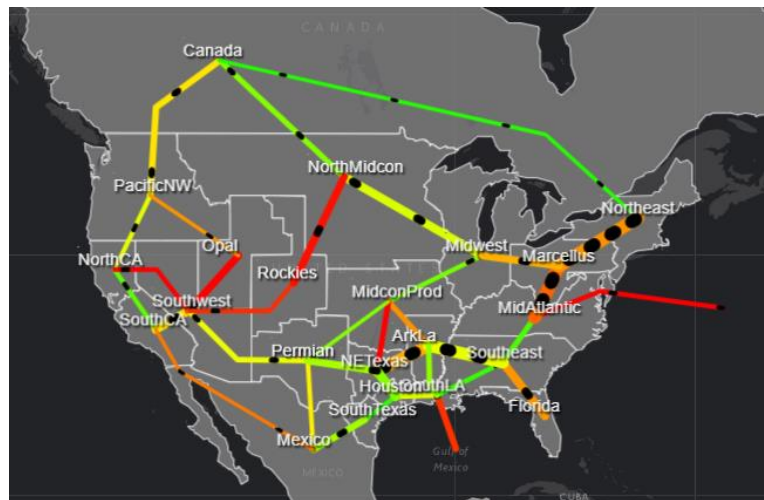


DI OptiFlo User Guide

With **DI OptiFlo** you can connect the dots between natural gas supply and demand to understand the optimal value between where gas is produced and supplied. This guide covers the following topics:

- **Main Page Overview**
- **Map View**
- **Map View Options**
- **Map View Settings**
- **Model Inputs**
- **Model Input Workflows**
- **DI ProdCast Supply Scenario**
- **Custom Scenarios**
- **Macro Outlooks**
- **Export Options**

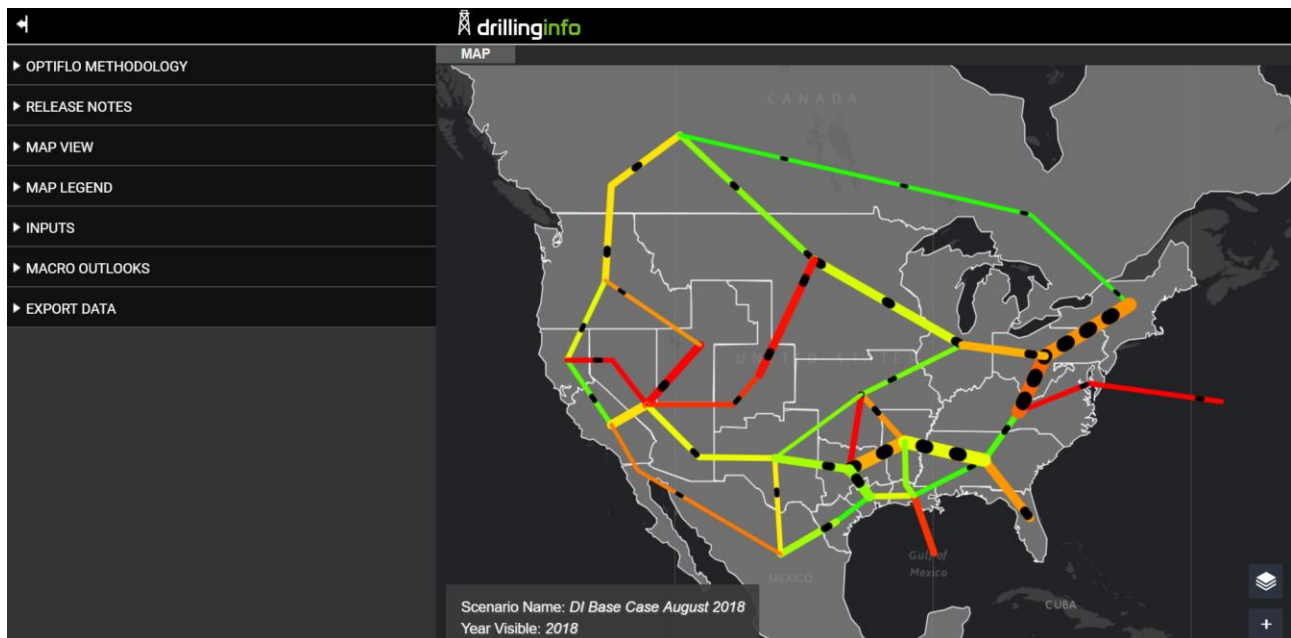


Main Page Overview

Once you launch **DI OptiFlo** from the **Drillinginfo Gallery**, the **Map View** is visible on the right side of the page with the **Main Menu** options along the left panel.

