” range of outputs from each sensitivity table.

Sensitivity – Average EUR per Well Differentials vs. Long-Term Gas Prices:

		EUR Differentials vs. Baseline Assumptions for Each Region:										
		(25.0%)	(20.0%)	(15.0%)	(10.0%)	(5.0%)	0.0%	5.0%	10.0%	15.0%	20.0%	25.0%
Long-Term Gas Prices:	\$ 5.50	\$ 17.21	\$ 19.28	\$ 21.35	\$ 23.41	\$ 25.48	\$ 27.54	\$ 29.61	\$ 31.67	\$ 33.74	\$ 35.81	\$ 37.87
	5.25	15.59	17.57	19.55	21.54	23.52	25.50	27.49	29.47	31.45	33.43	35.42
	5.00	13.96	15.86	17.76	19.66	21.56	23.46	25.36	27.26	29.16	31.06	32.96
	4.75	12.34	14.15	15.97	17.79	19.61	21.42	23.24	25.06	26.87	28.69	30.51
	4.50	10.71	12.45	14.18	15.91	17.65	19.38	21.12	22.85	24.59	26.32	28.06
	4.25	9.09	10.74	12.39	14.04	15.69	17.34	19.00	20.65	22.30	23.95	25.60
	4.00	7.46	9.03	10.60	12.17	13.74	15.30	16.87	18.44	20.01	21.58	23.15
	3.75	5.83	7.32	8.81	10.29	11.78	13.26	14.75	16.24	17.72	19.21	20.69
	3.50	4.21	5.61	7.01	8.42	9.82	11.22	12.63	14.03	15.43	16.84	18.24
	3.25	2.58	3.90	5.22	6.54	7.86	9.18	10.50	11.83	13.15	14.47	15.79
	3.00	0.96	2.19	3.43	4.67	5.91	7.14	8.38	9.62	10.86	12.09	13.33

Key Takeaways: We’ve already been over the evidence that the company is overstating its EUR per well and/or potential future drilling locations, but this table shows the consequences of that overstatement: the company could be *undervalued* **only** if the average EUR per well is exactly what UPL states, **and** gas prices increase over their current levels.

A differential of (10%) to (20%) is much more likely, which means that the company is likely only worth between \$10.00 and \$13.00 per share, assuming a modest increase in gas prices.

Sensitivity – IP Rate per Well Differentials vs. Long-Term Gas Prices:

		IP Rate Differentials vs. Baseline Assumptions for Each Region:										
		(25.0%)	(20.0%)	(15.0%)	(10.0%)	(5.0%)	0.0%	5.0%	10.0%	15.0%	20.0%	25.0%
Long-Term Gas Prices:	\$ 5.50	\$ 18.03	\$ 19.93	\$ 21.84	\$ 23.74	\$ 25.64	\$ 27.54	\$ 29.43	\$ 31.28	\$ 33.04	\$ 34.72	\$ 36.31
	5.25	16.35	18.18	20.02	21.85	23.68	25.50	27.32	29.10	30.80	32.41	33.95
	5.00	14.67	16.43	18.19	19.95	21.71	23.46	25.21	26.91	28.55	30.10	31.58
	4.75	13.00	14.68	16.37	18.06	19.74	21.42	23.10	24.73	26.30	27.79	29.21
	4.50	11.32	12.93	14.55	16.16	17.77	19.38	20.99	22.55	24.05	25.48	26.84
	4.25	9.64	11.18	12.72	14.27	15.81	17.34	18.88	20.37	21.80	23.17	24.47
	4.00	7.96	9.43	10.90	12.37	13.84	15.30	16.76	18.19	19.56	20.86	22.10
	3.75	6.28	7.68	9.08	10.48	11.87	13.26	14.65	16.01	17.31	18.55	19.74
	3.50	4.60	5.93	7.26	8.58	9.90	11.22	12.54	13.82	15.06	16.24	17.37
	3.25	2.93	4.18	5.43	6.68	7.94	9.18	10.43	11.64	12.81	13.93	15.00
	3.00	1.25	2.43	3.61	4.79	5.97	7.14	8.32	9.46	10.56	11.62	12.63

Key Takeaways: We do not have a particularly strong view on IP Rates – the company did not disclose much data, so most of these assumptions were based on 3rd party sources.



While the IP rates do impact the implied share price, the company itself has limited control over these rates and it is unlikely they will be substantially different from what we've assumed – so the overall impact is neutral.

