

11 Quick Land Workflows

for Uncovering Better Opportunities

Oil and gas land and lease acquisition is complicated, and you never have all the answers. When you're faced with a myriad of questions about the leasing picture and thinking through several ideas, you need quick answers to determine which ideas make economic sense to pursue.

IHS Markit U.S. Land Data provides those rapid insights.

This guidebook outlines the workflows you can use to find opportunities faster, using data from IHS Markit and our Land Studio application.

To learn more or request a demo in your AOI, contact us at www.ihs.com/usland.

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Workflow #1:

Identify current leaseholders in an AOI

The most common workflow using our land data is to identify the leaseholders in a particular area of interest (AOI). Because IHS Markit Land Data has assignments you are able to identify the current and correct lease holders. You can query based on location and identify leaseholders in an area, export the spatial data for further interrogation, create a variety of reports, export the leases into a spreadsheet.

You can use Land Studio to view summary fee lease layers such as the top leaseholder or top ten leaseholders on a section or tract level.

IHS Markit has more than 1.3 million leases in its database. Of those, over 740,000 have been assigned, many of them multiple times.



Workflow #2: Identify assignments and joint ventures

In today's competitive market, leases trade hands frequently. Without assignments, you wouldn't know your competition, or truly know where your opportunities exist. The majority of oil and gas leases in Land Studio are assigned, with many leases assigned multiple times.

With IHS Markit data you can easily query which leases have been assigned, query based on a particular assignor or assignee, and determine the current leaseholder. You are able to create reports showing who is assigning to whom or create detailed reports showing the chain of assignments on leases. Easily identify companies with joint ventures by reviewing assigned leases to compare partial assignments and multiple leaseholders on the same lease.

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1	Leases Assigned in Reeves County, Texas Since January 1, 2014									
2	Assignor	Assignee	Lease Assigned							
3	BROWNING OIL CO INC	J CLEO THOMPSON AND JAMES CLEO THOMPSON JR L P	556							
4	BROWNING OIL CO INC	THOMPSON 2016 ACQUISITION LLC	556							
5	DELAWARE BASIN RESOURCES LLC	OXY USA INC	474							
5	CHESAPEAKE EXPLORATION LLC	SWEPILP	466							
7	ARCADIA RESOURCES L P	SWEPI LP	450							
8	LARCHMONT RESOURCES LLC	SWEPI LP	450							
9	JAMESTOWN RESOURCES LLC	SWEPILP	450							
0	BHP BILLITON PETROLEUM PROPERTIES NA LP	SILVERBACK EXPLORATION LLC	450							
1	COG OPERATING LLC	CLAYTON WILLIAMS ENERGY INC	362							
2	CLAYTON WILLIAMS ENERGY INC	COG OPERATING LLC	312							
3	CLAYTON WILLIAMS ENERGY INC	CHESAPEAKE EXPLORATION LLC	298							
4	BROWNING OIL CO INC	MDC REEVES ENERGY LLC	285							
5	RED WILLOW PRODUCTION LLC	MDC REEVES ENERGY LLC	285							
б	SAN SABA RESOURCES LLC	MDC REEVES ENERGY LLC	285							
7	DELAWARE BASIN RESOURCES LLC	BROWNING OIL CO INC	265							
8	DELAWARE BASIN RESOURCES LLC	OZARK EXPLORATION INC	262							
9	DELAWARE BASIN RESOURCES LLC	J CLEO THOMPSON AND JAMES CLEO THOMPSON JR LP	262							
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1	RED WILLOW PRODUCTION LLC	CENTENNIAL RESOURCE PRODUCTION LLC	247							
2	CINCO ENERGY MANAGEMENT GROUP LLC	RESOLUTE NATURAL RESOURCES SOUTHWEST LLC	245							
3	CINCO LAND AND EXPLORATION INC	RESOLUTE NATURAL RESOURCES SOUTHWEST LLC	243							
4	SAN SABA RESOURCES LLC	BROWNING OIL CO INC	231							
5	SAN SABA RESOURCES LLC	RED WILLOW PRODUCTION LLC	227							
6	BROWNING OIL CO INC	OXY USA INC	215							
7	J CLEO THOMPSON AND JAMES CLEO THOMPSON JR L P	OXY USA INC	215							
8	OZARK EXPLORATION INC	OXY USA INC	211							
19	ANADARKO PETROLEUM CORP	SWEPILP	196							

Workflow #3: Create competitor maps

Creating competitor maps helps you determine the current leasing positions of others. This allows you to evaluate a particular company for a potential joint venture or acquisition, or look at all the companies in your AOI. IHS Markit lease data, with its searchable attributes and lease polygons, enable you to create custom leaseholder maps based on your desired parameters. You can create custom spatial exports based on individual companies, multiple companies or all the current leaseholders in a particular area. You can also combine leaseholder names with other attributes such as expiration dates to further refine your competitor maps.



Workflow #4: Find potential open or unleased acreage

Discovering potential open acreage on private mineral lands requires both lease and production data from IHS Markit. By combining spatial data for fee leases with spatial data on well production, you can get a visual of potentially open private or fee acreage.

Identifying potential open or unleased acreage on federal and state land and minerals can be determined using several different spatial layers. Open or unleased federal and state minerals can be identified by overlaying the active federal and state leases spatial layers on top of the federal and state minerals, respectively. Where no active leases cover federal and state minerals you have potential open acreage for leasing, barring national parks, wilderness areas and federal stipulations that may prevent leasing.



Workflow #5: Find potentially expiring leases

IHS Land Studio users can filter leases to find desired expiration date timeframes to pinpoint when leases are potentially expiring.