The **Map View** displays the output of the selected model while the main menu options provide access to various display settings, model inputs, and outputs. The **Main Menu** options include the **Methodology**, **Map View**, **Map Legend**, **Inputs**, **Macro Outlooks**, and **Export Data**.

By **default**, before making any updates or customizations to the model, you will see the **latest supply and demand forecast**.



Map View & Map View Options

The **Map View** tab displays the output of the model. This view includes both:

- **Visual Map:** The map displays high level information including regional supply and demand and regional flows; capacity and utilization are available directly in the map itself.
- **Detailed Information:** This information can be accessed by clicking on a region or path on the map. It includes:
 - **Flow Type:** inflow, outflow, flowthrough
 - **Pipeline Level Flow**
 - **Historical Information**

Hover

- Hover over a specific region to learn more about its supply and demand.
- Hover over a gas path to learn its flow and capacity for the selected scenario and year.

Gas Paths

Gas Paths are the lines connecting two regions. Only adjacent (neighbor) paths are shown. Long haul paths are available in the flow export file or under the map view after selecting a region.


Color	Representation
Red	Flow is approaching capacity
Green	Plenty of capacity available

The **width of the gas path** represents the amount of flow moving in the path. **The wider the path the more flow** that is moving through it.

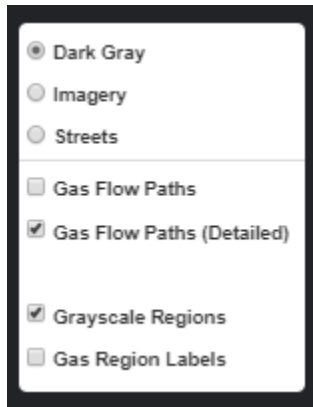
Model Detail

Located in the bottom left corner of the **Map View**, you can see the applied **Scenario Name**, **Year**, and the **Heat Map** applied.

Layer Manager

Use the **Layer Manager** to switch the base map view. By default, the map is set to a **dark gray background, regions in grayscale, and detailed gas flow path**. You can manage and update these options using the layer manager. 

Simply **select** or **deselect** what you want to turn on or off.



Region Selection

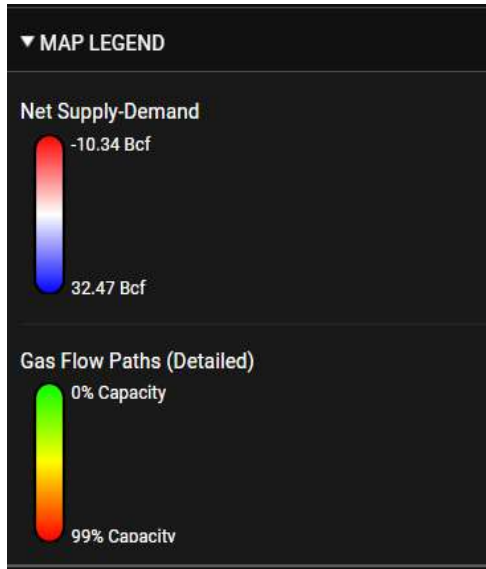
By turning on the **Gas Region Labels** through the **Layer Manager**, you can easily view and select a specific region you are interested in. Learn more about region selection [here](#).

Zoom

Zoom in and out using the controls in the bottom right corner of the page or your mouse.

Map Legend

The map legend is available under the **Main Menu** options. Quickly expand the panel in one click to view the legend.