Sensitivity – D&C Costs per Well Differentials vs. Long-Term Gas Prices:

		D&C Cost Per Well Differential vs. Baseline Assumptions for Each Region:										
		(25.0%)	(20.0%)	(15.0%)	(10.0%)	(5.0%)	0.0%	5.0%	10.0%	15.0%	20.0%	25.0%
Long-Term Gas Prices:	\$ 5.50	\$ 32.32	\$ 31.36	\$ 30.41	\$ 29.45	\$ 28.50	\$ 27.54	\$ 26.59	\$ 25.63	\$ 24.68	\$ 23.72	\$ 22.77
	5.25	30.28	29.32	28.37	27.41	26.46	25.50	24.55	23.59	22.64	21.68	20.73
	5.00	28.24	27.28	26.33	25.37	24.42	23.46	22.51	21.55	20.60	19.64	18.69
	4.75	26.20	25.24	24.29	23.33	22.38	21.42	20.47	19.51	18.56	17.60	16.65
	4.50	24.16	23.21	22.25	21.29	20.34	19.38	18.43	17.47	16.52	15.56	14.61
	4.25	22.12	21.17	20.21	19.25	18.30	17.34	16.39	15.43	14.48	13.52	12.57
	4.00	20.08	19.13	18.17	17.21	16.26	15.30	14.35	13.39	12.44	11.48	10.53
	3.75	18.04	17.09	16.13	15.17	14.22	13.26	12.31	11.35	10.40	9.44	8.49
	3.50	16.00	15.05	14.09	13.14	12.18	11.22	10.27	9.31	8.36	7.40	6.45
	3.25	13.96	13.01	12.05	11.10	10.14	9.18	8.23	7.27	6.32	5.36	4.41
	3.00	11.92	10.97	10.01	9.06	8.10	7.14	6.19	5.23	4.28	3.32	2.37

Key Takeaways: Ultra Petroleum aims to be the leading low-cost oil & gas producer in North America, and, indeed, reducing its D&C costs per well by even 10-20% would make a significant impact on its implied share price.

According to its investor presentations, UPL reduced D&C costs in Wyoming from \$7.0 million per well to \$4.5 million per well over the past 8 years (a 35% drop) – so a 10-20% reduction in future years is certainly plausible.

Such a reduction, assuming long-term gas prices at or above \$4.50, would imply a share price of \$20.00 – \$25.00, so there is some risk from this. However, an average EUR per well reduction of 10-20% would effectively “cancel out” the upside from this development and result in an implied share price closer to the company’s current market price.

Sensitivity – LOE Expense per Mcfe Differentials vs. Long-Term Gas Prices:

		LOE Per Mcfe Differential vs. Baseline Assumptions for PA and WY:										
		(21.6%)	(16.2%)	(10.8%)	(5.4%)	0.0%	5.4%	10.8%	16.2%	21.6%	27.0%	32.4%
Long-Term Gas Prices:	\$ 5.50	\$ 0.29	\$ 0.31	\$ 0.33	\$ 0.35	\$ 0.37	\$ 0.39	\$ 0.41	\$ 0.43	\$ 0.45	\$ 0.47	\$ 0.49
	5.25	\$ 28.81	\$ 28.49	\$ 28.18	\$ 27.86	\$ 27.54	\$ 27.23	\$ 26.91	\$ 26.59	\$ 26.28	\$ 25.96	\$ 25.64
	5.00	26.77	26.45	26.14	25.82	25.50	25.19	24.87	24.55	24.24	23.92	23.60
	4.75	24.73	24.41	24.10	23.78	23.46	23.15	22.83	22.51	22.20	21.88	21.56
	4.50	22.69	22.37	22.06	21.74	21.42	21.11	20.79	20.47	20.16	19.84	19.52
	4.25	20.65	20.33	20.02	19.70	19.38	19.07	18.75	18.43	18.12	17.80	17.48
	4.00	18.61	18.29	17.98	17.66	17.34	17.03	16.71	16.39	16.08	15.76	15.44
	3.75	16.57	16.25	15.94	15.62	15.30	14.99	14.67	14.35	14.04	13.72	13.40
	3.50	14.53	14.21	13.90	13.58	13.26	12.95	12.63	12.31	12.00	11.68	11.36
	3.25	12.49	12.18	11.86	11.54	11.22	10.91	10.59	10.27	9.96	9.64	9.32
	3.00	10.45	10.14	9.82	9.50	9.18	8.87	8.55	8.23	7.92	7.60	7.28
3.00	8.41	8.10	7.78	7.46	7.14	6.83	6.51	6.19	5.88	5.56	5.24	



Key Takeaways: Ultra Petroleum claims that being the industry’s low-cost producer gives it a competitive advantage, but this table shows that its advantage may not be as great as it has claimed.

