

Impacts of delaying IDC deductibility (2014-2025)

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Wood Mackenzie
consulting



Study background

API requested Wood Mackenzie to undertake a study examining the energy supply, job, and economic implications at the regional and national levels of enacting proposals that would substantially alter the current tax treatment of Intangible Drilling Costs (IDCs)

Drilling expenditure accounts for billions of US investment dollars annually. Sustaining a healthy level of drilling activity is crucial for securing domestic energy supply and US jobs into the future

Under the current IRS terms for IDCs, companies can elect to recover non-salvageable expenses quickly, therefore treating them similar to operating costs. This study looks at the impact of requiring the industry to delay the recovery of these costs for tax purposes as if they were capitalized. We predict that the changes of the current IDC terms as have been proposed, will lead to significant production and job losses. The economics of many key oil and gas plays would be negatively impacted by delaying IDC deductions

Given the high level of unemployment and budgetary stress facing the nation, the findings of this study should be of interest to policy makers as they move forward to craft solutions to these problems

Additionally, this report analyzes the wider impact on the industry of delaying IDC deductions. We review the competitiveness of the US oil and gas industry before and after such changes

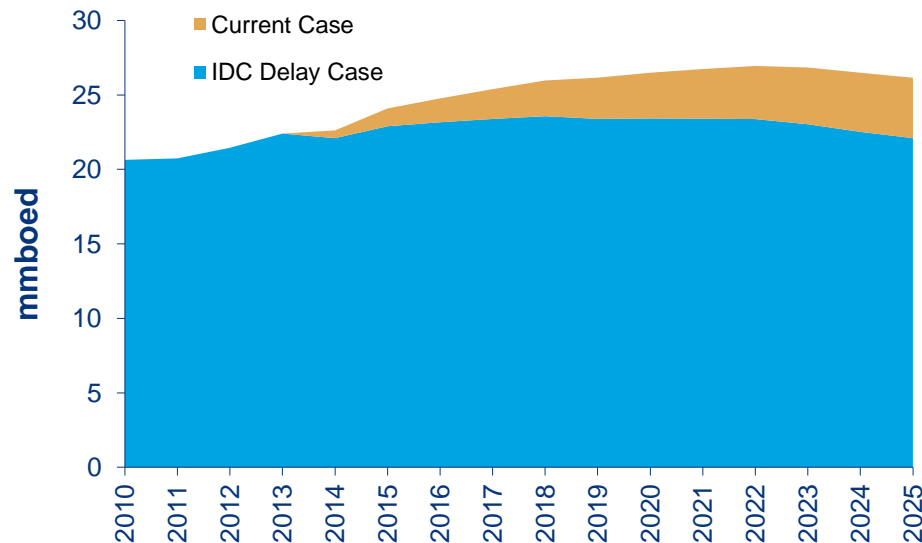
Key national results

Wood Mackenzie's analysis has estimated that proposed changes to the current tax treatment of IDCs will have a significant impact on future US liquids and gas production. This is primarily as a result of the economics of many US plays and fields becoming marginalized by delaying the IDC deduction

We estimate that by 2023, the proposals to delay the current IDC deduction timing would result in a loss of 3.8 million barrels of oil equivalent per day from US oil and gas fields. Liquids and natural gas production are both impacted. There would also be significant employment losses resulting from these changes, which Wood Mackenzie estimates will reach 233,000 by 2019. Furthermore, US industry investment would drop by \$407 billion over the 2014-2023 period, an annual average of more than \$40 billion

Federal tax increases would be more than offset by reductions in federal, state and private royalties and other state taxes lost

US liquid and gas production



IDC delay case incremental impacts: (change from the current case)

US impacts of IDC delay case	2014	2019	2023
Production (000's boed)	(520)	(2,771)	(3,811)
Jobs (000's)	(190)	(233)	(265)
Investment capex (\$ billions)	(33.0)	(44.4)	(47.5)

Total potential production impact:

By 2023, more than 3.8 mmbobed of production could be lost due to declining drilling activity under the IDC delay case. Total cumulative production lost by 2023 is estimated to be 8.9 billion boe

Total potential jobs impact:

Wood Mackenzie estimates 233,000 jobs lost by 2019

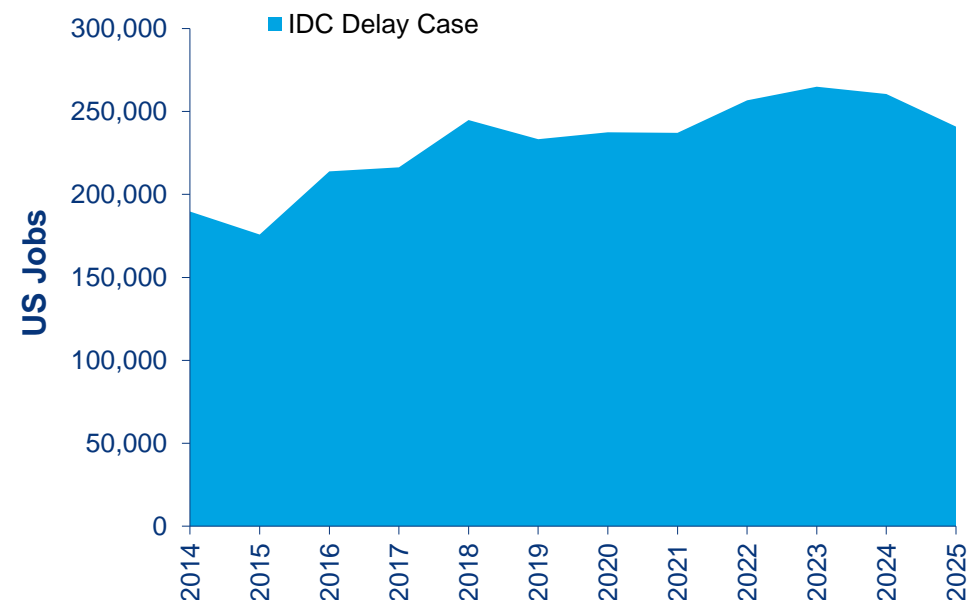
Total cumulative investment impact:

Between 2014 and 2023 we expect to see a total reduction in capex investment of \$407 billion

Impact of delaying IDC deductions on US employment

- Under the current case, we expect production in the US will continue to grow at a steady rate
- We expect drilling activity to be at elevated levels, as a stable fiscal regime will bring confidence to the industry, thus supporting future investment by the industry
- However, delaying the deductibility of IDCs could severely impact job growth as companies restrict their spending, which will lead to a curtailment of drilling activity
- Under the IDC deduction delay case, over 260,000 jobs could be lost by 2023 as a result of these declining activity levels

US employment impacts of IDC delay – jobs lost



Key regional results

	Annual Production Change (mboed)				Total Jobs Lost			Annual Capex Change (\$ billion)		
	2013	2014	2019	2023	2014	2019	2023	2014	2019	2023
GULF COAST - Current Case	6,358	6,155	6,836	7,126	-	-	-	37.3	43.8	56.1
IDC Delay Case	6,358	5,980	6,029	6,010	59,468	70,650	89,839	23.7	25.8	37.6
Difference	-	(175)	(807)	(1,116)	(59,468)	(70,650)	(89,839)	(13.6)	(18.0)	(18.5)
MID-CONTINENT - Current Case	3,166	3,216	3,543	3,509	-	-	-	18.0	23.6	23.3
IDC Delay Case	3,166	3,096	2,915	2,717	39,209	45,026	41,603	12.0	15.5	15.3
Difference	-	(120)	(628)	(792)	(39,209)	(45,026)	(41,603)	(6.0)	(8.1)	(8.0)
NORTHEAST - Current Case	2,245	2,301	3,776	4,537	-	-	-	16.9	21.1	24.2
IDC Delay Case	2,245	2,231	3,238	3,836	10,478	16,344	23,549	14.4	17.1	19.7
Difference	-	(70)	(538)	(701)	(10,478)	(16,344)	(23,549)	(2.5)	(4.0)	(4.5)
PERMIAN - Current Case	2,802	2,868	3,002	2,941	-	-	-	20.9	17.9	20.2
IDC Delay Case	2,802	2,835	2,850	2,725	15,186	16,609	19,054	17.1	14.6	16.6
Difference	-	(33)	(152)	(216)	(15,186)	(16,609)	(19,054)	(3.8)	(3.3)	(3.6)
ROCKIES - Current Case	4,451	4,627	5,299	5,562	-	-	-	30.8	37.5	42.0
IDC Repeal Case	4,451	4,511	4,658	4,644	58,945	72,869	84,652	23.6	27.8	30.0
Difference	-	(116)	(641)	(918)	(58,945)	(72,869)	(84,652)	(7.2)	(9.7)	(12.0)
WEST COAST- Current Case	1,052	1,052	1,004	799	-	-	-	2.3	2.5	0.6
IDC Delay Case	1,052	1,052	1,001	795	78	210	235	2.3	2.5	0.6
Difference	-	-	(3)	(4)	(78)	(210)	(235)	(0.0)	(0.0)	(0.0)
GULF OF MEXICO - Current Case	2,338	2,401	2,703	2,369	-	-	-	20.1	14.9	11.5
IDC Delay Case	2,338	2,395	2,701	2,305	6,300	11,550	5,950	20.1	13.7	10.6
Difference	-	(6)	(2)	(64)	(6,300)	(11,550)	(5,950)	-	(1.2)	(0.9)
TOTAL CURRENT CASE	22,412	22,620	26,163	26,843	-	-	-	146	161	178
TOTAL IDC DELAY CASE	22,412	22,100	23,392	23,032	189,664	233,258	264,882	113	117	130
TOTAL US ECONOMY DIFFERENCE	-	(520)	(2,771)	(3,811)	(189,664)	(233,258)	(264,882)	(33)	(44)	(47)

Contents

1	IDC Introduction: IDCs, background and history as related to oil and gas
2	Scenarios: Scenario descriptions, assumptions and methodology
3	Results: Scenario impacts; production, jobs and revenues
4	Conclusions

What is the IDC deduction?