Map View Settings

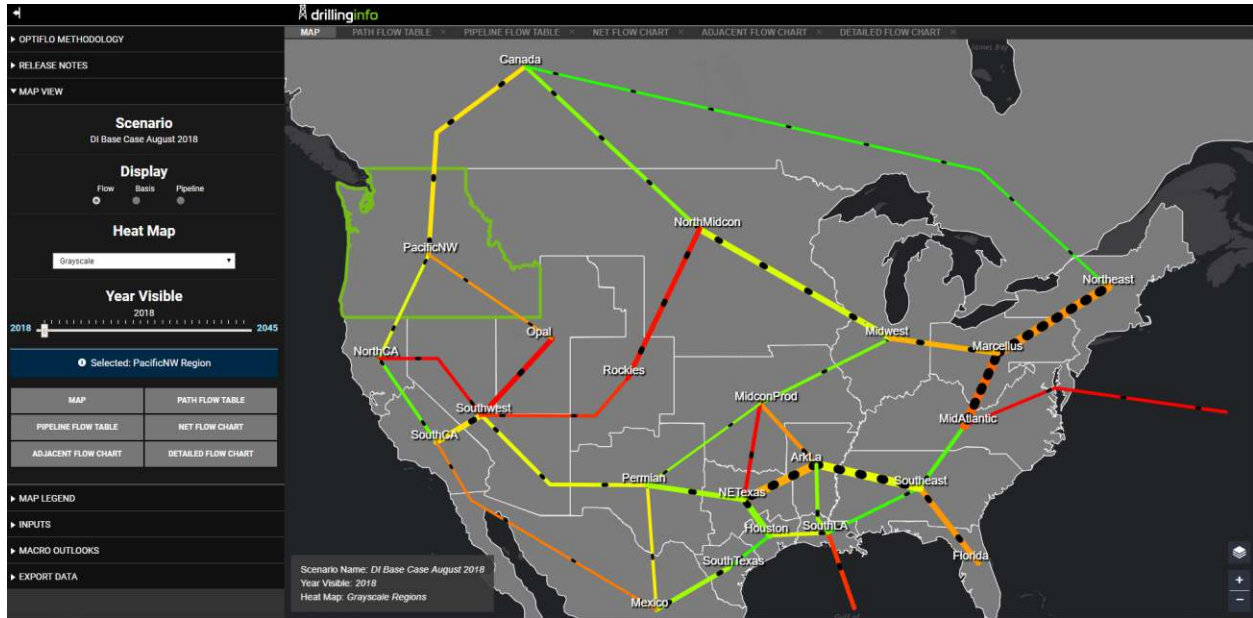
The **Map View** settings are accessible on the left side of the page under the **Main Menu** options. Expand the panel in one click to access the **Scenario Name**, **Display**, **Heat Map**, **Selected Region or Path**, and **Region or Path Details**.

- **Scenario Name** - Displays name of current model displayed on the map view.
- **Display** - Includes flow, basis, pipeline. Flow is selected by default; the other options are planned for future development.
- **Heat Map** - Includes Supply, Demand, Net Supply-Demand, Grayscale.
- **Selected Region or Path** - Displays name of the region or path selected on the map view.
- **Region or Path Details** – Provides access to detail tables with information specific to the selected region or path. Learn more in the next two sections - **Region Detail Options** and **Path Detail Options**.

Region Detail Options

Once you select a region on the map, the **region border highlights green** and six new tabs are available under this **Selected Region** section of the **Map View** panel. These tabs also become available at the top of the map.

In the example below, the **PacificNW** region is selected. The region border is now green. The new detail tables are available under the **Map View** panel and above the top of the map.



Selected Region Detail Tables

Learn more about the detail tables available after you select a region.