Specifically, even an LOE per Mcfe expense reduction of 20% over 30-40 years would only increase its implied share price by \$1.00 – \$1.25 in the most likely gas price scenarios.

Admittedly, we are not factoring in Production Taxes or Other Operating Expenses here, and those both add up to \$0.89 Mcfe, which is 2.4x greater than the baseline LOE per Mcfe of \$0.37.

A 20% reduction in those could increase the implied share price by more like \$3.00 – \$4.00, but such an increase is unlikely because the company has no control over production taxes, and also has more limited control over its “Other Operating Expenses” (which consist of gas gathering and transportation fees).

Once again, any potential decrease in operating expenses would be more than offset by the average EUR per well falling by even 5-10%.

The Impact of Reserve Credits

One issue that we have not yet addressed is the impact of **reserve credits** on the valuation – in our Base Case scenario, we are fairly conservative with these credits:

Reserve Credit Cases					
Reserve Credit Case:	2	6	6	6	
Region:					
Category:	PD	WY	PA	UT	
PDP	100.0%	100.0%	100.0%	100.0%	
PDNP	100.0%	100.0%	100.0%	100.0%	
PUD	100.0%	100.0%	100.0%	100.0%	
PROB	75.0%	50.0%	50.0%	50.0%	
POSS	75.0%	10.0%	10.0%	10.0%	

Someone may rightfully look at this and say that the analysis is skewed because we’re being too pessimistic with a 50% credit for PROB reserves and only a 10% credit for POSS reserves.

The company does **not** disclose the reserve credits it uses internally, but it did disclose the following risking assumptions for the Utah region:



- 15% EUR risk on 40-acre locations (~85% reserve credit for PUD and PROB locations).
- 25% EUR risk on 20-acre locations (~75% reserve credit for POSS locations).

It is difficult to directly compare these numbers because our model is set up differently, but here's what the output of the NAV analysis looks like with 100% reserve credits for PDP and PDNP reserves, 85% for PUD and PROB reserves, and 75% for POSS reserves:

Category:	Unrisked Bcfe	Reserve Credit	Risky Bcfe	Base Case:	@ Other Long-Term Gas Prices:		
					\$ 3.50	\$ 4.50	\$ 5.50
Total Asset Value:				\$ 6,592	\$ 4,662	\$ 6,592	\$ 8,523
Less: Net Debt & Preferred:				(1,855)	(1,855)	(1,855)	(1,855)
Less: Price Paid for Uinta Basin Acquisition:				(650)	(650)	(650)	(650)
Net Asset Value:				\$ 4,087	\$ 2,156	\$ 4,087	\$ 6,017
Diluted Shares Outstanding:				153.0	153.0	153.0	153.0
NAV / Share:				\$ 26.71	\$ 14.09	\$ 26.71	\$ 39.33
Current Share Price:				\$ 18.83	\$ 18.83	\$ 18.83	\$ 18.83
Current Share Price Premium / (Discount) to NAV:				(29.5%)	33.6%	(29.5%)	(52.1%)

So with much more optimistic reserve credits, even after the modest drop in PUD reserve credits, the company would be undervalued by approximately 30%.

Once again, however, a drop of even 10% in the average EUR per well would reduce this potential upside and imply a share price in-line with the company's current market price:

EUR Differentials vs. Baseline Assumptions for Each Region:												
Long-Term Gas Prices:	\$	(25.0%)	(20.0%)	(15.0%)	(10.0%)	(5.0%)	0.0%	5.0%	10.0%	15.0%	20.0%	25.0%
		5.50	\$ 23.63	\$ 26.77	\$ 29.91	\$ 33.05	\$ 36.19	\$ 39.33	\$ 42.48	\$ 45.62	\$ 48.76	\$ 51.90
5.25	21.16	24.17	27.17	30.17	33.18	36.18	39.18	42.19	45.19	48.19	51.19	
5.00	18.70	21.57	24.43	27.30	30.16	33.02	35.89	38.75	41.62	44.48	47.35	
4.75	16.24	18.97	21.69	24.42	27.14	29.87	32.60	35.32	38.05	40.77	43.50	
4.50	13.78	16.36	18.95	21.54	24.13	26.71	29.30	31.89	34.48	37.06	39.65	
4.25	11.31	13.76	16.21	18.66	21.11	23.56	26.01	28.46	30.91	33.35	35.80	
4.00	8.85	11.16	13.47	15.78	18.09	20.40	22.71	25.02	27.33	29.64	31.95	
3.75	6.39	8.56	10.73	12.91	15.08	17.25	19.42	21.59	23.76	25.94	28.11	
3.50	3.93	5.96	8.00	10.03	12.06	14.09	16.13	18.16	20.19	22.23	24.26	
3.25	1.47	3.36	5.26	7.15	9.05	10.94	12.83	14.73	16.62	18.52	20.41	
3.00	(1.00)	0.76	2.52	4.27	6.03	7.78	9.54	11.30	13.05	14.81	16.56	

So the reserve credits do make a significant impact on the model, but we don't believe universal credits of 100% / 85% / 75% are justified, given the risk of the company's reserves.