- Intangible Drilling Costs (otherwise known as IDCs) include charges for wages, fuel, repairs, hauling and other non-salvageable expenses incident to and necessary for the drilling of wells or the preparation of wells for the production of oil or gas
- These costs usually represent 60 to 90 percent of the cost of a well, depending on the type of well and costs associated with the specific intangible services
- The election to recover drilling costs quickly, allows these costs to be treated like all other business operating costs. This treatment does not reduce the actual tax liability over the life of any project
- Rates of return are directly influenced by the timing of cash outflows and inflows related to the project. Therefore, any significant delay of the timing of the tax deductibility of drilling costs, will reduce the discounted cash flow and rate of return values such projects will generate
- Consequently many projects will no longer meet investment criteria

History of IDC deduction

- In 1918, the IRS clarified the ability to either deduct or capitalize certain drilling expenses. Regulations issued in 1919 combined the oil and natural gas expense recovery provisions into a more succinct election:
 - *“Such incidental expenses as are paid for wages, fuel, repairs, hauling, etc., in connection with the exploration of the property, drilling of wells, building of pipe lines, and development of the property may at the option of the taxpayer be deducted as an operating expense or charged to the capital account returnable through depletion”*
- This language was retained in the regulations until in 1933, when the expression *“intangible drilling and development costs”* was first used in reference to the allowance of the deduction for expenditures for *“wages, fuel, repairs, hauling, supplies, etc. incident to and necessary for the drilling of wells and the preparation of wells for the production of oil or gas. . . .”*
- In connection with the Revenue Bill of 1942, Congress explicitly reaffirmed the treatment of oil and natural gas drilling and development costs. Furthermore, in 1954, Congress retained the option to expense IDCs incurred by the operator

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Case descriptions

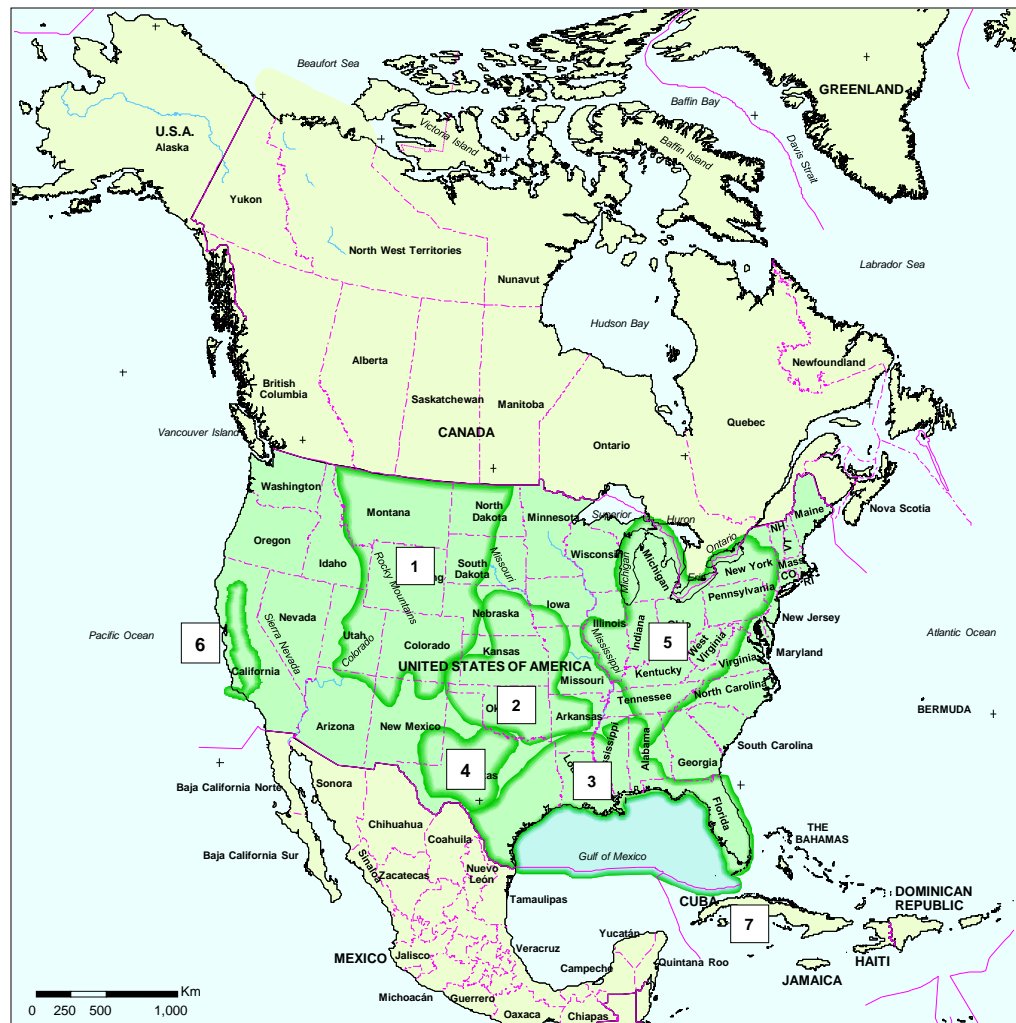
- We have modeled two cases to infer the impact of delaying the deductibility of IDCs
- Case 1 is the “Current case” which establishes a baseline future for the US oil and gas industry under current economic and fiscal conditions
- In other words we assume that there is no change to the treatment of IDCs for taxation purposes. Therefore companies will continue to invest in drilling and field development as per Wood Mackenzie’s base case forecast
- Case 2 is the “IDC delay case”. In this scenario Wood Mackenzie re-models US oil and gas activity following a change of the current IDC terms
- A direct consequence of delaying the deductibility of IDCs will be to lower the return on domestic oil and gas investment opportunities. As a result, many wells and fields which currently yield an economic return will likely become sub-economic and will not be drilled
- Consequently, future investment and activity levels are likely to be reduced

Regions covered by the study

In analyzing the impact of delaying the deductibility of IDCs on the US oil and gas industry, Wood Mackenzie has reviewed the economics and future drilling activity of wells in the following US regions:

1. Rocky Mountains
2. Mid-Continent
3. Gulf Coast
4. Permian
5. Northeast
6. West Coast
7. Gulf of Mexico deep water and shelf

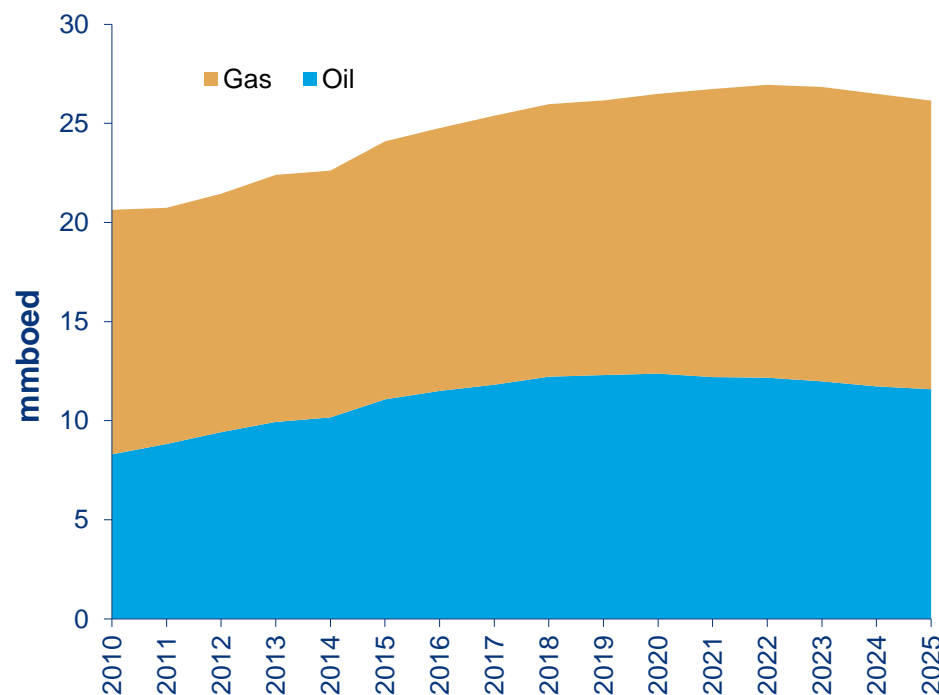
Alaska has been excluded from the study



Current case production

- If the current US policy regarding IDCs is left in place, Wood Mackenzie predicts that US domestic production will grow from 22.4 mmbod in 2013 to 26.8 mmbod in 2023, representing a 20% increase over this 10 year period
- We expect to see significant production growth from the Rockies, Northeast, Gulf Coast and Gulf of Mexico regions
- This production growth is being driven by the drilling of new wells on a number of fronts including the unconventional oil plays, consolidation in the shale gas plays and new activity in the frontiers. This includes the emerging deep water plays of the Gulf of Mexico
- Our production forecast assumes no opening of new federal areas for future exploration and development

Total US production - current case



Production Impact (000's boed)	2013	2019	2023	Difference 2013-2023
Oil (mmbd)	9.93	12.30	11.98	2.05
Gas (bcfd)	69.8	77.6	83.2	13.4

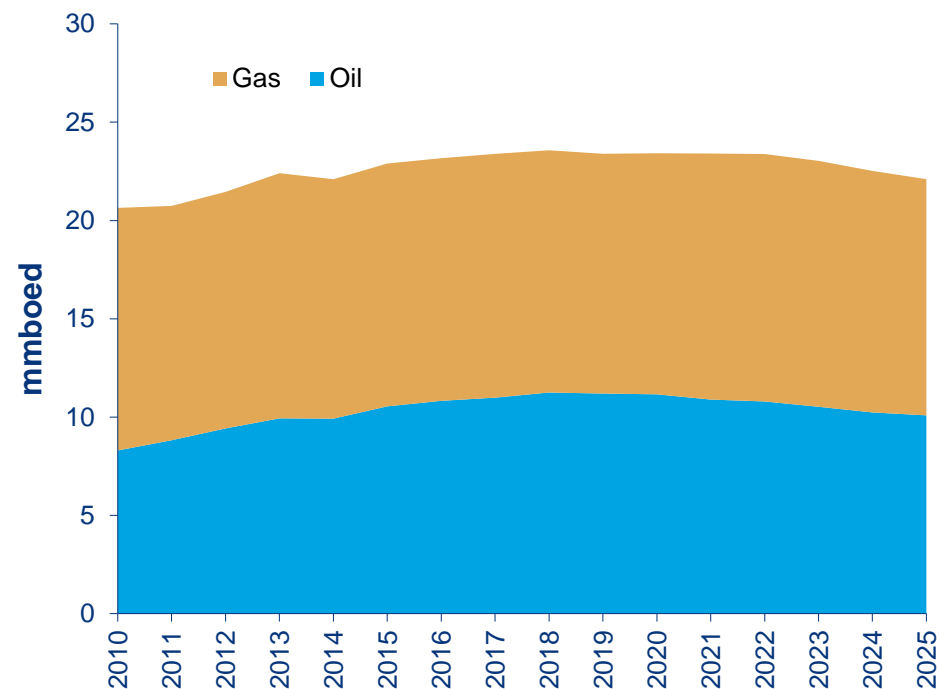
IDC delay case - assumptions

- The “IDC delay case” assumes the following policy and regulatory initiatives:
- The current tax treatment of IDC deductions is changed to delay the timing of IDC deductibility
- The resultant change in depreciation terms are as follows:
 - We assume that the IDCs will no longer be fully deductible when they are incurred
 - The IDCs will instead be depreciated on a straight-line basis over the expected average life of a US lease
- For onshore drilling, our models assume that any IDC deductions will be allowed from the year that the drilling costs were incurred
- For our Gulf of Mexico models, we assume the deductions will be taken from the date of first production. In the Gulf, field start-up often occurs a number of years after the drilling of the discovery well
- As a result of this change to the treatment of IDCs, we expect well economics to be adversely impacted due to a reduction in cash flow and project rate of return

IDC delay case production

- In the delay case, we assume a change of the current IDC terms would take effect in 2014
- Under this scenario there would likely be an immediate impact on drilling activity, resulting in lower future production levels
- In the current case we forecast a 20% production growth between 2013 to 2023
- We expect the delay case will generate a much smaller production increase of 0.6 mmbod by 2023, equivalent to a 3% growth rate
- Regions that are particularly hit hard by IDC delay include the Northeast, Mid-Continent and Rockies
- Each region could lose approximately 20% of its future production under the delay scenario

Total US production – delay case



Production Impact (000's boed)	2013	2019	2023	Difference 2013-2023
Oil (mmbd)	9.93	11.20	10.52	0.59
Gas (bcfd)	69.8	68.3	70.1	0.3

Scenario modeling

- For the two scenarios described, Wood Mackenzie has developed an activity outlook based upon the expected impact of the respective policies on oil and natural gas development activity levels
- Policy impacts on production and tax revenues are estimated by contrasting the results of Wood Mackenzie's proprietary Global Economic Model (GEM) for the two stated scenarios
- Wood Mackenzie has developed the GEM tool to forecast capex, opex, production and taxation at the asset level across the regions being studied. Wood Mackenzie defines an asset as a stand-alone field or geological play which has a distinct development scenario
- Outputs from GEM include production forecasts, and project Internal Rates of Return (IRR) and Net Present Values (NPV)
- Tax assumptions are based upon publicly available state and federal information. Data inputs are derived from public disclosures by oil and gas companies, and information referenced in the appendix of this report and other public sources (industry journals, independent agencies, etc.)
- Where no such information is available, Wood Mackenzie has made assumptions based on its in-depth technical knowledge of the US industry, supplemented by its many years of experience gathered through studying activity in the North American oil and gas sector