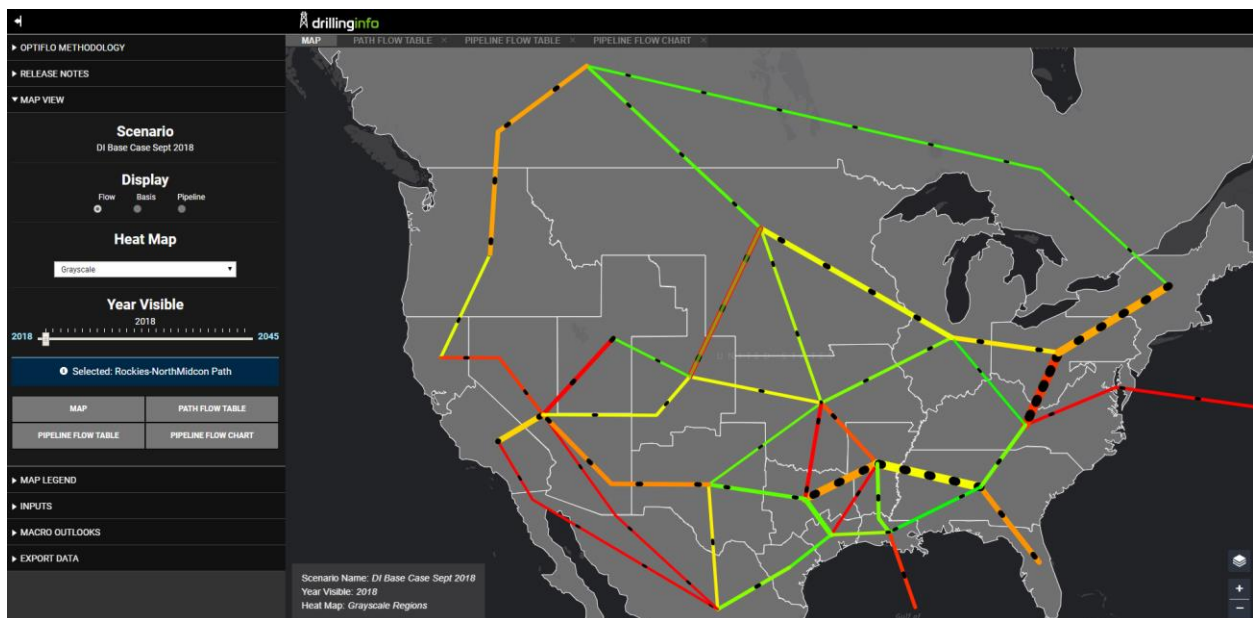
Name	Description
Map	Visual that displays model output. The region selected is also highlighted with a green outline.
Path Flow Table	Displays all flows going in, out, and through the selected region, categorized by their tariff (can be long-haul).
Pipeline Flow Table	Displays all flows going in, out, and through the selected region, categorized by pipeline.

Net Flow Chart	Displays the net of all flows into and out of the selected region.
Adjacent Flow Chart	Displays all inflows, outflows, and flowthroughs between the selected region and its immediate neighboring regions.
Detailed Flow Chart	Displays all inflows and outflows by ultimate origin or destination. Flowthroughs are filtered out.

Path Detail Options

Once you select a gas path on the map, it will highlight green (and remain outlined in the original gas path color) and four new options become available under the **Selected Path** section of the **Map View** panel. These options also become available as tabs located at the top of the map.

In the example below, the **Rockies to North MidCon** gas path is selected. The gas path is now outlined in red (the original gas path color) and highlighted green. The new detail tables are available under the **Map View** panel and above the top of the map.



Selected Path Detail Tables

Name	Description
Map	Visual that displays model output. The path selected is highlighted in green and outlined with the original path color.
Path Flow Table	Displays all flows going through the selected arc segment, categorized by their tariff (can be long-haul). Flows going in the opposite direction of the net are displayed in parenthesis.
Pipeline Flow Table	Displays all flows going through the selected arc segment, categorized by pipeline. Flows going in the opposite direction of the net are displayed in parenthesis.
Pipeline Flow Chart	Displays all flows on the selected arc by pipeline.


Model Inputs




This tab includes multiple tables for each of the inputs of the model that can be modified.

Input	Description
Path Capacity	All pipelines and paths included in this model.
Path Tariff	Fuel and commodity rates used for each pipeline and path.
Demand	Regional domestic demand including ResCom, Power, Industrial and Other (mainly Fuel). Mexico is also a demand input in the model and therefore available in this tab.
Supply	Regional dry gas production forecast. Canada is a supply region and included in this tab.
Fuel Price	The prices in this table are used to calculate incurred fuel tariffs for pipeline flows leaving each region. They do not impact supply or demand or have any other effects. The base case fuel prices use the last 12-month average regional price basis plus DI's henry hub price.