Even if we do assume those credits, the EUR per well differential reduces the company's share price back down to the level of its current market price.



So, as always, there is a question over the proper reserve credits to apply, but even in **the most optimistic scenario**, UPL is, at best, valued appropriately to slightly undervalued at its current share price.

Investment Risks

The top risk factors include:

- 1) The \$650 million Uinta Basin acquisition fails to close.
- 2) Even if the acquisition does close, initial drilling reports might be positive and indicate higher-than-expected reserve levels.
- 3) Full drilling continues in the Marcellus shale as natural gas prices recover.
- 4) The company's improved well spacing pilots prove successful, and it is able to increase its effective EUR per well following full implementation of this technology.

We'll address each of those risk factors in turn and explain how to mitigate them:

The \$650 Million Uinta Basin Acquisition Fails to Close

As shown in the tables above, the Uinta Basin acquisition itself reduces the company's implied share price by around \$1.50 – \$2.00.

Once the acquisition was announced, in fact, UPL's share price dropped by more than that.

However, if the acquisition fails to close, there is a chance that its share price could bounce back to its higher level of \$20.00 – \$21.00 per share.

The company would still be overvalued at those levels, but in the absence of other catalysts to push down the share price, the stock could potentially stay in that range indefinitely.

While we still believe UPL is overvalued by 30-40%, we do not want to accept much more than a 20% loss if this acquisition fails to close or if other catalysts do not materialize.

To hedge against this risk, we could buy call options on Ultra Petroleum's stock at a strike price of approximately \$23.00 – \$24.00; doing so would limit our losses to only 22-27%.

We could also set a buy-stop order in the same share price range.

Reserve Levels in Utah Prove to Be Higher-Than-Expected



The company stated in its acquisition presentation that its 3P Reserves in Utah are approximately 90.6 MBO (543.6 Bcfe), but that it also has more speculative “potential” reserves of 82.9 MBO (497.4 Bcfe) on 10-acre spacing there (as opposed to the current 40-acre and 20-acre spacing).

It is always difficult to weigh the consequences of speculative potential reserves/resources, especially if more aggressive well spacing is assumed, but if we take these figures at face value, the EUR per well in Utah would nearly double. Here is the impact on the implied share price:

Category:	Unrisked Bcfe	Reserve Credit	Risky Bcfe	Base Case:	@ Other Long-Term Gas Prices:		
					\$ 3.50	\$ 4.50	\$ 5.50
Total Asset Value:				\$ 5,920	\$ 4,672	\$ 5,920	\$ 7,168
Less: Net Debt & Preferred:				(1,855)	(1,855)	(1,855)	(1,855)
Less: Price Paid for Uinta Basin Acquisition:				(650)	(650)	(650)	(650)
Net Asset Value:				\$ 3,415	\$ 2,166	\$ 3,415	\$ 4,663
Diluted Shares Outstanding:				153.0	153.0	153.0	153.0
NAV / Share:				\$ 22.32	\$ 14.16	\$ 22.32	\$ 30.48
Current Share Price:				\$ 18.83	\$ 18.83	\$ 18.83	\$ 18.83
Current Share Price Premium / (Discount) to NAV:				(15.6%)	33.0%	(15.6%)	(38.2%)

So if the 3P Reserves in Utah really are approximately twice what the company has stated, the implied share price would increase by approximately \$3.00.

While this scenario could happen, it’s unlikely that 100% of the more speculative 10-acre locations will turn into real wells; at most, perhaps 25-50% of those locations will turn into viable wells.

As a result, there is not a huge amount of risk from the Utah reserves proving better than expected – and we could once again hedge against this risk in the same way, with call options purchased at strike prices of \$23.00 – \$24.00, and/or a buy-stop order in that same range.

We could also long another company, such as Newfield Exploration, with reserves in similar regions of Utah.

Marcellus Drilling Continues Unabated

Another key investment risk is that we’re wrong about the halt to drilling in the Marcellus shale, and it either continues as planned or is only paused for a few years as Ultra Petroleum’s bigger JV partners wait for gas prices to recover.



As shown in the tables above, if all drilling is stopped for 5 years the company would be overvalued by approximately 5%; if drilling stopped altogether, that would be closer to 30%.