Methodology – economic threshold and impact on future drilling

- Running the plays and fields under the current case generates a suite of base case economics
 - Of particular interest to us in this study is each project's IRR
- Following the adjustment of the IDC treatment in the delay case, we find that project IRRs reduce across all plays and fields
- We have used a 15% IRR post take threshold for our economics
 - I.e. plays and fields which fall below a 15% IRR following the IDC delay, will have some but not all future wells excluded
 - 15% IRR has been chosen as an economic threshold as it is consistent with project decision making in the upstream oil and gas industry, i.e. oil and gas companies will generally seek a higher than 15% IRR before committing capital to new upstream projects due to the inherent risks associated with drilling
- Well performance across a play can be quite different. Therefore in order to model a realistic impact of declining economics on a play's future activity levels, we have built a distribution of wells to remove. The distribution is determined by the IRR of the play
 - Based upon our industry experience a play with an average well IRR being 14% vs. a play with an average well IRR of 9%, will see more of its well locations being drilled. For this analysis we have assumed that plays which have a 10%-15% IRR following the IDC changes will continue to have 80% of their original drilling forecast, whereas plays which fall below a 10% IRR, will only have 50% of their wells drilled

Wood Mackenzie onshore/offshore split of tangibles and IDCs

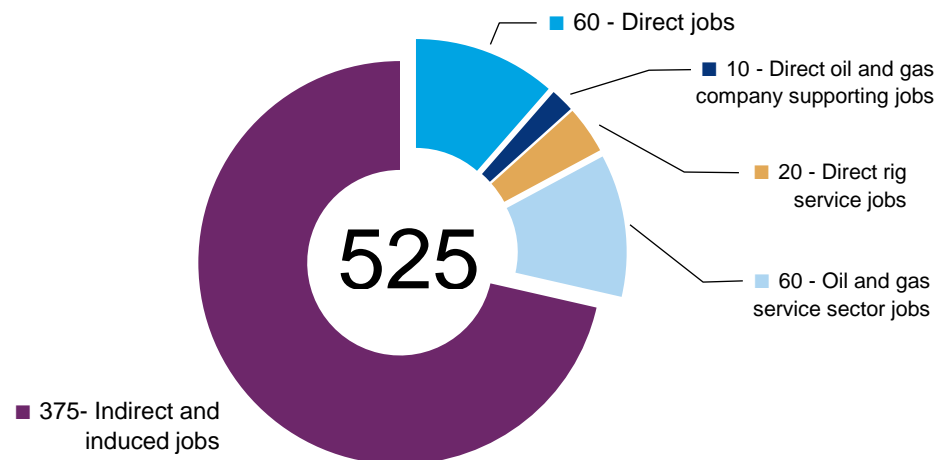
- We tend to see a higher percentage of intangible costs in offshore wells
 - Driven by rig rates for offshore wells which are typically higher than onshore
- However unconventional onshore wells (i.e. shale gas and oil) require fracture stimulation once the rig has been removed, thus increasing the percentage of intangibles in these wells
 - For such wells, completion costs including fracture stimulation can be the largest single intangible cost item – greater than the cumulative day rate

	Offshore Drilling	Onshore Conventional Drilling	Onshore Unconventional Drilling
Intangibles as a typical % of total well cost	80%	70%	85%
Tangibles as a typical % of total well cost	20%	30%	15%

Estimation of jobs lost due to reduced drilling

- We have derived a relationship between wells to be drilled, drilling rigs and jobs
- We have assumed that the jobs created or lost within the oil and gas industry and the wider economy are directly related to the number of rigs being employed for drilling – i.e. development activity
- Therefore, as activity drops fewer rigs are required
- This then results in a loss of direct, indirect and induced jobs
- Through our research, we have estimated the job impact per rig by category

Job Description	
Direct jobs per onshore drilling rig	60
Direct oil and gas company jobs supporting each drilling rig	10
Direct rig service jobs per drilling rig	20
Oil and gas service sector jobs per drilling rig	60
Total direct jobs per drilling rig	150
Indirect and induced jobs multiplier	2.5
Total Indirect and induced jobs in wider economy per drilling rig	375
Total jobs (direct, indirect and induced) per drilling rig	525



Employment multipliers – methodology

- Having calculated the number of jobs required to operate the rigs, we can then estimate job impact on the wider economy. The type of jobs created are split into three categories;
 - Direct jobs – these are the people employed or contracted by the companies involved in the production of oil and gas
 - Indirect jobs – these are the individuals employed in the businesses that supply goods and services to the oil and gas producers
 - Induced jobs – employment created in the wider economy as a result of spending by those employed in the first two categories
- The jobs lost per year which Wood Mackenzie has calculated in this study, refer to the number of jobs for a particular year that are not available due to the delay of IDC deductions case
- For the ratio of direct to indirect and induced jobs, Wood Mackenzie uses a general multiplier of 2.5
- I.e. for every job lost in oil and gas extraction phase, a further 2.5 jobs are lost through indirect and induced effects
- In comparison to other studies, we believe this multiplier is conservative. However, it falls within a range of multipliers found in literature which describe the impact on the wider economy of oil and gas industry jobs as applied to specific production regions or production activities (see slide 46)

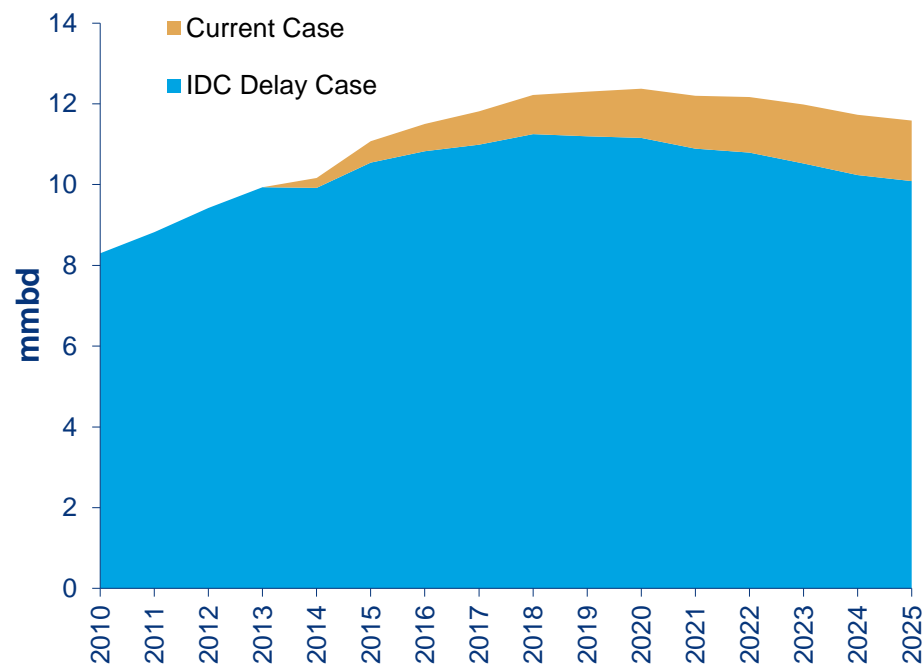
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Current case vs. IDC delay case – production forecast (liquids)

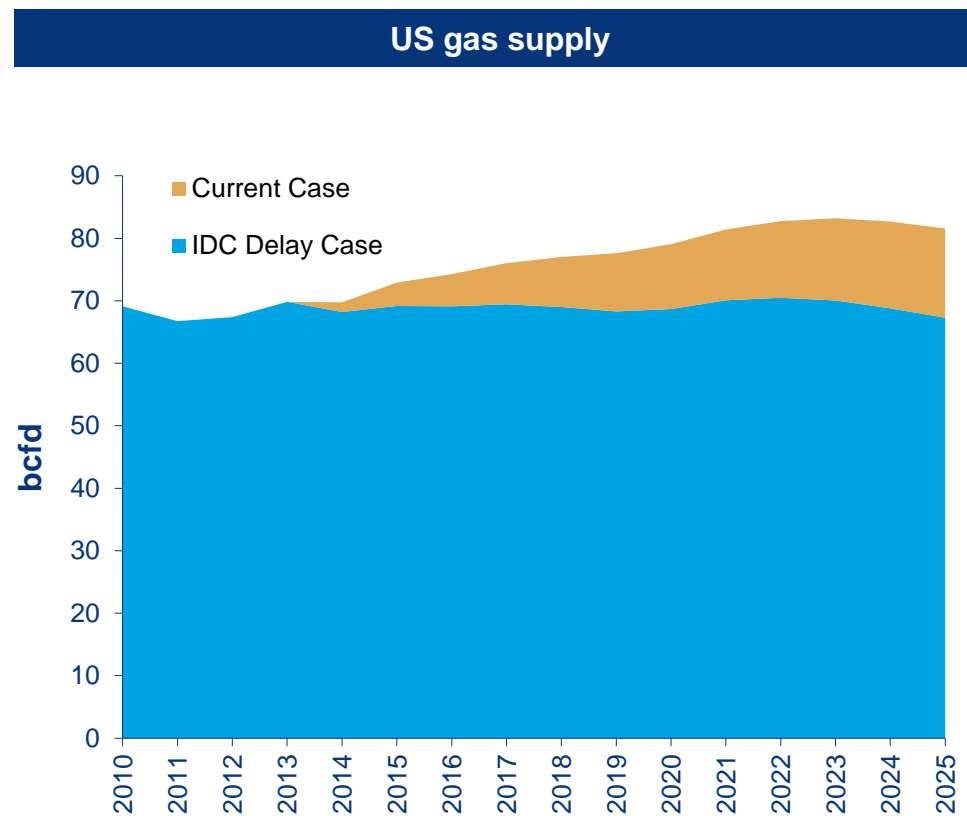
- Following many years of falling liquids production, we've seen a turnaround in oil focused drilling activity over the last few years
- This in turn has resulted in growing US domestic oil supply. In particular activity has exploded in the shale oil plays
- Under the current case, we forecast liquid supply to peak by 2019 at an estimated 12.3 mmbd, with 2023 production at 12.0 mmbd
- The impact of a change of the current IDC terms would be to lower liquids supply by 1.1 mmbd by 2019
- High cost shale oil plays would be severely affected
- Under this scenario, 2023 oil production will drop by 1.5 mmbd to 10.5 mmbd

US liquids supply



Current case vs. IDC delay case – production forecast (gas)

