

# U.S. Hemp Roundtable

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100 M Street, S.E., Suite 600, Washington, DC 20003

May 27, 2020

Director SND, Farm Services Agency  
U.S. Department of Agriculture, Stop 0522  
1400 Independence Avenue, SW  
Washington, DC 20250-0522

To whom it may concern:

As the hemp industry's leading national business advocacy organization, the U.S. Hemp Roundtable appreciates the opportunity to comment on "Funding Availability: Coronavirus Food Assistance Program (CFAP) Additional Commodities Request for Information," May 22, 2020, Docket ID FSA-2020-0004-0003, Federal Register Number 2020-11155, pp. 31062-31065.

We assert that hemp, deemed an agricultural commodity under the Agriculture Improvement Act of 2018, should be eligible for CFAP funding. The COVID-19 pandemic and response has wreaked havoc on hemp farming, resulting in significant disruption to the industry. Specifically, hemp has suffered a more than 5% price loss between January and April 2020 and faces additional marketing costs due to COVID-19.

As a relatively new agricultural commodity, hemp does not have widely published price data, such as those commodities whose prices are collected by USDA and commodities traded on the futures markets. Accordingly, we are unable to locate specific pricing data for the weeks of January 13 and April 6. However, we have been able to access reliable monthly data from two independent sources: Hemp Benchmarks<sup>®</sup>, a Price Reporting Agency, and PanXchange<sup>™</sup>, an institutional grade trading platform. **This data demonstrates that hemp prices have fallen significantly more than 5% from January to April 2020.**

Both firms focus their attention on the prices of hemp-derived cannabidiol (CBD) formulations, which encompass the end product of the overwhelming majority of hemp crops cultivated by U.S. farmers.

Hemp Benchmarks<sup>®</sup> determined that the aggregate assessed price for hemp CBD biomass declined by 19% from January 2020 to April 2020, from \$1.00 to \$0.81/%CBD/pound. Hemp CBD flower declined from \$226 to \$145/pound during the same period, a 36% decline. Crude oil extracted from hemp flower dropped during this same period from \$668 to \$376/kg, a 46% decline; refined hemp oil extracted from flower fell 31%, from \$2528 to \$1744/kg; and hemp CBD isolate declined 37%, from \$1624 to \$1018/kg.

PanXchange<sup>™</sup> data demonstrates that prices for processed hemp flower fell between 21-32% between January 2020 and April 2020. As an example, the average prices for Colorado winterized crude oil extracted from hemp flower fell from \$550/kg in January to \$375/kg in April, a 32% decline.

Both firms have also identified deeply concerning trends in their data. The Hemp Benchmarks<sup>®</sup> data reveals that the ranges between low and high prices have shrunk, and with little fluctuation in prices, farmers are likely to earn something closer to the significantly lower assessed values for their hemp. PanXchange<sup>™</sup> notes that many farmers were unable to sell biomass at harvest

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time last year, so they entered into tolling agreements to process their biomass. With the industry-standard contract structure requiring farmers to pay a processing fee that would be returned once the processors sold the refined product, many farmers are still awaiting payments for their 2019 crops.

We have attached supporting data from Hemp Benchmarks<sup>®</sup> and PanXchange<sup>™</sup>, as well as presentations discussing their backgrounds and methodologies. We can provide additional information upon request, but as some of this data is proprietary in nature, we may ask to submit such responses in a confidential manner.

Given the clear data demonstrating significant price drops during the COVID-19 crisis – far greater than the agency's benchmark of 5% – we urge the USDA to supplement the commodities currently listed in the CFAP regulation by including hemp, and issue another Notice of Funding Availability listing hemp as an eligible commodity for CFAP payments.

Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jonathan Miller', with a stylized, cursive flourish extending to the right.

