 PetroDE has added normalization options and projection parameters to Decline, Cumulative, and Combined Mean Projection charts. Our new type curves allow you to:

- Quickly compare different areas,
- Characterize uncertainty in well performance, and
- Look at more wells than ever before

This example workflow demonstrates these new features.

Perform your desired search

Perform a Super or Advanced Search on the area, formation and time period you are interested in. For this example, use Super Search on the IHS Production Data. Enter **San Andres** in the search box and select **Past Two Years** from the time period drop-down menu**.**   This returns results for the San Andres Formation, and Reservoir. We are interested in the Formation, which is selected by default.

Next, go to the **Analysis** card and select **Refine**. In the **Choose Column** box, type **Completion Date.** Restrict the completion date to 2016.

Now restrict the result further to horizontal wells. In the **Choose Column** box, type **Hole Direction** and select **Horizontal**.
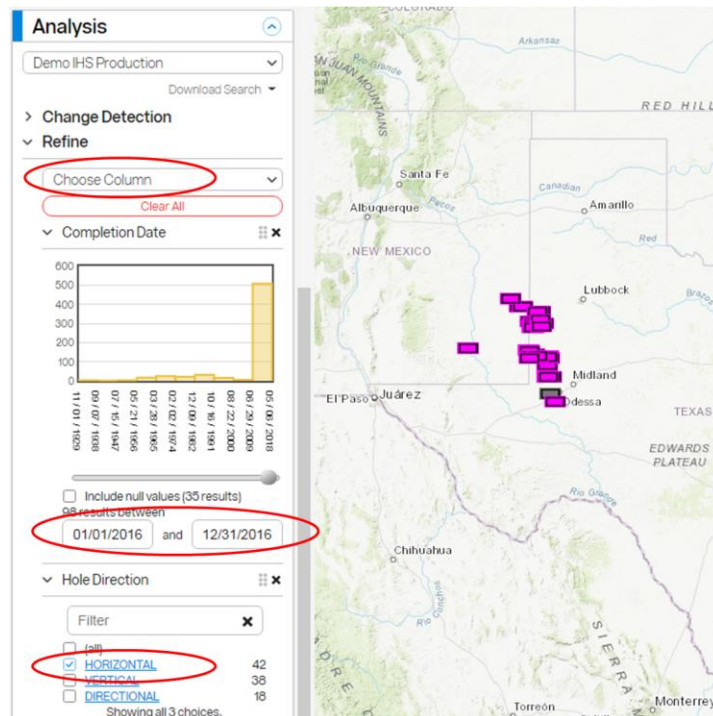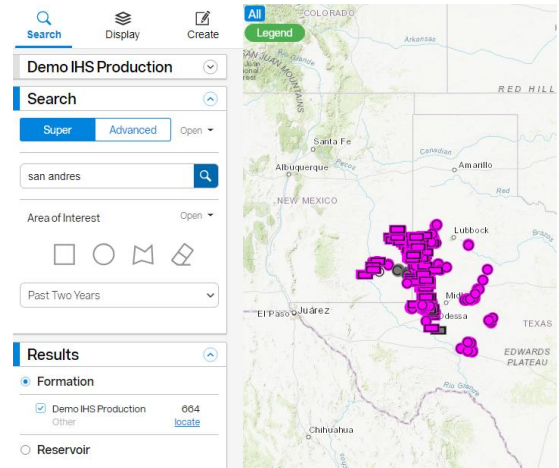
Make a monthly production chart