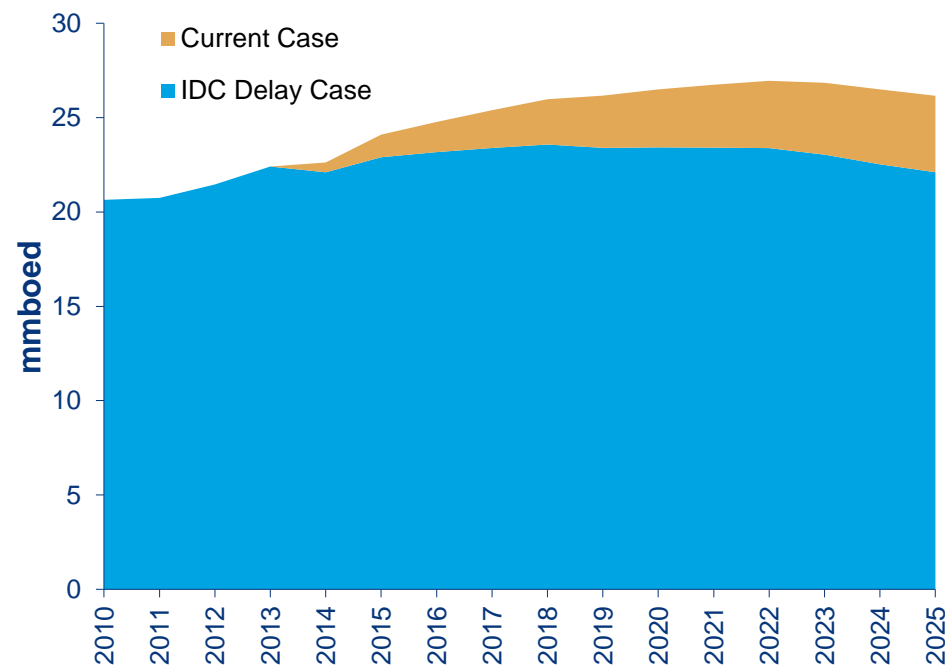
- Gas production has been somewhat erratic in recent years as falling prices have squeezed returns in the high cost unconventional gas plays
- A delay of the deductibility of IDCs will further marginalize many of these US gas plays
- Current dry gas production in 2013 is an estimated 70 bcf/d, effectively flat since 2010
- Under the current case we expect modest growth through 2019, at which point US domestic gas supply is estimated to be 78 bcf/d, a 12% increase from today
- By 2023 gas production will be an estimated 83 bcf/d
- An IDC deduction delay will result in a reduction from the current case of 9 bcf/d by 2019 and 13 bcf/d by 2023 to a total of 70 bcf/d, equivalent to 2013 production levels



Current case vs. IDC delay case – production forecast (total)

- In the current case, there is an upwards trend of the combined US liquids and gas supply. We expect this to continue at least through the early 2020s, peaking at nearly 27 mmboed by 2023
- Delaying the deductibility of IDCs would have a significant overall impact on US energy supply, reducing the 2023 production forecast by 3.8 mmboed (14%) to 23 mmboed
- High cost unconventional oil and gas plays are likely to be hit hardest by these changes
- These are the plays which also provide the bulk of future production growth

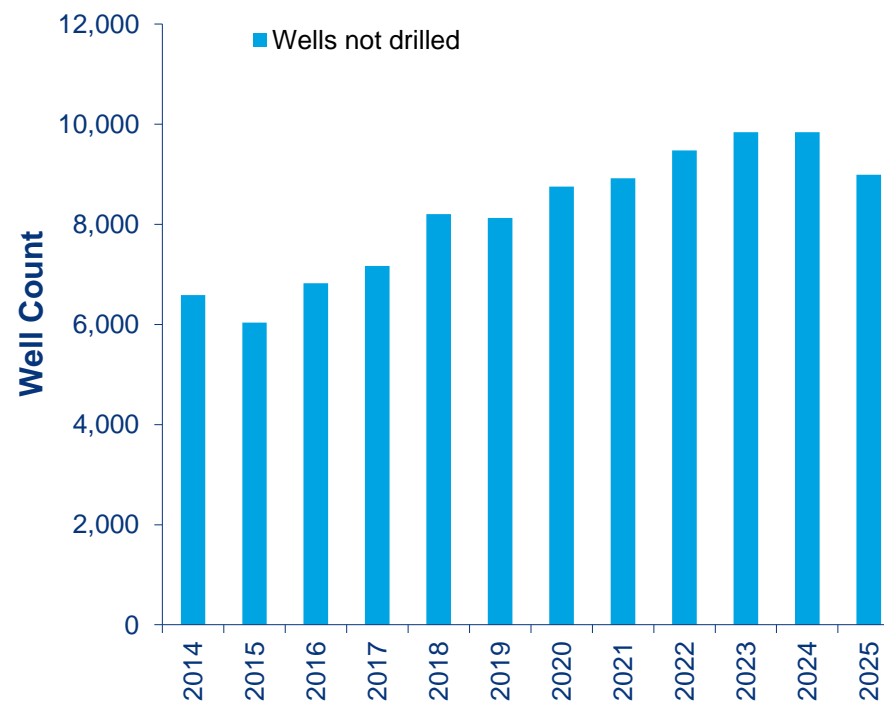
US energy supply (liquids and gas)



Current case vs. IDC delay case – well forecast

- We estimate that delaying the deductibility of IDCs will severely impact future drilling activity levels in the US
- 15-20% of future US annual drilling will be lost as a result of impaired economics due to the delay in deductibility of IDCs
- We expect the impact would be immediate as companies will likely lay down rigs where wells have become sub-economic as a result of the IDC treatment change
- From 2018 onwards we expect at least 8,000 wells per year will not be drilled compared to the current case as a result of delaying the IDCs
- By 2023, we estimate that nearly 10,000 wells will not be drilled due to the delay in deductibility of IDCs in comparison to the current case

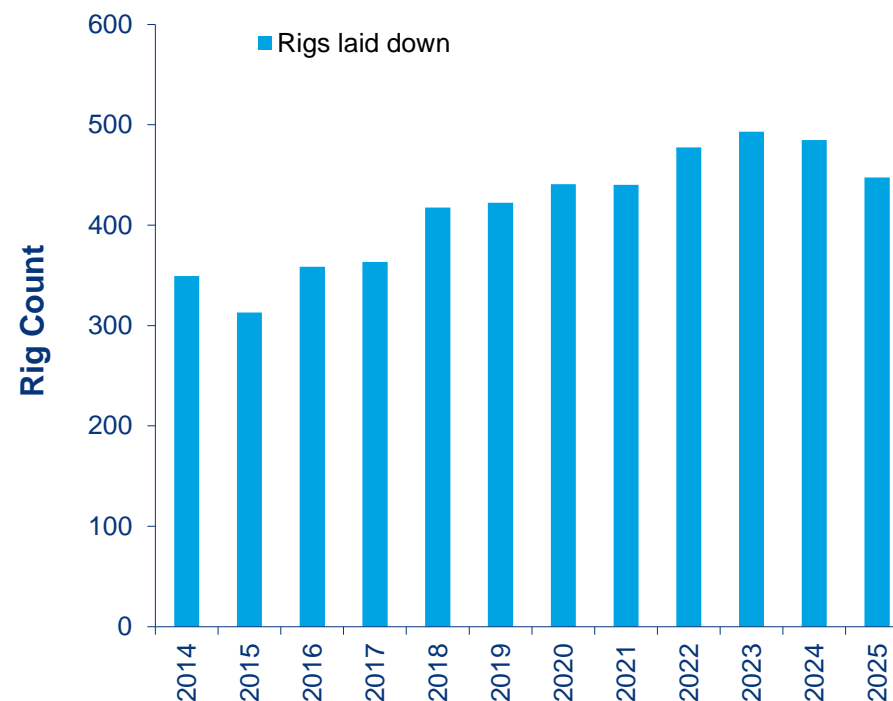
US forecast of wells not drilled due to delay case



Current case vs. IDC delay case – rig forecast

- We estimate that delaying the deductibility of IDCs will result in more than 20% of the US onshore rig fleet being laid down in the future
- Under the current case, rig counts are likely to grow from current levels of over 1,600 active rigs
- We have estimated that the delay in deductibility of IDCs will likely result in the laying down of at least 300 rigs in 2014, growing to over 400 rigs by 2018
- By 2023 we expect nearly 500 rigs will be laid down in comparison to the current case
- This reduction in rig count will have a direct impact on oil and gas employment and a knock on effect to the wider economy

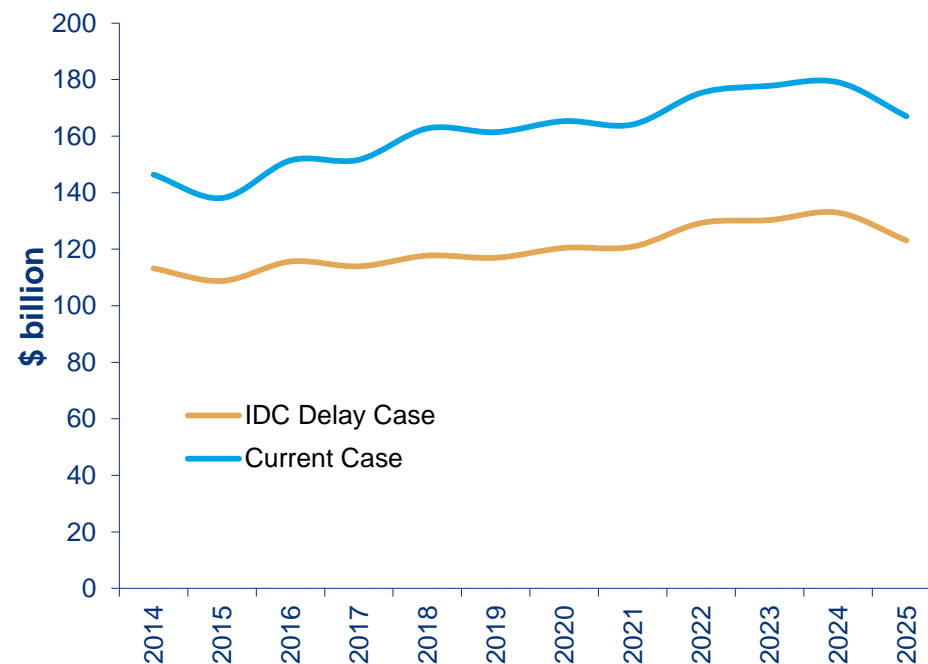
US forecast of rigs laid down due to IDC delay case



Current case vs. IDC delay case – investment forecast

- In the IDC delay case we predict a decline in future capital expenditure due to a reduction in onshore drilling activity
- We also expect to see an impact on Gulf of Mexico deep water field development expenditure
- Over the period 2014 to 2023, we expect US capex to be reduced by a total of \$407 billion as a result of a delay in deductibility of IDCs
- An average of \$40 billion per year would not be invested in the US domestic oil and gas industry

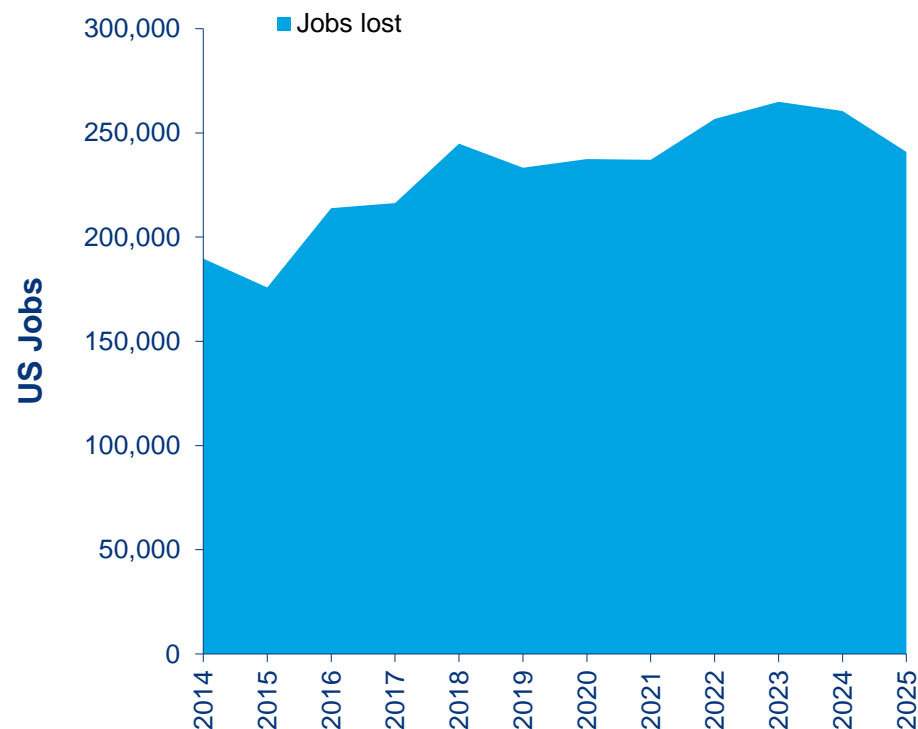
US capex forecast



Current case vs. IDC delay case – jobs forecast

- Wood Mackenzie estimates the jobs impacted by the reduced oil and gas industry activity in the US will peak at 265,000 by the year 2023
- Over 90% of the jobs lost are related to a slow down in onshore activity
- The Gulf of Mexico is sensitive to fiscal changes due to the high cost of developing future deep water fields, therefore future exploration activity could be curtailed in these deep water areas