Model Input Workflows

How to Change Inputs

1. Click on the pencil icon  located in the first column of each row or click on any cell in the row to get started.
2. Type in the new numbers in the cell you want to modify. As you're editing the row will highlight green.
3. Click on the **check** to commit your changes.

	Pipeline	Start Gas Region	End Gas Region	2018 Capacity (Mcf/d)
 	Alliance US	Canada	NorthMidcon	1926880
	Alliance US	NorthMidcon	Midwest	1,284,404

Using Filters

Bulk changes to inputs can be made by using the **filters** at the top of the page.

PATH CAPACITY	PATH TARIFF	DEMAND	SUPPLY	FUEL PRICE	
Pipeline	All	Start Region	All	End Region	All
From	2018	To	2045	Percent	0
CLEAR FILTER		UNDO CHANGES		APPLY CHANGES	

Note the following:

- Multiple filters are available for **pipeline**, **start**, and **end regions** and vary by input.
- The **start** and **end dates** allow you to change to **1 year** or **a specified range**.
- Input changes can be made on a **percentage** or **absolute basis**. A **10%** change means volume will **increase by 10%** from current levels.

Same is true for absolute, if **-1,000,000** is typed, the **volume** will **decrease by 1 Bcf/d**.

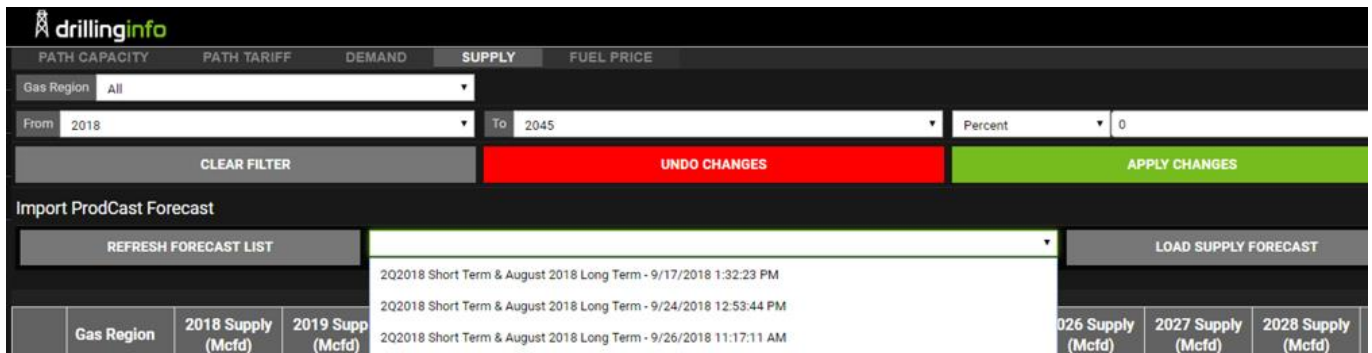
PATH CAPACITY	PATH TARIFF	DEMAND	SUPPLY	FUEL PRICE	
Pipeline	All	Start Region	All	End Region	All
From	2020	To	2045	Percent	10
CLEAR FILTER		UNDO CHANGES		APPLY CHANGES	

Supply Scenario from DI ProdCast

You can also change production directly in the **Supply Input Table** as explained in the above [Inputs](#) section. Additionally, production scenarios can be imported from **DI ProdCast tool**.

After you have run a scenario in **DI ProdCast**, click **Refresh Forecast List**, and the forecast will show up in the list. The name of the scenario is based on date and time run. Select your scenario and **Load Supply Forecast**. Scenario can be renamed after selected.

Selecting DI ProdCast Scenario



The screenshot shows the 'drillinginfo' interface with the 'SUPPLY' tab selected. It includes a 'Gas Region' dropdown set to 'All', 'From' and 'To' date pickers (2018 and 2045), and a 'Percent' dropdown set to '0'. Below these are buttons for 'CLEAR FILTER', 'UNDO CHANGES', and 'APPLY CHANGES'. The 'Import ProdCast Forecast' section features a 'REFRESH FORECAST LIST' button and a 'LOAD SUPPLY FORECAST' button. A dropdown menu is open, displaying a list of scenarios with their respective timestamps. Below the list is a table with columns for 'Gas Region', '2018 Supply (Mcf)', '2019 Supply (Mcf)', '2026 Supply (Mcf)', '2027 Supply (Mcf)', and '2028 Supply (Mcf)'.