Go to the **Analysis** card and select **Charts -> Time Series -> Monthly Production**.   Select **Type = Decline, Production = Liquid**, and **Group By = Operator**. Click the **Display** button. The result is shown below.
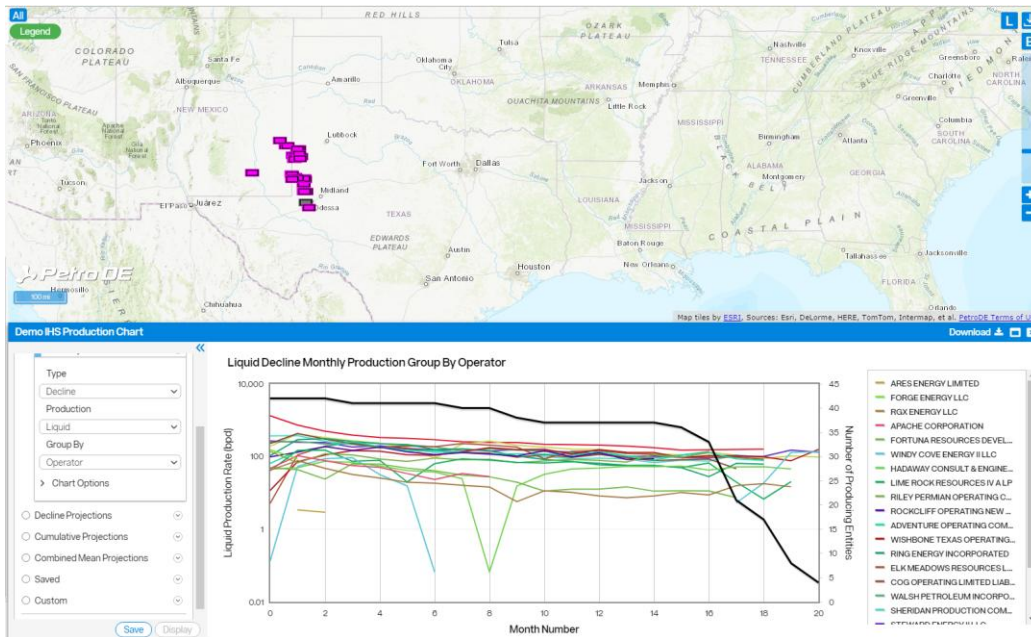
Notice that the Number of producing entities is fairly constant for 15 months. You can group the individual production streams by several methods. Grouping by Operator in this example shows us the performance of the various operators in this formation for the completions in 2016. PetroDE's subsearch feature lets you click anywhere on the chart and see the corresponding well on the map. For example, if we click on the red line for COG Operating, we can see it highlighted on the map in New Mexico. When we hover over the data line at a vertical grid line, the stats are displayed.
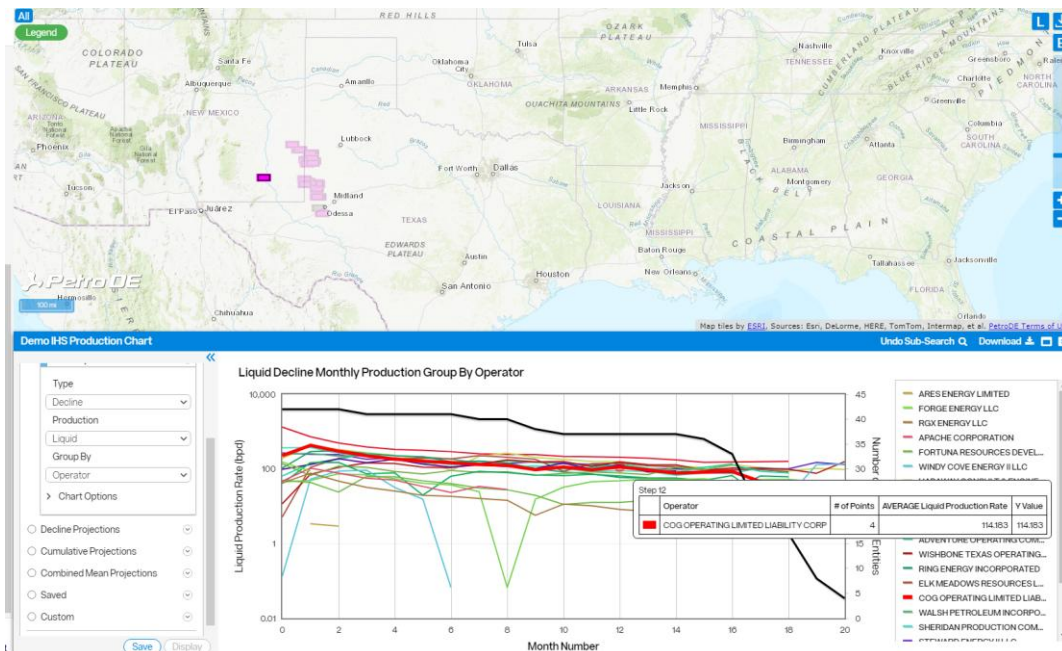
Make a decline projection chart with our NEW FEATURES

We have added several normalization options, as well as the ability to set the b factor optimization range or set it to an exact value. You can also set the criteria for abandonment and choose the rate where the decline changes from hyperbolic to exponential.