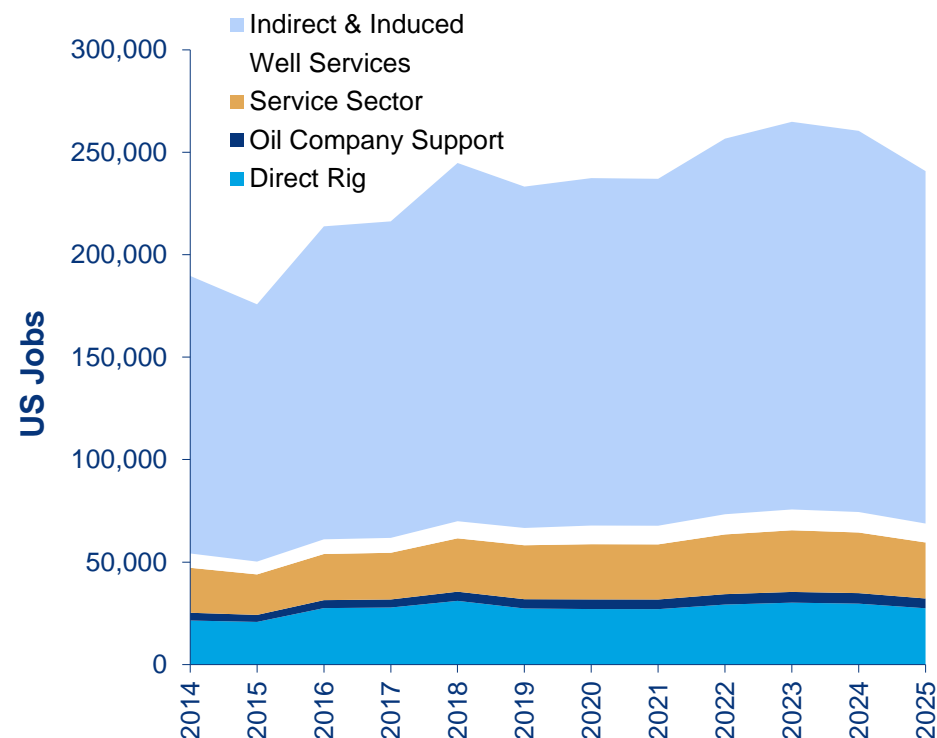
US jobs forecast – IDC delay case



Jobs lost – direct, indirect & induced

- Direct oil and gas industry jobs lost due to delaying the deductibility of IDCs are likely to peak at over 75,000 by 2023
- The impact on the wider economy is also very significant
- Using our conservative multiplier of 2.5 for calculating the indirect and induced jobs impact, we estimate nearly 200,000 jobs are lost to the wider economy in 2023 as a result of the IDC changes
- In the near term we expect to lose 190,000 jobs to the US economy in 2014, rising to 233,000 in 2019, if the changes were to be enacted
- The chart represents the annual impact on employment due to the delay of IDC deductions

US jobs forecast – IDC delay case



Summary impact of the IDC delay case

- **Investment & Jobs**

- Under the delay case, we expect investment through the drilling and development of oil and gas resources will decline by \$407 billion over the period 2014 to 2023
- This is driven by a reduction in drilling by an average of 8,000 wells and over 400 rigs per year

- **Jobs**

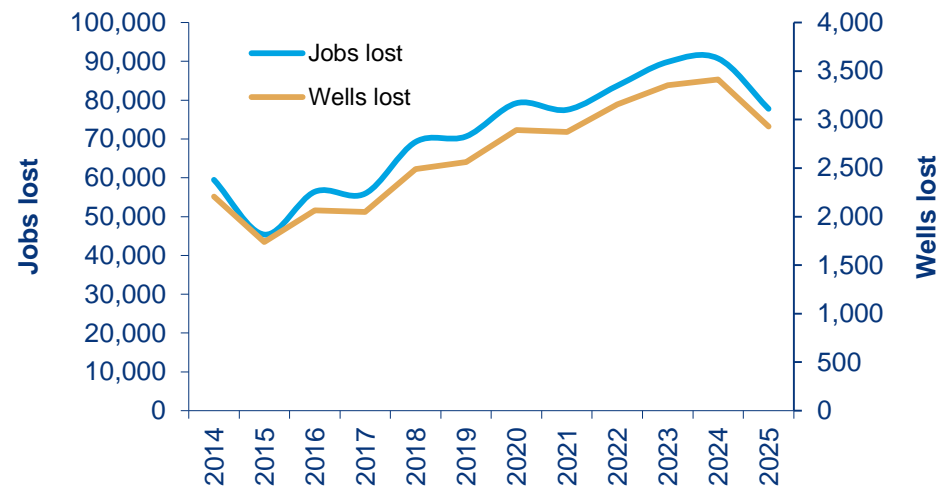
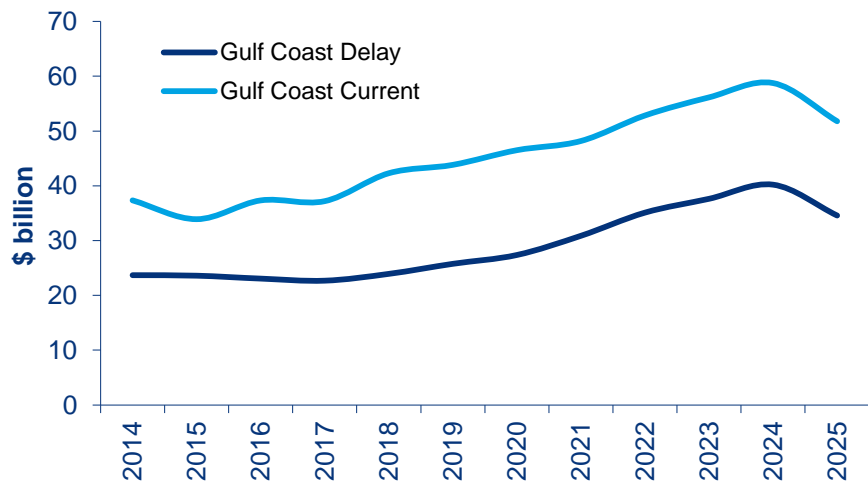
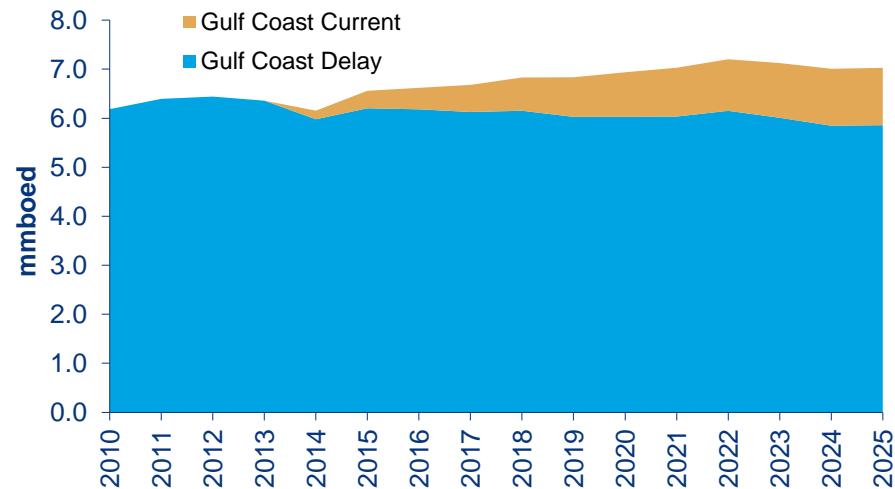
- The impact on employment is to lose an average of 225,000 jobs per year of which an estimated 65,000 would be direct oil and gas industry jobs

- **Production**

- By 2023 we expect the IDC delay case production to be 3.8 mmoed (or 14%) lower than the current case
- This is primarily driven by lower growth from onshore unconventional oil and gas plays

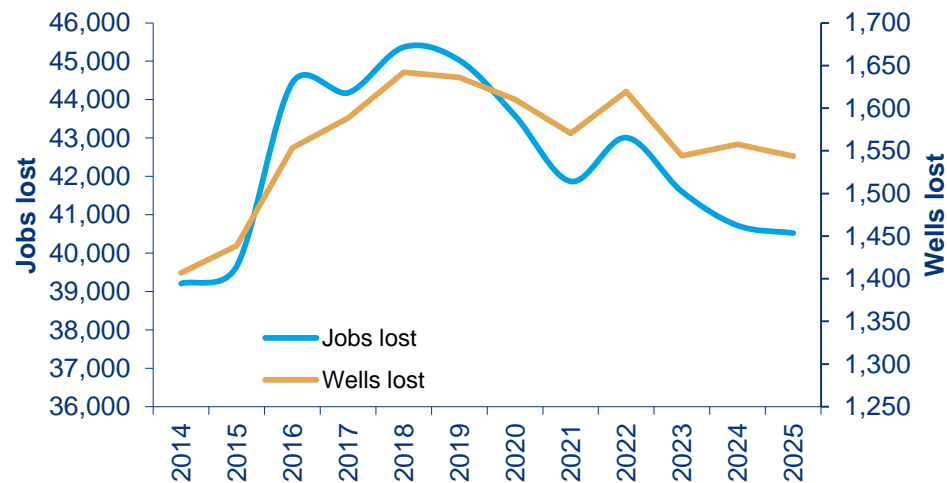
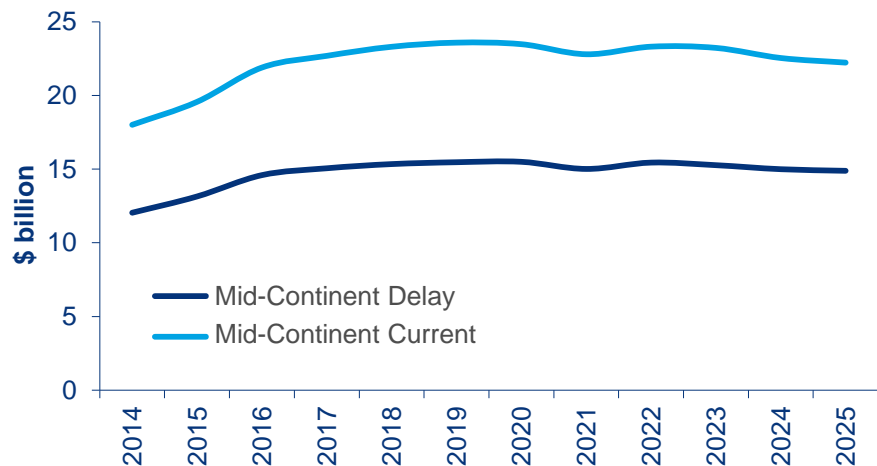
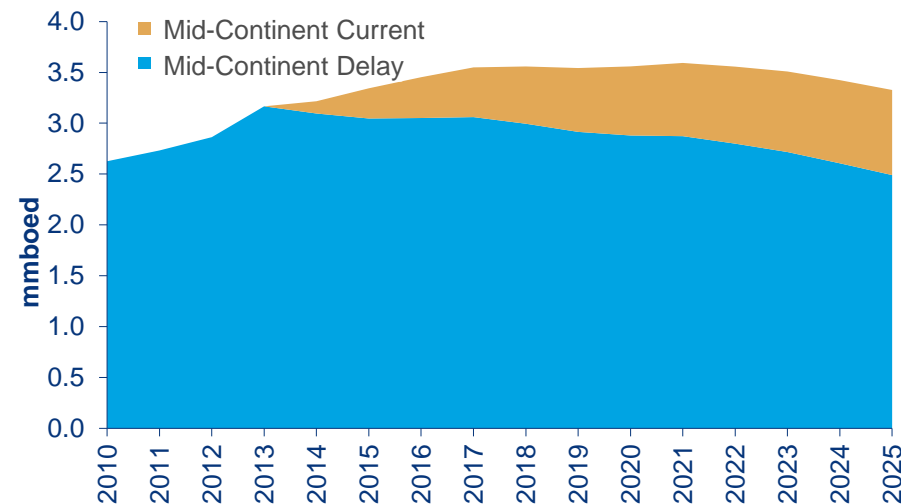
IDC delay case – US Gulf Coast impacts