Jonathan Miller  
General Counsel, U.S. Hemp Roundtable

Cc: Secretary Sonny Perdue  
Under Secretary Greg Ibach

# 2020 U.S. HEMP ROUNDTABLE

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# HEMP BENCHMARKS®

## U.S Wholesale Hemp Price Benchmarks

January 2020

U.S. Region Products	Units	Assessed Price	Low	High
CBD Biomass (Aggregate)	\$ / % CBD / pound	\$1.00	\$0.40	\$2.50
CBD Biomass (0 - 25K pounds)	\$ / % CBD / pound	\$1.31	\$0.70	\$2.50
CBD Biomass (25K - 100K pounds)	\$ / % CBD / pound	\$1.14	\$0.65	\$1.75
CBD Biomass (100K - 1M pounds)	\$ / % CBD / pound	\$1.01	\$0.60	\$1.30
CBD Biomass (1M+ pounds)	\$ / % CBD / pound	\$0.55	\$0.40	\$0.75
CBG Biomass	\$ / % CBG / pound	\$14.80	\$10.00	\$20.00
CBD Flower (Bulk)	\$ / pound	\$226	\$63	\$675
CBD Clones	\$ / each	\$4.25	\$3.00	\$6.00
Industrial Seeds	\$ / pound	\$4.57	\$3.72	\$8.00
CBD Seeds (Non-Feminized)	\$ / pound	\$1,435	\$475	\$4,000
CBD Seeds (Feminized)	\$ / seed	\$0.93	\$0.40	\$1.25
Crude Hemp Oil	\$ / kilogram	\$668	\$325	\$1,200
Refined Hemp Oil (Aggregate)	\$ / kilogram	\$2,528	\$750	\$5,273
Distillate - THC Free	\$ / kilogram	\$3,120	\$2,000	\$5,273
Distillate - Broad Spectrum	\$ / kilogram	\$2,858	\$1,400	\$3,954
Distillate - Full Spectrum	\$ / kilogram	\$1,791	\$750	\$2,640
CBD Isolate	\$ / kilogram	\$1,624	\$1,100	\$4,000

### Report Contents

#### Price Commentary

- CBD biomass and extract prices continue to slide. [Continued on page 2](#)

#### Prices for CBD Seeds & Clones Falling Despite Approaching Growing Season

- Prices for high-CBD hemp genetics decline on uncertainty of compliance with USDA rules, increased supply from seed producers. [Continued on page 7](#)

#### 2019 Harvest Assessment Still Hazy

- As farmers prepare for the 2020 season, hard data on amount of biomass generated in 2019 is scarce. [Continued on page 9](#)

#### State Spotlight: Wisconsin

- Official data: 3.4 million pounds harvested, but farmers sold less than 10% of their crops by the end of last year. [Continued on page 11](#)

#### Improved Harvesting & Drying Equipment Necessary for Production to Scale

- Significant crop loss post-harvest points to need for hemp-specific equipment if industry is to expand efficiently. [Continued on page 12](#)

#### Nielsen Projects 2020 Hemp-CBD Market Will Grow Significantly

- Nielsen predicts 2020 retail market for hemp-CBD products over 2X larger than Hemp Benchmarks' 2019 estimate. [Continued on page 13](#)

#### Federal Regulatory Update

- Some states opting out of submitting production plans to USDA, while several state and Tribal plans approved; crop insurance and pesticides for hemp cleared by USDA, EPA. [Continued on page 15](#)

#### State Updates

- Arizona sees 40% of hemp crops test "hot;" proposed state rules in Maine include testing for total THC; Virginia officials say farmers are having difficulty finding buyers. [Continued on page 18](#)

Hemp Benchmarks® is an independent Price Reporting Agency (PRA). Our goal is to bring price transparency to wholesale hemp markets in order to allow businesses to operate with confidence and efficiency.

We do not have physical or financial exposure to the commodities that we assess, and therefore do not profit from liquidity, volumes or price movement, avoiding the potential for any perception of conflicts of interest that could arise for marketplaces and exchanges.