Example using new features:

Go to **Charts -> Time Series -> Decline Projections**.   Select, the default **Arps** equation and **Liquid** production stream. Next, open the **Normalization** drop down menu and select **Peak Month**.   Before selecting to normalize by Perforation Length, we need to refine our results. Go to the **Analysis** card and select **Refine**. In the **Choose Column** box, type **Perforation length**. From the mini-graph, we note the mode of the perforation lengths is about 4000 feet .
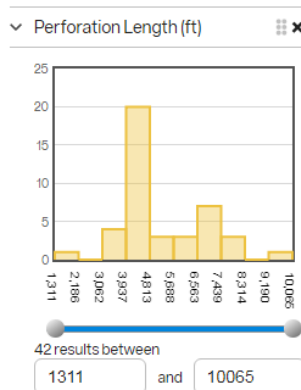

Return to the chart UI, and under **by Perf. Length**, enter **4000**. Note that it is easy to normalize to the mode or to any perforation length that is appropriate for your analysis.

Next, open the **Projection Parameters** drop-down menu. Keep the defaults to let PetroDE optimize the b factor in the Arps equation between 0 and 2.   Click the **Display** button. Note that you can also opt to change the b factor to one that you know would better describe declines in this area. Simply click on **Exact Value** and type in the desired b factor value.
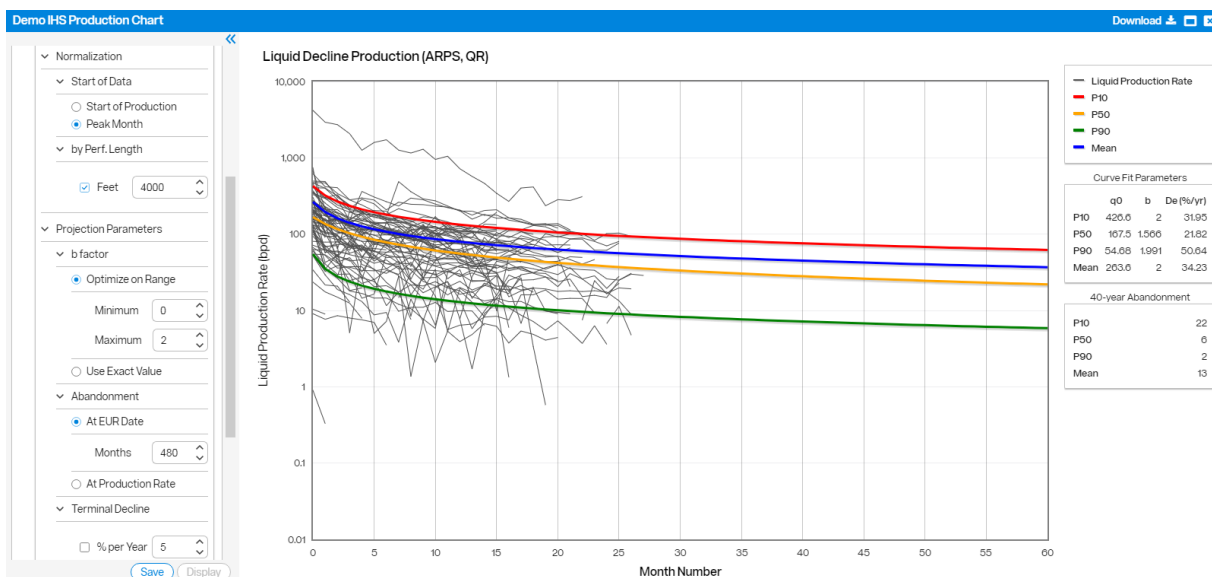
To look at conditions near the end of the life of production, you can either choose the EUR date by typing the number of months to abandonment in the Months box, or choose the production rate at which to abandon. To see the graph at abandonment time, open **Chart Options,** scroll down to **Limit X Axis** and move the slider all the way to the right.
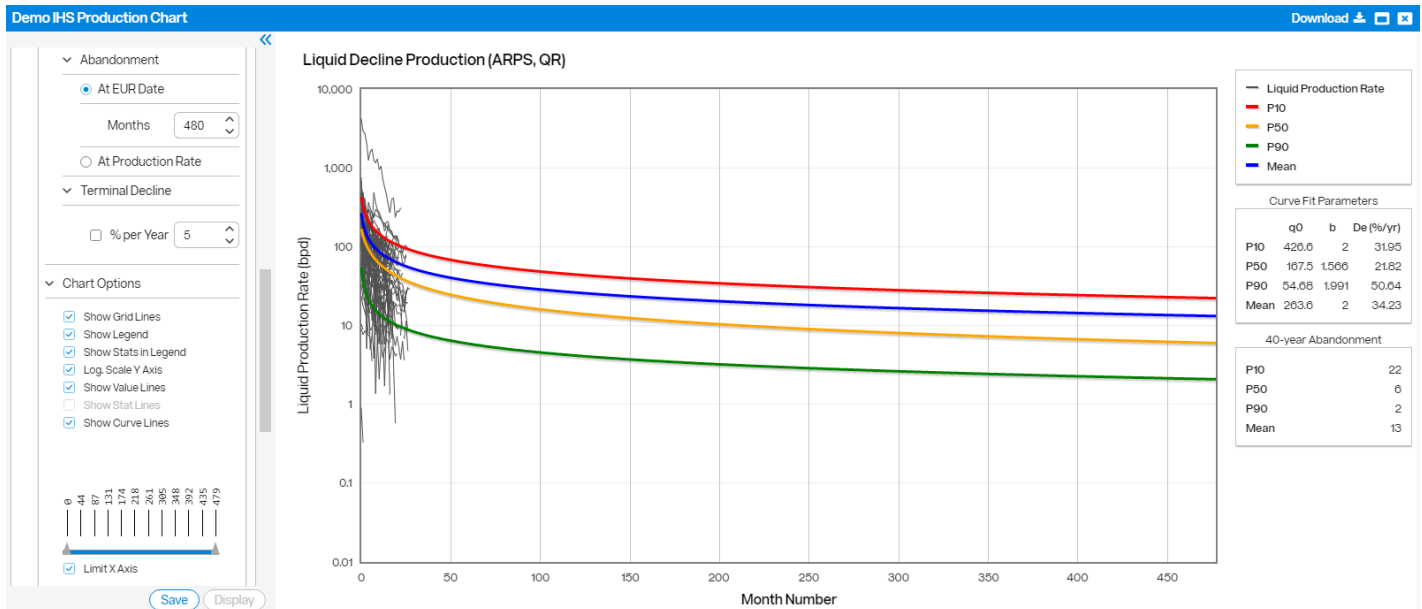
The third (Abandonment) card on the right now shows the month and rate at the abandonment criteria set.