- Wood Mackenzie estimates that US Gulf Coast region production could decline by 1.1 mmoed by 2023 compared to the current case. More gas will be lost than oil due to the region’s weighting to gas production
- We estimate that by 2023, 3,000 fewer wells will be drilled per year, resulting in more than 90,000 job losses
- The slow down in drilling activity will result in lowered investment, approximately \$19 billion less per year by 2023



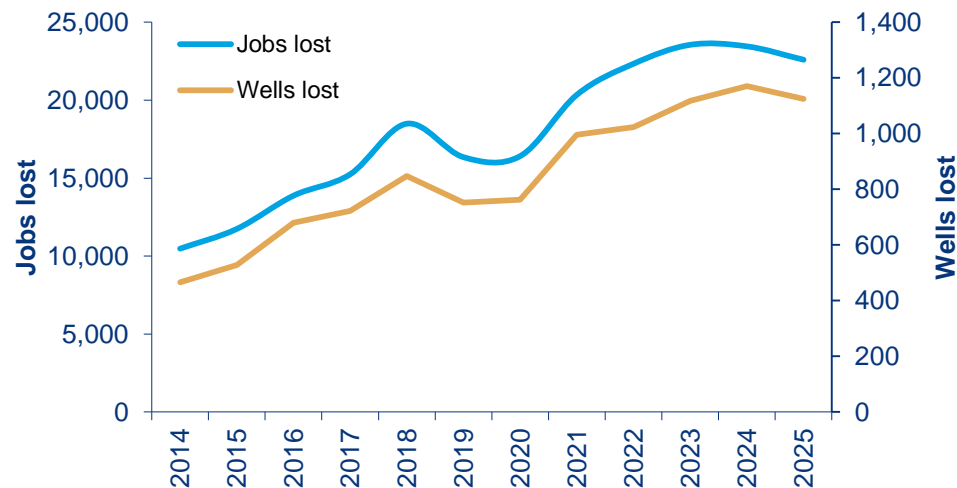
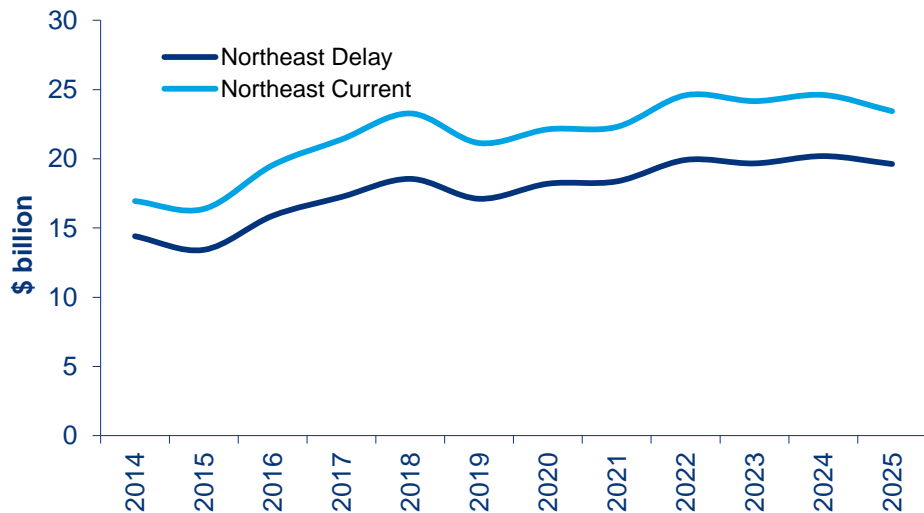
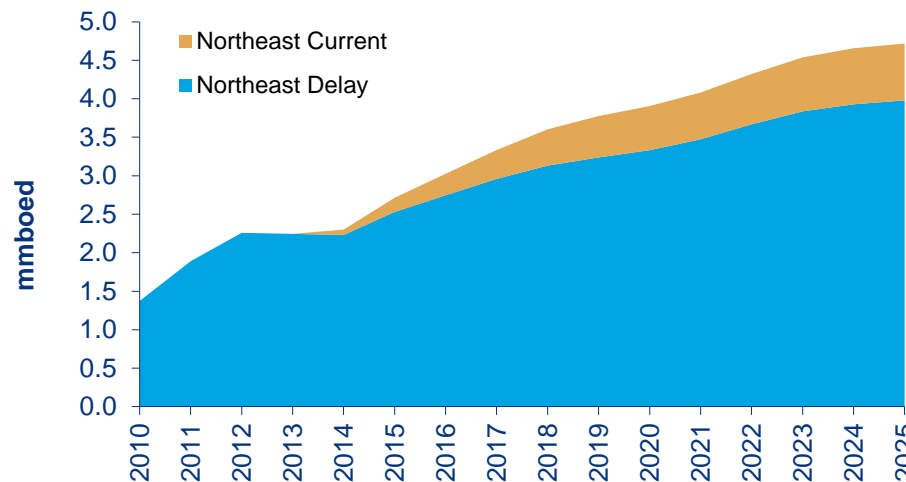
IDC delay case – US Mid-Continent impacts

- Wood Mackenzie estimates that US Mid-Continent production could decline by 0.8 mmbaed by 2023 compared to the current case. More oil will be lost than gas due to the region’s weighting to oil production
- We estimate 1,500 fewer wells will be drilled per year, resulting in more than 40,000 jobs being lost by 2023
- The slow down in drilling activity will result in lowered investment, approximately \$8 billion less per year by 2020



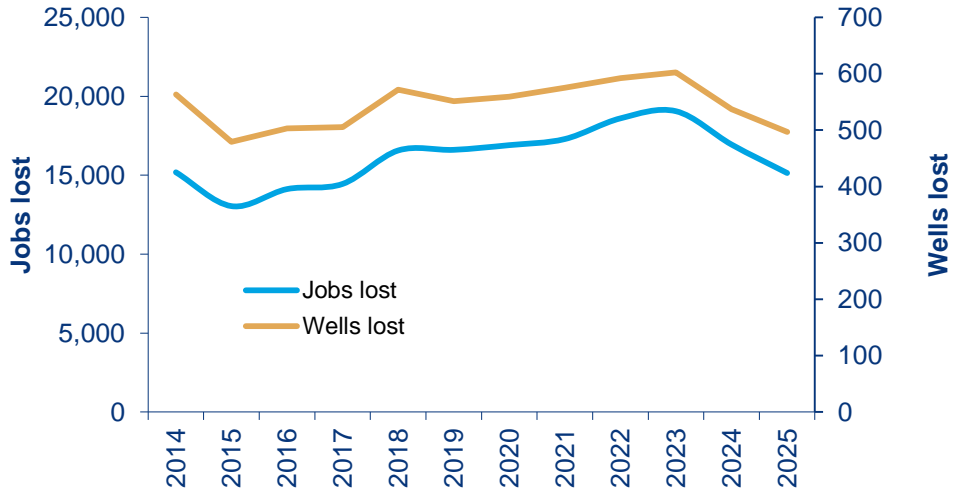
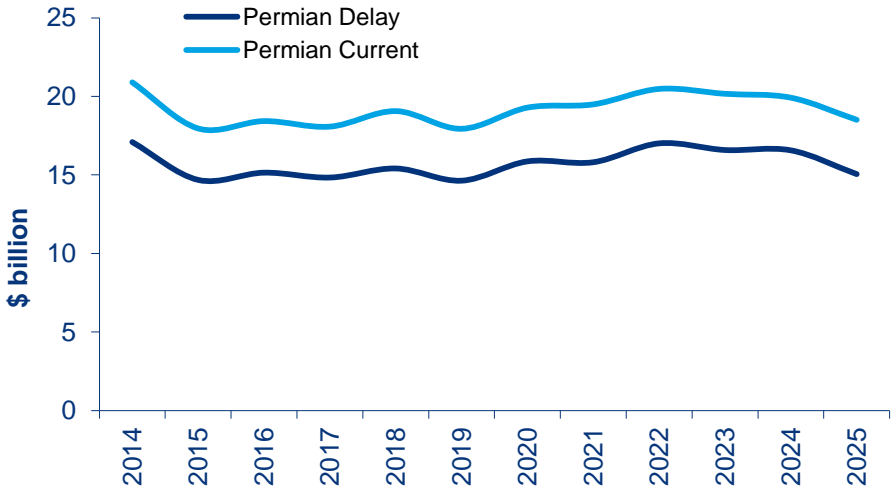
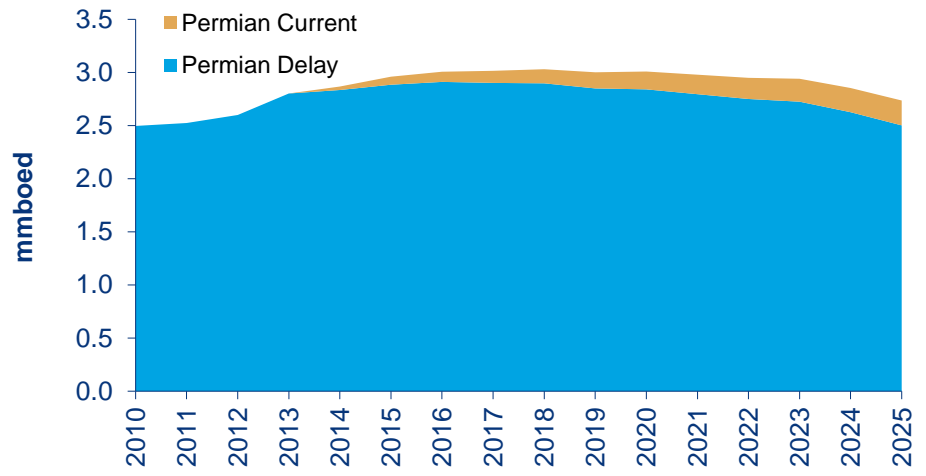
IDC delay case – US Northeast impacts

- Wood Mackenzie estimates that US Northeast production could decline by 0.7 mmoed by 2023 compared to the current case. 65% of this lost production would be gas
- By 2023, we estimate over 1,100 wells per year will be lost due to delaying the deductibility of IDCs, resulting in more than 23,000 jobs lost annually from the region
- The slow down in drilling activity will result in lowered investment, approximately \$5 billion less per year by 2023