In the Rocky Mountain states, operators file affidavits of production to indicate if a lease is held by production (HBP). IHS Markit collects affidavits of production and utilizes them to determine if a lease is HBP.

In the Mid-Continent and Texas, operators don't file affidavits of production. In order to get a visual representation of potentially expiring leases in a desired timeframe, simply overlay the identified expiring leases with the current IHS Markit production data.

If a lease is past its expiration date, but there is current production reported for the lease, then the lease is likely not expired. Other items to consider when determining potentially expiring acreage are drilling units, pooling agreements, depth restrictions and spacing orders that may affect the current status of a lease.

Identifying expiring federal oil and gas leases is simple. The active federal oil and gas spatial layer provided by IHS Markit contains two attributes designating if a lease is HBP. In the Bureau of Land Management (BLM) case files, there are actions associated with a lease indicating if a lease is HBP. The HBP attribute is included when one of these actions is encountered. The active federal oil and gas leases layer also has both expiration date and year.

With these additional attributes, you can readily find expiring leases over a specific timeframe.





Workflow #6: Minimize courthouse research time

Using the right data and tools, you can investigate the majority of ideas quickly by sorting through massive amounts of land data at your desktop– ultimately to decide whether to proceed with more in-depth analysis.

Detailed courthouse research is unavoidable at some point in the leasing processes. If courthouse work is warranted, you can minimize the broker time by providing brokers with mineral owner names and addresses, source reference documents of leases, assignments and other documents and other attributes.

Once the desired AOI is identified you can create maps, export lease data to spreadsheets or create detailed lease reports which will facilitate more efficient courthouse research.

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Workflow #7: Recognize under drilled-acreage

Some companies may have desired acreage positions but don't have the financial resources to drill wells. In order to hold onto their leases, their only viable strategy may be to enter into a joint venture. By targeting specific companies and their acreage, you can identify companies potentially interested in joint ventures or being possible acquisition targets.

You can identify under drilled acreage by combining IHS Markit lease, well and production data. By overlaying the three spatial layers, you can not only see drilled acreage blocks but also those that have the potential for additional drilling and exploitation.



Workflow #8: Distinguish lease depth restrictions

In areas with multiple producing zones, identifying depth restrictions is crucial to understanding the current leasing positions of your competi-tors. In the search for "stacked pay" you are able to identify which leases have depth restrictions that could either provide or limit opportunities.

IHS Markit captures lease depth restrictions along with the lease terms and conditions. You can query leases based on whether they have depth restrictions or not. Once you identify which leases have depth restrictions, you can create a detailed report which contains the actual depth restriction information, or create a spatial layer identifying which leases have depth restrictions.

Workflow #9: Pinpoint new activity and trends

Discovering and researching new activity and trends helps you understand competitor activity and formulate strategic direction. With Land Studio, you can create custom queries to dissect leasing and assignments based on timeframes, activities, companies and specific AOIs. By saving custom queries, AOIs and bookmarks in IHS Land Studio, it is easy to identify trends and new activity. You can further analyze your custom queries by creating maps and a variety of reports and exporting them to Excel.

Workflow #10: Discover BLM and state upcoming lease sale parcels and lease sale results

Land Studio contains upcoming lease sale announcements for both federal and state lease sales and lease sales results. To help in your pre-sales and bidding strategy, create reports and exports to quickly calculate average price-per-acre over various timeframes to illustrate trends.

It's also easy to visualize sale parcels next to historical sale price trends to get an estimate of present sale prices. Downloading spatial data containing upcoming sale parcels and the sale results for the previous year allows you to overlay sale parcels on geologic maps to help evaluate their potential.

Spatially overlay the upcoming sale parcels, the historical sale results, and your present acreage position to see if the sale parcels fit operationally with your current position or plans.



Workflow #11: Research BLM records

Land Studio contains the complete historical BLM database of Use Authorization of federal lands managed by the BLM. This includes oil and gas leases, units, participating area, communitization agreements, right-of -ways, coal mines and leases and all other BLM case types. You can query on virtually any case attribute including serial number, case type, leaseholder, expiration date, case action type, disposition and much more.

Land Studio gives you the ability to quickly query, create reports, including serial register pages and spatial exports. You can also save queries and bookmarks. If you have a serial number, you can quickly create a Serial Register Page report utilizing Land Studio's Rapid Report capability.

Common workflows made more efficient

- 1 Identify current leaseholders in an AOI
- 2 Identify assignments and joint ventures
- 3 Create competitor maps
- 4 Find potential open or unleased acreage
- **5** Find potentially expiring leases
- 6 Minimize courthouse research time
- 7 Recognize under-drilled acreage
- 8 Distinguish lease depth restrictions
- 9 Pinpoint new activity and trends
- Discover upcoming BLM and state lease sale
- ① Research BLM records

Conclusion

Oil and gas leasing is complicated. IHS Markit data and Land Studio allow you to interrogate vast amounts of data to qualify opportunities at the velocity the business demands. The combined strengths of IHS Markit data and the Land Studio application allow you to do just that.

To learn more or request a demo in your AOI, contact us at www.ihs.com/usland.

For more information www.ihsmarkit.com

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About IHS Markit

IHS Markit (Nasdaq: INFO) is a world leader in critical information, analytics and solutions for the major industries and markets that drive economies worldwide. The company delivers next-generation information, analytics and solutions to customers in business, finance and government, improving their operational efficiency and providing deep insights that lead to well-informed, confident decisions. IHS Markit has more than 50,000 key business and government customers, including 85 percent of the Fortune Global 500 and the world's leading financial institutions. Headquartered in London, IHS Markit is committed to sustainable, profitable growth.