Gas Region	2018 Supply (Mcf)	2019 Supply (Mcf)	2026 Supply (Mcf)	2027 Supply (Mcf)	2028 Supply (Mcf)

After Selecting the DI ProdCast Scenario

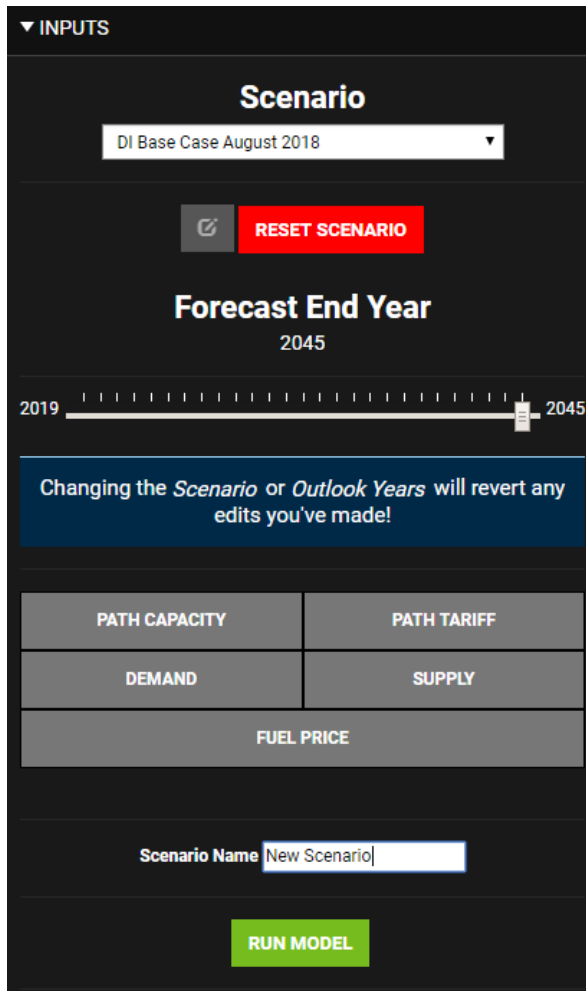


The screenshot shows the 'drillinginfo' interface with the 'SUPPLY' tab selected. It displays a dropdown menu with the selected scenario: '2Q2018 Short Term & August 2018 Long Term - 9/17/2018 1:32:23 PM'. Below the dropdown are two buttons: 'LOAD SUPPLY FORECAST' and 'RENAME FORECAST'.

Custom Scenarios

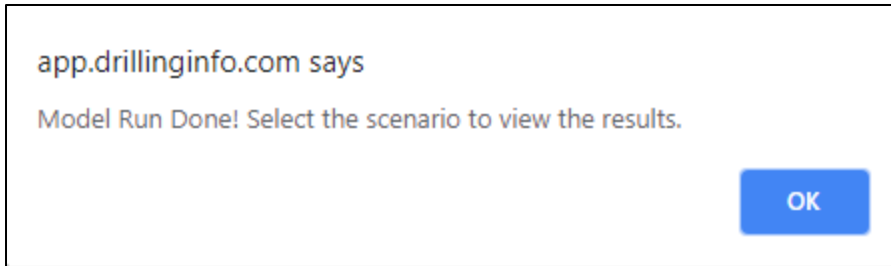
You can also create custom scenarios as necessary. To do this:

1. First make the necessary [input changes](#).
*Once an input is changed, the option to **name a scenario** becomes available on the **left side panel**.*
2. Type a scenario name and click **Run Model**.
*It takes about **30 seconds** for the model to run.*