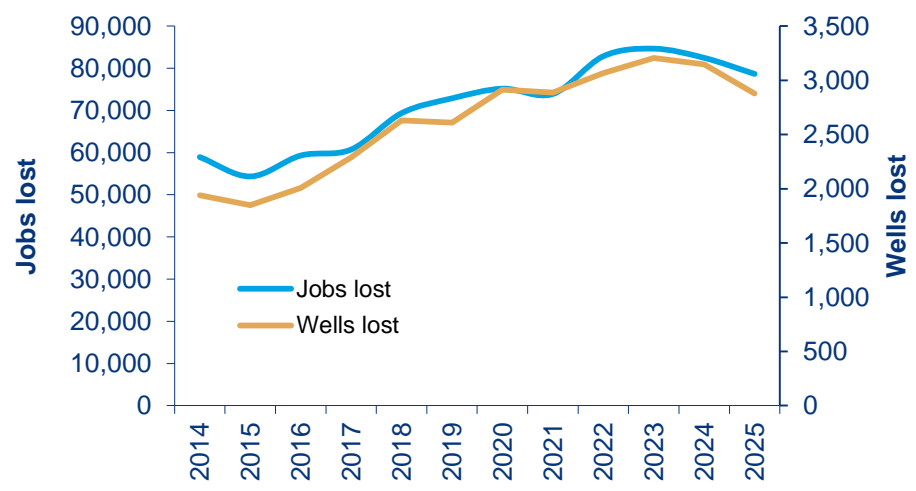
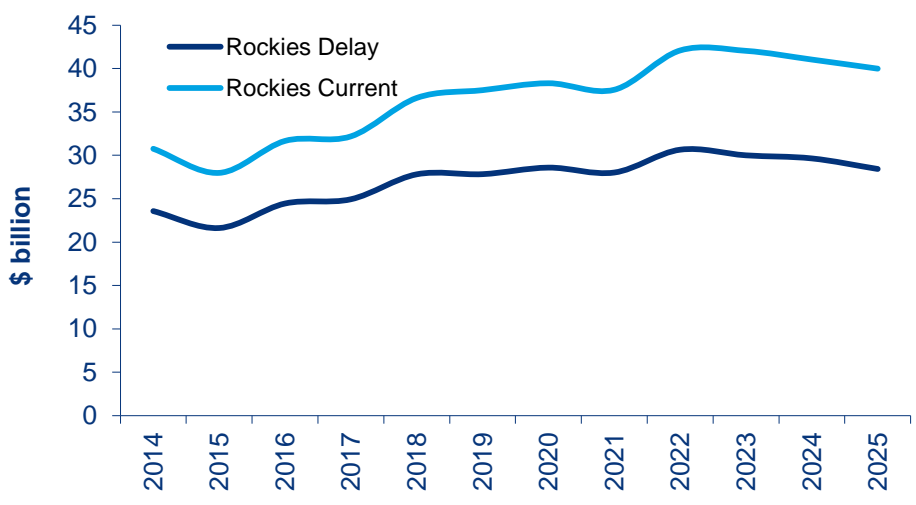
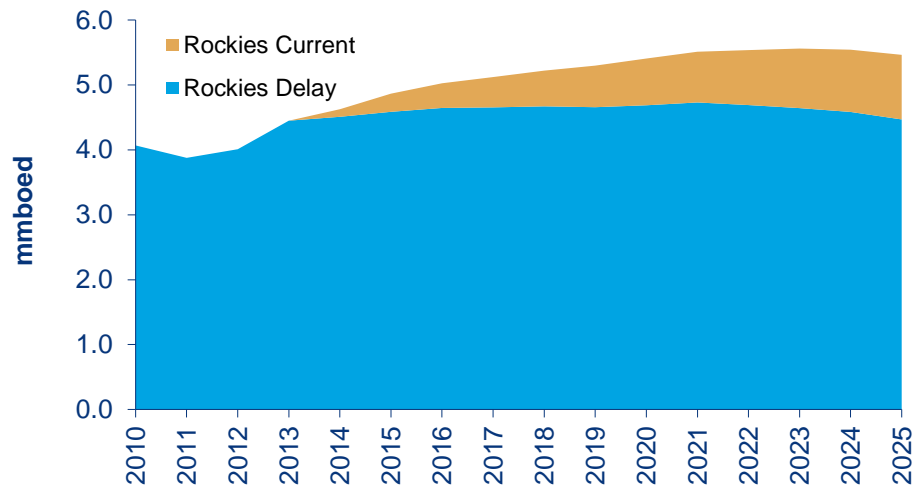
IDC delay case – US Permian impacts

- US Permian production would be severely impacted by delaying the deductibility of IDCs. Wood Mackenzie estimates approximately 0.2 mmboed will be lost from the region by 2023 in comparison to the current case. The lost production is evenly split between gas and oil
- Under the IDC delay case the region will lose more than 600 wells and 19,000 jobs per year by 2023
- The slow down in drilling activity will result in lowered investment, approximately \$4 billion less per year by 2023



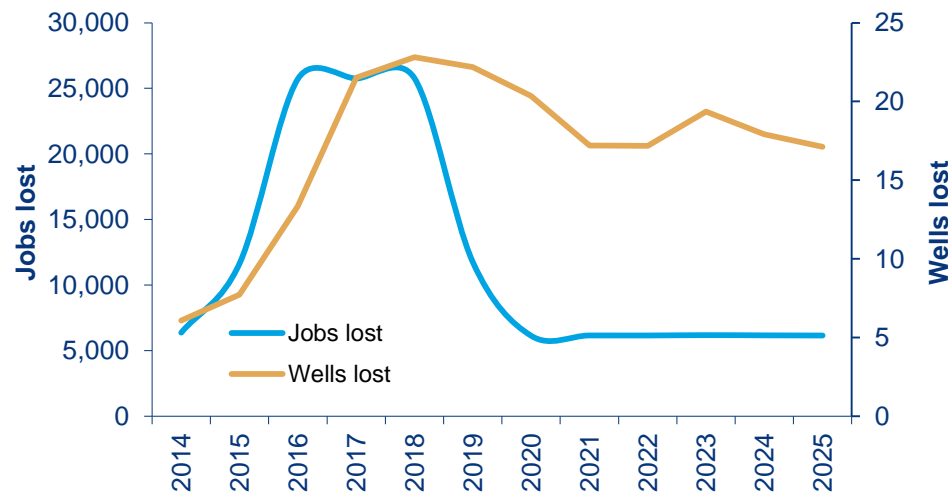
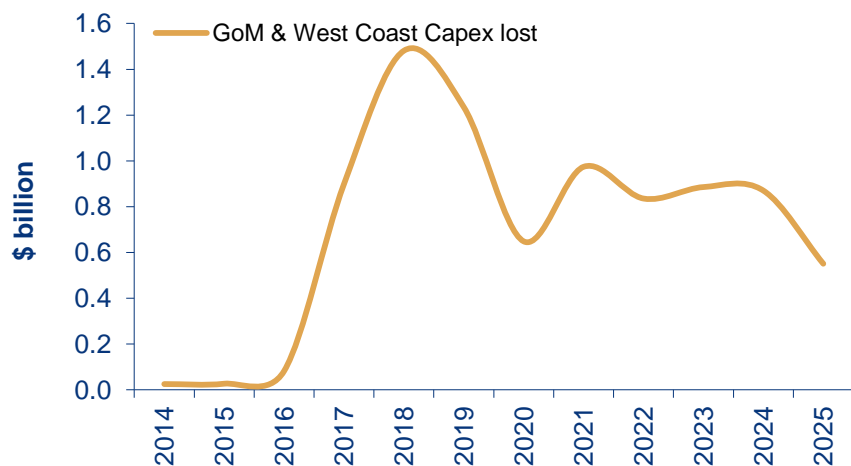
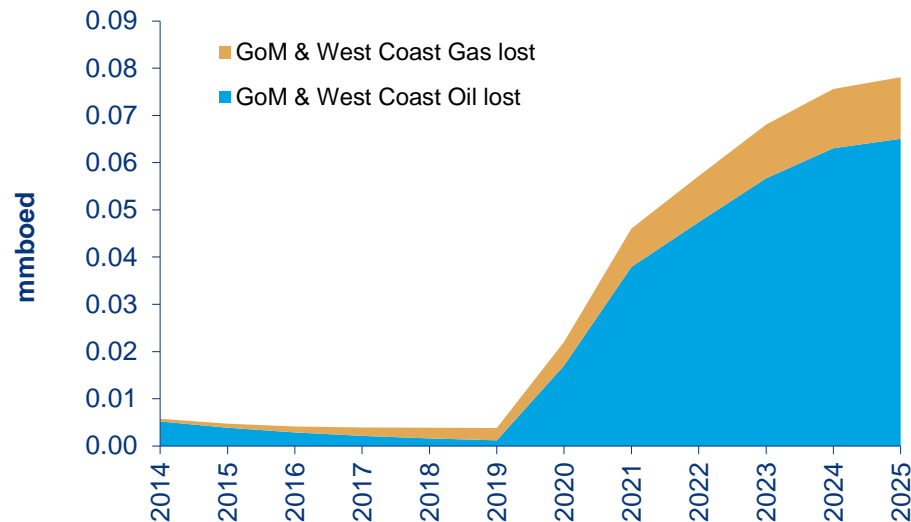
IDC delay case – US Rockies impacts

- Wood Mackenzie estimates that US Rockies production could decline by early 0.9 mmoed by 2023 compared to the current case. The production lost will be split evenly between oil and gas
- By 2023, we estimate over 3,000 wells and 80,000 jobs per year will be lost due to delaying the deductibility of IDCs
- The slow down in drilling activity will result in lowered investment, approximately \$12 billion less per year by 2023



IDC delay case – US Gulf of Mexico & West Coast impacts

- The impact of delaying the deductibility of IDCs on the West Coast and Gulf of Mexico are less significant than the other regions analyzed
- However we see the potential for future deep water developments to be impacted, particularly in the higher cost, ultra deep plays. Many of these developments do not come onstream until after 2020, as shown by the increase in oil lost in the chart to the right
- This could potentially put at risk some of the region's largest future developments. Therefore the impact on oil production, investment and jobs beyond 2020 could be significant



Summary of regional impacts due to IDC delay case

- **Production**

- Production losses are most significant in the Gulf Coast, Mid-Continent, Northeast and Rockies regions, while the Permian, West Coast and Gulf of Mexico are less affected
- The plays which are most economically sensitive to delaying the deductibility of IDCs tend to be the higher cost unconventional oil and gas plays
- These are also the plays which offer the best growth and future investment opportunities
- A limited number of Gulf of Mexico developments become sub-economic as a result of a change in IDC terms. However small changes to the taxation terms can have a large impact on the economics of these developments

- **Investment and jobs**

- Our analysis shows that all seven areas are hit with job and investment losses following the delay in deductibility of IDCs
- Both the Gulf Coast and the Rockies have a number of large growth plays which are sensitive to the IDC changes
- The other regions are also hit by a downturn in activity as a result of their plays being negatively impacted by the change of IDC treatment

Contents

1	IDC Introduction: IDCs, background and history as related to oil and gas
2	Scenarios: Scenario descriptions, assumptions and methodology
3	Results: Scenario impacts; production, jobs and revenues
4	Conclusions

Summary impact of a delay in the deductibility of IDCs

- Oil and gas project returns would be reduced significantly, leading to lowered investment, fewer wells being drilled, job losses and less production
 - Jobs lost – 233,000 by 2019 and 265,000 by 2023
 - Production lost – 2.8 mmoed by 2019 and 3.8 mmoed by 2023
 - Cumulative \$407 billion less in capex by the year 2023
 - 8,100 fewer wells drilled in 2019 and 9,800 in 2023
- Short run federal tax increases would be more than offset by reductions in federal, state, and private royalties and other state taxes lost. After 2020, the tax take would be drastically reduced due to lowered production and revenues
- The cash flow impact to a number of companies could be severe to the point that they could not afford to invest in future drilling and development
- The US oil and gas regime is viewed as being stable and attractive when compared to most other countries. Fiscal stability allows companies to plan and make sound investment decisions. Delaying the deductibility of IDCs would create instability in the US fiscal regime, and lower its relative competitiveness compared to other oil and gas regions
 - These factors could lead to an outflow of investment into other oil and gas basins

