

# METHODOLOGY AND SPECIFICATIONS GUIDE

## The Eagle Ford Marker: Rationale and methodology

(Latest Update: October 2012)

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## THE EAGLE FORD MARKER: RATIONALE AND METHODOLOGY

Platts, the energy information division of The McGraw-Hill Companies, expanded its coverage of the US domestic crude oil markets in October 2012, by launching an innovative new assessment, the Eagle Ford Marker (EFM). This document explains the methodology behind the new assessment, and provides important background behind Platts' coverage of the US' rapidly growing crude oil markets.

The US crude market is undergoing enormous change. Extensive exploration and production activity in new various crude oil shale plays such as Eagle Ford and Bakken has boosted domestic crude output for these new light sweet crudes. A paradigm shift is already well underway, with substantial decreases in light sweet crude imports into the US Gulf Coast and an increase in condensate/crude exports by way of sales to foreign buyers of the naphtha and distillates generated via condensate splitting and normal refining.

At the same time, these structural shifts in the market will likely result in the growth of other pricing alternatives to WTI as the singular benchmark for Americas crude in the next two to three years. Eagle Ford, for instance, is sometimes sold referenced to Louisiana Light Sweet crude prices. Rising Canadian and Bakken production, in tandem with a shortage in exit pipeline capacity from the US midcontinent to the US Gulf Coast, has pushed WTI into unprecedented weakness relative to US Gulf Coast domestic grades and the international crude market.

In response to these developments, Platts, the energy information division of The McGraw-Hill Companies, launched two price assessments on May 3, 2010 for Bakken Blend crude oil, representing the light sweet crude produced from the Bakken Shale Formation in the North Dakota/Montana/ Saskatchewan/Manitoba region – one assessment for crude traded at the Enbridge's terminal at Clearbrook, Minnesota and into Kinder Morgan's terminal at Guernsey, Wyoming. Bakken was the first of the shale crude plays in North America to experience a production boom, with crude output out of the Williston Basin (where the Bakken shale formation is located) jumping from just over 180,000 b/d in 2008 to nearly 675,000 b/d in the summer of 2012.

Eagle Ford was the next shale formation to experience this boom, with production rising from 200,000 b/d in late 2011 to more than 600,000 b/d in September 2012 as estimated by Platts, less than nine months later. Both the Bakken and the Eagle Ford shale plays are generally expected to breach 1 million b/d each by 2016 if current production growth continues, dramatically shifting the supply/demand dynamics in the North American crude markets as refiners substitute these shale crudes for Brent-related sweet import cargoes.

While production of Eagle Ford continues to rise and find new buyers amongst US refineries, the quality of Eagle Ford remains inconsistent due to geological issues. Texas refiners reported a variance in the quality of Eagle Ford from 42 to 60 degrees API in 2011, when the majority of Eagle Ford deliveries were received via truck. In 2012, pipeline capacity is now in place to Houston and Corpus Christi from the south Texas shale play and is growing, and waterborne loadings of Eagle Ford in Corpus Christi have started – moving to other Gulf Coast refineries via barge or to US Atlantic Coast refineries via US-flagged tankers. The start-up of this pipeline/waterborne exit capacity has also provided an outlet for condensate.

The quality of the Eagle Ford production stream remains variable. The nature of the shale play itself is one factor, as the quality of the crude varies along the "oil" window in the northern part of the Eagle Ford shale, and how close leases and rigs

### Texas Light Sweet Crude Imports



Source: EIA

are to the adjacent "wet gas/condensate" window. In addition, Texas refiners have expressed a need to run crude less than 50 API, which incentivizes the blending of heavier Eagle Ford crude streams with condensate. This has resulted in Eagle Ford crude becoming more naphthenic and also varying in product yields depending on the level of condensate blending.

Due to this quality and yield variability inherent to Eagle Ford, Platts has decided to take a pioneering approach in its methodology development for an Eagle Ford crude assessment. The Platts Eagle Ford Marker (EFM) represents the value of a 47 degree API barrel of Eagle Ford crude oil, based on its product yields. To determine these yields, Platts has gathered a variety of Eagle Ford crude assays ranging from 40 degrees API to 62 degrees API from many sources. Platts analyzed the relative yields to extrapolate median yield percentages by volume for LPGs, light naphtha, heavy naphtha, kerosene, middle distillates, gasoil, and residual fuel oil.

The base of the Eagle Ford Marker, called Eagle Ford Yield, is calculated by applying these median yields for a 47 degree API crude to Platts US Gulf Coast LPG and refined product assessments. The details on these specific yields and the product assessments used are detailed in the methodology section.

A simple yield approach may result in relatively high calculated values in times of healthy refining margins, and the opposite in times of relative weakness in the value of refined products. To account for this, Platts compares the relative value of the Eagle Ford gross product worth to the gross product worth of a competing crude, and applies this relationship to the actual spot price of the competing crude in the observable spot market. This alternative spot crude creates a "safety net" for the Eagle Ford Marker value, to ensure that the published value is not overstated in times of strong refining margins, and understated in times of weak refining margins.

Platts has selected Light Louisiana Sweet, the local US Gulf Coast sweet crude benchmark, as the comparative variable for the Eagle Ford Marker. Most spot Eagle Ford trades use LLS as the basis, and the spot price of LLS provides a better reflection of US Gulf Coast supply and demand fundamentals for light, sweet crude than light, sweet crude oil delivered from West and North Africa.

Platts' analysis showed that spot market values for North Sea, West African, and Mediterranean light, sweet crudes appeared to be more reflective of European and Asian supply and demand fundamentals than trends in the US Gulf Coast. Rising

Eagle Ford demand has resulted in a reduction in light, sweet imports into Texas, as illustrated in the graph below.