However, our Base Case scenario here already assumes that drilling *continues* in the Marcellus shale – and even with that assumption, the company is still likely overvalued due to the same issue with overstated EUR per well figures.

If drilling continues unabated, **AND** the company's EUR per well is really not overstated, then it might be worth between \$18.00 and \$22.00 per share according to the tables above, assuming that natural gas prices increase to the \$4.00 – \$4.50 per Mcf range.

Once again, we could hedge against this risk via call options or a buy-stop order in the same price range, or by longing a company with a bigger position in the Marcellus shale, such as EQT.

Well Spacing Improves in Wyoming and Other Regions

This is potentially the biggest risk factor, but it's also the toughest to quantify and use in our analysis.

Currently, the company has indicated spacing of 1 well per 10 acres in Wyoming, on both a historical and forward basis; a quick analysis of its numbers confirms spacing in this approximate range.

However, it has also been conducting pilot tests of 5-acre spacing.

It is unclear how much the EUR per well would drop with this more aggressive spacing, but UPL would almost certainly **not** double its Wyoming reserves just from this – the EUR per well would also decrease by some percentage.

Well spacing could also be improved in other regions, but it is most likely to take place in Wyoming given the pilot tests there.

If we assume a 50% higher EUR per well in just Wyoming, to simulate the impact of 5-acre well spacing, here are the implied per share values:



Category:	Unrisked Bcfe	Reserve Credit	Risked Bcfe	Base Case:	@ Other Long-Term Gas Prices:		
				\$	\$ 3.50	\$ 4.50	\$ 5.50
Total Asset Value:				\$ 6,776	\$ 5,266	\$ 6,776	\$ 8,285
Less: Net Debt & Preferred:				(1,855)	(1,855)	(1,855)	(1,855)
Less: Price Paid for Uinta Basin Acquisition:				(650)	(650)	(650)	(650)
Net Asset Value:				\$ 4,270	\$ 2,760	\$ 4,270	\$ 5,780
Diluted Shares Outstanding:				153.0	153.0	153.0	153.0
NAV / Share:				\$ 27.91	\$ 18.04	\$ 27.91	\$ 37.78
Current Share Price:				\$ 18.83	\$ 18.83	\$ 18.83	\$ 18.83
Current Share Price Premium / (Discount) to NAV:				(32.5%)	4.4%	(32.5%)	(50.2%)

In this case, the company would indeed be substantially **undervalued** in most reasonable natural gas price scenarios.

However, it is extremely unlikely that UPL will realize a 50% uplift to its effective EUR as a result of improved well spacing – and even if it does improve by that much, it will take years to implement, reducing the NPV of improved cash flows from this development.

As a result, once again, a realistic upper limit for the implied share price under this scenario might be \$22.00 – \$24.00 per share.

We could hedge against that risk with call options or a buy-stop order in that same range, or by longing another company that is also implementing improved well spacing in similar regions.

The Worst Case Scenario

Another risk is that we could be wrong about everything outlined above, from the overstated EUR per well, to the halt to drilling in the Marcellus shale, to the reductions in D&C costs and operating expenses making less of an impact than expected.

If we get a true “perfect storm” of some or all of these elements coming together, potentially the company’s stock price could increase to **\$30.00** in the next year – but that’s highly unlikely, and we can hedge against it with call options and by setting a strict buy-stop order.

Since this is a short recommendation, of course, our potential losses are unlimited and so there is no real hard “limit” on how high UPL’s share price could increase.

However, going above \$30.00 per share seems unlikely since gas prices would need to rise above \$5.00 per Mcf, and EUR per well would have to be 15-25% greater than the company-provided figures for that to happen.



The company is highly unlikely to see a share price above \$30.00 simply from reduced D&C costs or operating expenses, since both would have to fall by upwards of 20% *along with* gas prices rising to at least \$5.00 per Mcf at the same time.

Since this is a short recommendation, there is little “Balance Sheet protection,” and asset sales could not be used to limit our losses – which is why it’s so important to purchase call options and/or to set a strict buy-stop order in the \$23.00 – \$24.00 range to limit our potential losses to approximately 25% (vs. the potential upside of 30-40%).

We could also hedge against this possible worst case scenario by longing companies with strengths in some of the “investment risk” areas we outlined above.

For example, we could invest in a company with significant operations in the LGR/UGR regions of the Uinta Basin, or in a company with more of a presence in the Marcellus shale, or in a company that has successfully demonstrated improved well spacing in the Rocky Mountain region of the US.

We would need to conduct additional research and do more valuation work to highlight the best candidate(s) for hedging purposes, but we might start the process with those ideas.