Contents

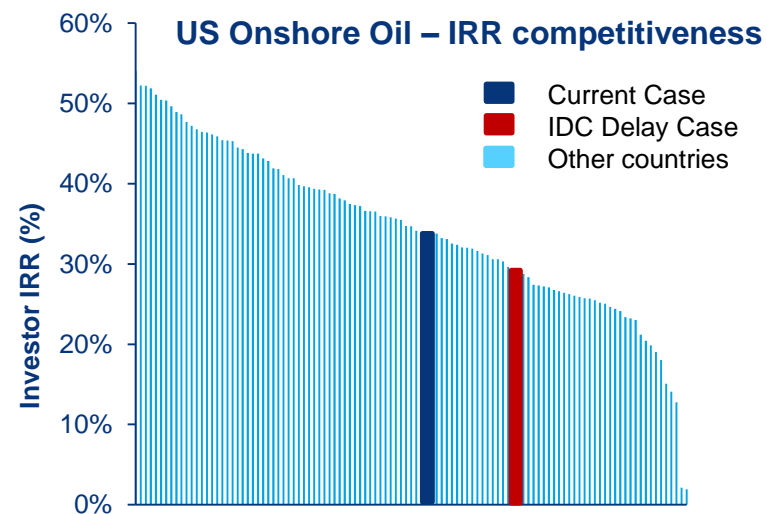
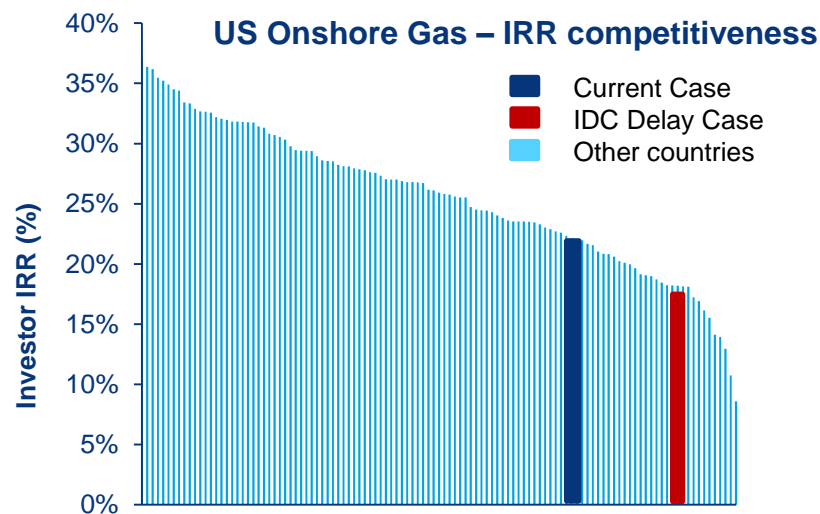
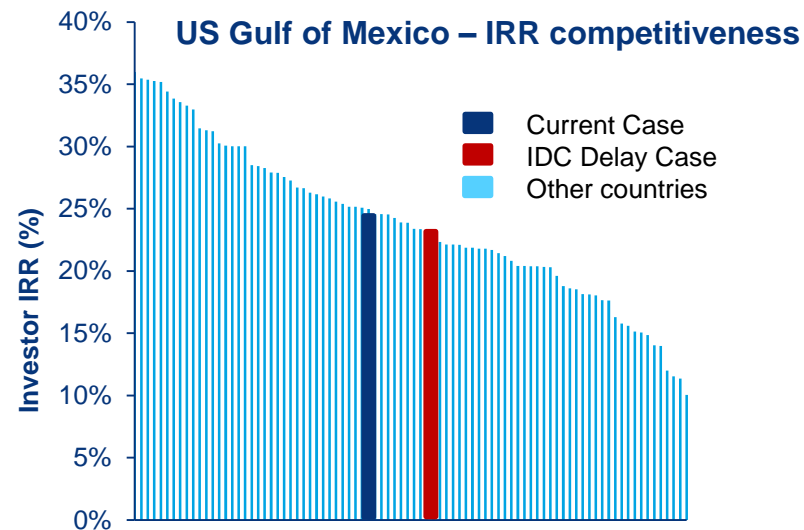
Appendix

IDC impact on corporate cash flow – additional points to consider (1)

- With a delay in the deductibility of IDCs, energy companies will have significantly less cash available for additional drilling, especially in the early years
- Hard hit by such a change would be smaller companies and independents which often look to spend within the constraints of their cash flow. Some may be unlikely to have the financial resources or debt capacity to sustain drilling programs at planned rates. Consequently, this reduction in cash flow could result in a larger impact than the one we have modelled in our analysis
- Companies which are not necessarily cash constrained will nevertheless see diluted returns on their US investment opportunities, which may lead to them to divert their capital to more favorable opportunities overseas
- With cash flows and balance sheets already strained by the recent downturn in gas and NGLs prices, additional reduction of cash flow from the delay in deductibility of IDCs could lead to several operators potentially struggling to meet production targets and other investment metrics, thereby seriously impacting investment in US drilling
- Consequently, this reduction in cash flow could result in a larger impact than the one we have modelled in our analysis. Even under our more conservative modelling approach, our analysis indicates that a statutory tax rate would need to be well below 20% to maintain projected investment and production levels found in the current case

IDC delay impacts on US competitiveness – additional points to consider (2)

- As shown earlier, the delay in deductibility of IDCs has a negative impact on project returns
- On average the delay case shows an IRR drop of 4% IRR for onshore projects and 2% for the Gulf of Mexico
- As can be seen from the charts, the relative competitiveness of the US regions falls due to the IDC changes in comparison to other regions around the world
- In particular, the competitiveness of the US onshore becomes more marginal, which could lead to companies investing in other global opportunities



Tax changes – additional points to consider (3)

- Broadly speaking, forms of government intervention such as taxation result in a type of economic inefficiency referred to as a deadweight loss (often called a Herberger triangle in Economics). The idea is that a tax increase reduces supply and pushes up prices, resulting in reduced total profits for firms and higher costs for consumers. The negative impact on firms and consumers together will be greater than the increased tax revenues. The difference is the deadweight loss. Many economists argue that these losses magnify over time from the compounding effect of reduced economic activity
- Changes in tax-deductible costs also impact beyond the initial decision to go ahead with a new project, or in this case the drilling of a well or the development of an oil and gas field. It can also alter the decision on whether to replace outdated equipment. If old equipment is kept in service for longer, it usually results in falling productivity

Lost wells and jobs by state due to IDC delay case

Wells lost by state due to IDC Delay Case	2014	2019	2023
Alabama	0	10	7
Arkansas	312	484	453
California	6	17	19
Colorado	1,028	1,631	1,867
Florida	0	0	0
Indiana	1	2	7
Kansas	121	137	150
Kentucky	0	0	0
Louisiana	5	14	20
Michigan	4	125	222
Mississippi	0	1	1
Montana	5	23	28
North Dakota	514	347	371
New Mexico	130	166	201
New York	0	0	1
Ohio	298	421	386
Oklahoma	570	578	561
Pennsylvania	138	120	273
Tennessee	3	1	3
Texas	3,133	3,466	4,246
Utah	65	116	182
Virginia	19	63	162
West Virginia	4	21	64
Wyoming	233	385	618
TOTAL US ECONOMY	6,588	8,127	9,842

Jobs lost by state due to IDC Delay Case	2014	2019	2023
Alabama	329	677	420
Arkansas	3,467	5,211	4,778
California	141	405	373
Colorado	27,692	46,437	50,667
Florida	0	0	0
Indiana	19	71	207
Kansas	2,923	3,839	4,165
Kentucky	0	0	0
Louisiana	2,727	5,136	3,074
Michigan	175	3,572	6,484
Mississippi	6	37	48
Montana	75	318	385
North Dakota	18,276	11,841	12,420
New Mexico	4,407	5,806	7,184
New York	0	0	45
Ohio	7,720	10,562	9,491
Oklahoma	19,409	20,229	18,696
Pennsylvania	4,714	3,926	8,527
Tennessee	100	19	81
Texas	91,583	105,631	121,247
Utah	1,626	2,614	3,708
Virginia	70	226	569
West Virginia	128	657	1,890
Wyoming	4,077	6,045	10,425
TOTAL US ECONOMY	189,663	233,258	264,883

* Data is based on the estimated impact on jobs resulting from lost production from each state. In reality some states may be more affected than others by a slowdown in activity, due to the relative importance of the oil and gas industry in that particular state

Play and field economics – methodology, pricing and inflation

- In generating economics for the onshore plays and Gulf of Mexico fields, we have included regional price differentials against our Henry Hub gas and WTI oil price forecasts
- Our Henry Hub gas price forecast we have used is:
 - 2013 \$4.50 per mcf flat in real terms
- The WTI oil price forecast we have used is:
 - 2013 \$80.00 per barrel flat in real terms
- Projects economics have been run under nominal terms with an inflation rate of 2.0% per annum
- We have used prices for our economics which are representative of oil and gas company long term planning economics, i.e. prices under which project economics are evaluated for investment approval purposes

References

- US Bureau of Economic Analysis (BEA)
- Employment assumptions and multipliers calculated by the Bureau of Labour Statistics (BLS)
- http://www.bls.gov/emp/ep_data_input_output_matrix.htm
- The BEA also derives employment assumptions, which feed through into its Regional Input-Output Modelling System (RIMS II). RIMS II calculates output and employment multipliers for all industries at the level of region, state and county
- <https://www.bea.gov/regional/rims/rimsii/help.aspx>
- ICF International, 2008, “Strengthening Our Economy: The Untapped U.S. Oil and Gas Resources,” http://www.api.org/aboutoilgas/upload/Access_Study_Final_Report_12_8_08.pdf
- MIG, Inc. 2008 Implan database, <http://implan.com/V4/Index.php>
- BLM Oil and Gas Statistics (1984-2010) January 2011 Version
- Price Waterhouse Coopers September 2009 Study – The Economic Impacts of the Oil and Natural Gas Industry on the U.S. Economy: Employment, Labor, Income and Value Added
- For oil and gas extraction, RIMS II calculates employment multipliers at the state level. These range from 0.6 for states with a small energy industry such as Kansas, to 2.5 for states such as Texas and Colorado. Because these multipliers only account for jobs created within the state, they are larger for states that source more of their inputs from within the state

References

Other studies have calculated employment multipliers for oil and gas;

- *The Economic Impacts of the Oil and Natural Gas Industry on the U.S. Economy in 2009: Employment, Labor Income and Value Added* by PWC in 2011. This study used a wider range of activities, including distribution and downstream products. Employment multiplier – 4.18
- *The Contributions of the Natural Gas Industry to the US National and State Economies* by IHS in 2009. Study focussed on natural gas only, including upstream and pipeline activity, as well as construction of offshore platforms. Employment multiplier – 4.54
- *Updated Employment Multipliers for the U.S. Economy* in 2003 by Josh Bivens of the Economic Policy Institute. Study on the wider economy but with breakdown for petroleum and natural gas. Employment multiplier – 1.8
- *Energy for Economic Growth*, a 2012 report by the World Economic Forum in partnership with IHS CERA. Employment multiplier for Deepwater oil and gas – 3.0, for unconventional gas – 3.2 and for unconventional oil – 4.1

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