For these reasons, Platts chose LLS as the competing crude in the calculation of Eagle Ford Marker, where LLS' gross product weight will be calculated using the same product prices as the Eagle Ford Yield. This LLS yield calculation will be subtracted from the Eagle Ford Yield value to establish a yield relationship. This yield relationship will be applied to the spot price of LLS to arrive at the Eagle Ford Marker assessment.

The details of the yield percentages and the methodology used to arrive at the Eagle Ford Marker and the Eagle Ford and LLS yield calculations are explained below.

### Eagle Ford Marker Methodology

The foundation of Eagle Ford Marker assessment is median product yield percentages extrapolated from a pool of Eagle Ford crude assays, gathered by Platts from a variety of sources. The assays sampled ranged from 40.1 degrees API to 62.3 degrees API. Since the temperatures for product distillation cuts can vary depending on the refinery, Platts decided to apply a consistent convention for these temperature ranges from the US Energy Information Administration that reflect the typical cuts for a US Gulf Coast refinery (see table below).

Based on this temperature cut convention and the analysis, Platts will use the yield percentages outlined in the table below in its calculation of the Eagle Ford Yield, a gross product worth calculation based on the value of refined products. To derive these percentages, Platts drew from a pool of Eagle Ford crude assay samples and extrapolated the median yields for a 47 API barrel of Eagle Ford crude.

These yield percentages are then applied to Platts LPG and refined product assessments to arrive at a gross product worth calculation for this Eagle Ford barrel. Platts reviewed its slate of Americas product assessments to determine which prices would comprise the Eagle Ford Yield. Platts has decided to use prompt assessments as the basis for the Eagle Ford Yield, with exceptions being the diesel (ULSD Colonial Pipeline) and jet fuel (Jet 54 Colonial Pipeline). Due to the prompt nature of the front pipeline cycle product assessments into the Colonial Pipeline as they approach scheduling day, Platts will use the second cycle assessments for this portion of the Eagle Ford Yield. The table below details the specific product assessments used in the yield calculation and each assessment's delivery/loading windows.

To derive the LLS, or comparative variable, yield calculation, Platts follows the same process as the Eagle Ford Yield, using the same temperature cuts from the EIA to arrive at yield percentages by volume based on recent LLS assays – primarily for a 38 API LLS barrel. The same product prices used to calculate the Eagle Ford Marker

**Table 2: Refined Oil Products Used In Eagle Ford Marker Assessment Table**

Product Category	Assessments	Loading/Delivery Timing
LPG (C1-C4)	Mont Belvieu Non-LST Propane (13.8%) Mont Belvieu Non-LST Isobutane (20.99%) Mont Belvieu Non-LST Normal Butane (64.75%)	"Any barrels" for current month, rolls to the next month two calendar days from month end.
Light Naphtha (C5+)	Mont-Belvieu Non-Targa Natural Gasoline	"Any barrels" for current month, rolls to the next month two calendar days from month end.
Heavy Naphtha	Naphtha Barges CIF Houston	5-15 days forward from publication date
Kerosene	Jet 54 Cycle 2 (Colonial Pipeline)	2nd prompt cycle, follows Colonial Pipeline schedule
Diesel	ULSD Cycle 2 (Colonial Pipeline)	2nd prompt cycle, follows Colonial Pipeline schedule
VGO	0.5%S VGO CIF US Gulf Coast	5-15 days forward from publication date
Residual Fuel Oil	USGC 3%S Fuel Oil	7-15 days forward from publication date

**Table 1: Eagle Ford Yields**

Product	Temperature (degrees F)	EF Yield (% vol)
LPG (C1-C4)	<85	1.13
Light Naphtha (C5+)	85-200	13.63
Heavy Naphtha	200-350	23.47
Kerosene	350-450	11.93
Diesel	450-650	21.08
VGO	650-1050	24.21
Residual Fuel Oil	1050+	4.47

**Table 3: LLS Yields**

Product	Temperature (degrees F)	EF Yield (% vol)
LPG (C1-C4)	<85	2.54
Light Naphtha (C5+)	85-200	7.58
Heavy Naphtha	200-350	16.58
Kerosene	350-450	12.40
Diesel	450-650	26.40
VGO	650-1050	27.30
Residual Fuel Oil	1050+	7.20

base yield are used to calculate the LLS yield. Platts welcomes market participants, industry experts, and stakeholders to provide feedback on these yields for LLS and/or to provide additional assays.

The relationship of the Eagle Ford Marker base yield and the LLS yield is calculated, and then applied to the outright spot price of LLS front-month as assessed by Platts. For example, the Eagle Ford Marker is \$100 and the LLS Yield is \$105. The relationship between Eagle Ford and LLS based on these yield calculations is -\$5/b. The LLS front-month price is assessed at \$100/b. Based on this spot price for LLS and the -\$5/b relationship between the yield calculations of Eagle Ford and LLS, the Eagle Ford Marker would be \$95/b.

### Eagle Ford Postings Average

In addition to the Eagle Ford Marker, Platts also began publishing a daily average of Eagle Ford postings from four companies: Sunoco, Plains, Flint Hills, and Enterprise. This daily average is called Eagle Ford Postings Average, and provides a basis for comparison to the Eagle Ford Marker. Platts is also publishing the differential between the Eagle Ford Postings Average and the Eagle Ford Marker.

For any questions, suggestions, or comments, please contact [Americas\\_crude@platts.com](mailto:Americas_crude@platts.com), and [pricegroup@platts.com](mailto:pricegroup@platts.com).