Now open **Terminal Decline** to add it to the graph. Select the default **% per Year** and click **Display**. The month at which the calculations convert to the exponential decline rate selected is listed in the stats box. To see the exact rate at the conversion point. Roll over the dot on the graph.
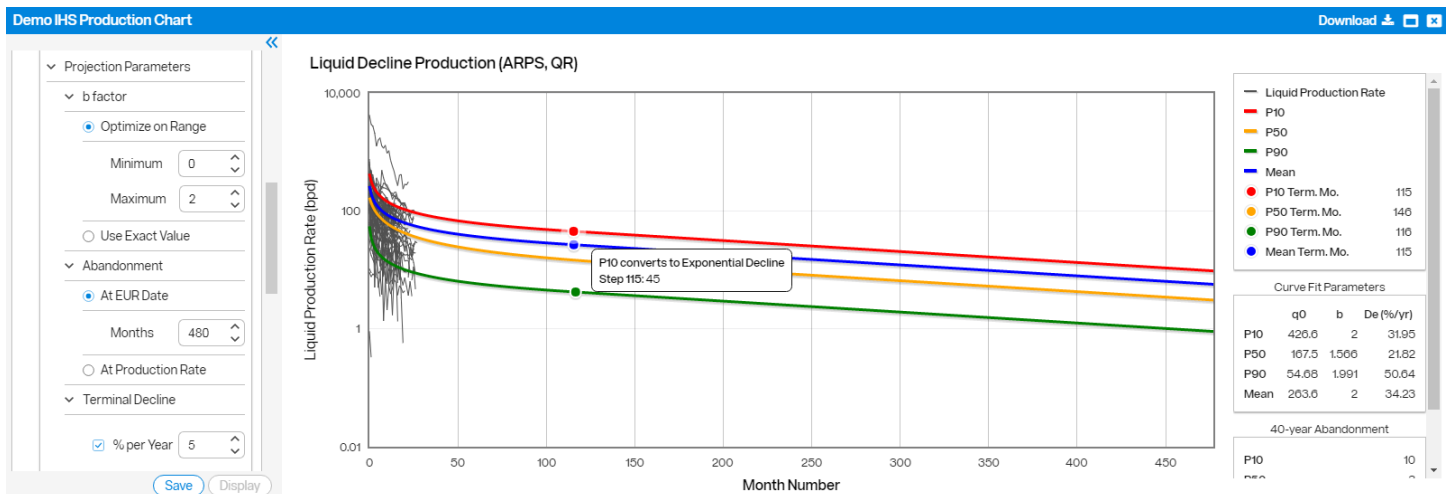
Look at cumulative production