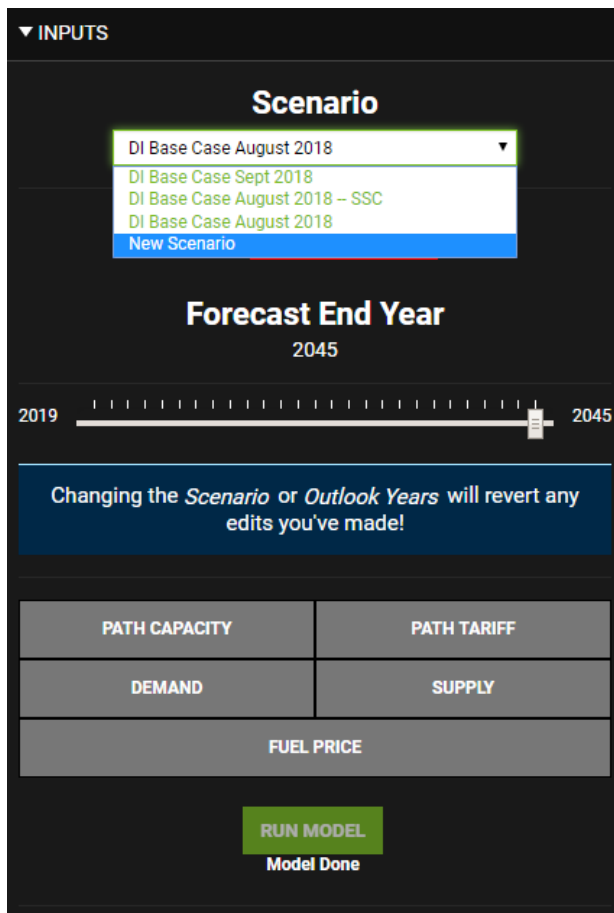


The screenshot shows a dark-themed interface for creating custom scenarios. At the top, there is a dropdown menu labeled "Scenario" with the current selection "DI Base Case August 2018". Below this is a "RESET SCENARIO" button with a refresh icon. The "Forecast End Year" is set to 2045, with a slider below it ranging from 2019 to 2045. A blue warning box states: "Changing the Scenario or Outlook Years will revert any edits you've made!". Below the warning box are five input fields: "PATH CAPACITY", "PATH TARIFF", "DEMAND", "SUPPLY", and "FUEL PRICE". At the bottom, there is a "Scenario Name" field containing "New Scenario" and a green "RUN MODEL" button.

3. Message **Model Run Done!** pops up at the top of the page.
4. Click **OK**.



NOTE: Make sure to select the **scenario** from the drop-down in the **inputs tab** to view the **output of your model**.



▼ INPUTS


Scenario

DI Base Case August 2018 ▼

- DI Base Case Sept 2018
- DI Base Case August 2018 – SSC
- DI Base Case August 2018
- New Scenario

Forecast End Year

2045

2019  2045

Changing the *Scenario* or *Outlook Years* will revert any edits you've made!

PATH CAPACITY	PATH TARIFF
DEMAND	SUPPLY
FUEL PRICE	

RUN MODEL
Model Done

Macro Outlooks

US and regional **supply**, **demand**, and **LNG** are available in the **Macro Outlooks** tab for the forecasted period (as selected in the inputs tab). These values correspond to the model inputs (inputs tab supply and demand tables). Learn more about each option below:

Name	Description
Supply-Demand Balance	<p>US total supply (Production + Canada), US total demand (Domestic + Mexico), LNG exports.</p> <p>LNG exports = total supply minus total demand. LNG is the balancing item of the model.</p>
Sector Demand Outlook	<p>US total demand by sector: ResCom, Power, Industrial, Mexico (pipeline exports), Other.</p>
Regional Supply	<p>Dry gas production by region.</p>
Regional Demand	<p>Total demand by region.</p>
LNG Regional Outlook	<p>LNG exports by supply region. For example, South LA (Sabine Pass), MidAtlantic (Cove Point), etc.</p>

Export Options

If you need to export any of the tables, use the export panel under the main menu options to download one or more of the following exports.

- **Pipelines:** includes a full list of pipelines included in the model. Short name (displayed in DI OptiFlo tables) as well as the full pipeline name.
- **Supply:** regional production by year.
- **Demand:** regional demand by sector and year.
- **Flow:** flow and capacity by start and end region at the pipeline level for each of the forecasted years.