Scroll down the Chart UI and select **Cumulative Projections**. Notice that all the parameters you set have propagated to the Cumulative calculations. Make any changes if needed, and click **Display**.
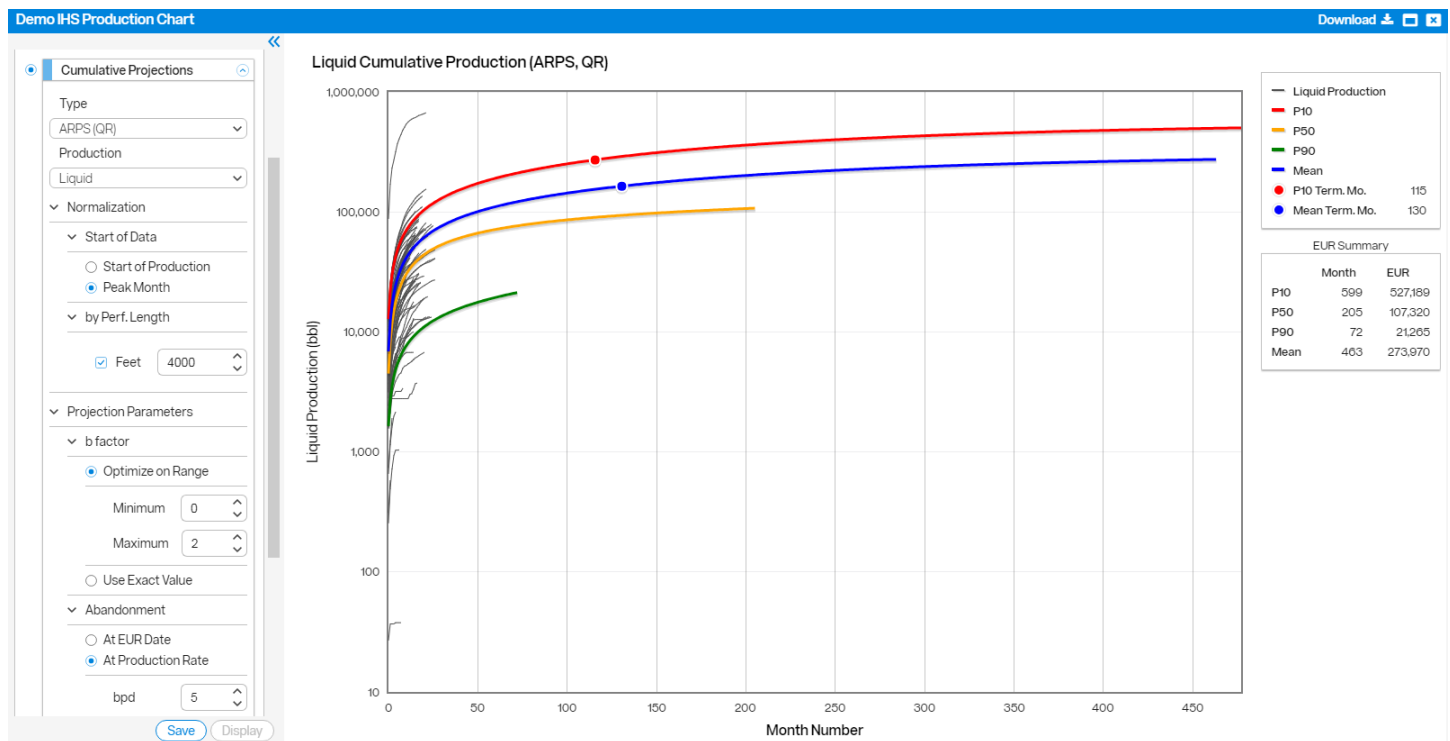
To investigate any well on the graph, simply click on the graph and the well will location will be highlighted on the map as shown in the figure below.