**Commodity market participants benefit from increased price transparency.**

U.S. Product Categories	Units	Assessed Price	Low	High
CBD Biomass (Aggregate)	\$ / % CBD / pound	\$0.81	\$0.23	\$1.35
CBD Biomass (0 - 25K pounds)	\$ / % CBD / pound	\$0.91	\$0.31	\$1.35
CBD Biomass (25K - 100K pounds)	\$ / % CBD / pound	\$0.80	\$0.35	\$1.30
CBD Biomass (100K - 1M pounds)	\$ / % CBD / pound	\$0.59	\$0.30	\$0.97
CBD Biomass (1M+ pounds)	\$ / % CBD / pound	\$0.43	\$0.23	\$0.62
CBD Flower (Bulk)	\$ / pound	\$145	\$48	\$300
CBD Clones	\$ / each	\$2.80	\$1.50	\$4.35
Industrial Seeds	\$ / pound	\$3.41	\$2.15	\$4.00
CBD Seeds (Non-Feminized)	\$ / pound	\$578	\$100	\$1,200
CBD Seeds (Feminized)	\$ / seed	\$0.59	\$0.10	\$1.75
Crude Hemp Oil	\$ / kilogram	\$376	\$90	\$600
Refined Hemp Oil (Aggregate)	\$ / kilogram	\$1,744	\$600	\$4,250
Distillate - THC Free	\$ / kilogram	\$2,497	\$850	\$4,250
Distillate - Broad Spectrum	\$ / kilogram	\$1,553	\$800	\$3,200
Distillate - Full Spectrum	\$ / kilogram	\$1,048	\$600	\$2,000
CBD Isolate	\$ / kilogram	\$1,018	\$600	\$2,200
CBG Biomass (Aggregate)	\$ / % CBG / pound	\$6.07	\$5.14	\$8.33
CBG Seeds	\$ / seed	\$1.06	\$0.50	\$1.75
CBG Clones	\$ / each	\$5.10	\$2.35	\$7.50
CBG Distillate	\$ / kilogram	\$5,231	\$2,600	\$8,500
CBG Isolate	\$ / kilogram	\$4,475	\$1,450	\$7,500

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**Commodity market participants benefit from increased price transparency.**

### Report Contents

#### Price Commentary

- Larger price declines observed in April after some stabilization in March; Crude CBD Oil and CBG Isolate both off 36% from last month; Biomass trading volumes down. [Continued on page 2](#)

#### COVID-19 Impacts

- Hemp cultivation and CBD processing declared essential in most cases, but sales slow. [Continued on page 7](#)

#### Projections for the 2020 Growing Season

- States with mature programs report applications to grow are slowing relative to 2019. [Continued on page 9](#)

#### Fallout in the Cannabinoid Extraction Sector

- Heat map details US extraction capacity, but COVID and general market challenges likely to reshape the landscape this year. [Continued on page 13](#)

#### Federal Regulatory Update

- Hemp businesses eligible for relief programs, but survey responses indicate pessimism regarding government aid. [Continued on page 17](#)

#### Industry Developments

- New industrial and agricultural applications for hemp are being pursued. [Continued on page 18](#)

#### State Updates

- CO provides update on exports of hemp seed; VA legalizes CBD for use in food. [Continued on page 19](#)

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# U.S. Hemp Roundtable.

## Introduction

# HEMP BENCHMARKS®

26 May 2020

# Hemp Benchmarks®

**Hemp Benchmarks®** - division of New Leaf Data Services - is a leading provider of financial, business and industry data for the North American hemp markets. We offer comprehensive and unique benchmark services for public and private organizations, and financial institutions.

## Who we are

- An independent unbiased Price Reporting Agency (PRA)
- 130+ years cumulative commodity data services experience
- 50+ years cumulative cannabis/hemp industry experience
- Renowned pedigree earned by our work with the leading price assessment and benchmarking firms in energy, chemicals, metals and agricultural commodities, including S&P Global Platts

## What we do

- Bring price transparency to wholesale hemp markets to allow businesses and markets to operate with confidence and efficiency.
- Assess wholesale market prices of hemp and hemp-derivatives
- Publish U.S. Spot Indices
- Analyze drivers of price change

## How we do it

- Data is collected by in-the-field price reporters; from our extensive Price Contributor Network; and through partnerships with brokers, exchanges, vendors and associations.
- Our transaction data and sources remain confidential and secure so industry participants can report with complete confidence.
- Our assessments are developed using the same statistical/econometric methods and analysis successfully deployed in every other agricultural market
  - Data is validated, time-stamped, and cleansed of outliers and errors
  - Benchmarks are calculated using a simple or volume weighted average
  - Multiple regression techniques are used for trending or isolating key variables.
- We do not have physical or financial exposure to the commodities that we assess, and therefore do not profit from liquidity, volumes, or price movement, avoiding the potential for any perception of conflicts of interest that could arise for marketplaces and exchanges.

## Markets we serve

- Buyers & Sellers
- Those supporting the production & sale of hemp and hemp-derived products
- Those investing or assisting others with investing

# Management Team



**Jonathan Rubin**  
CEO

30 years commodity market experience, including 15 years in commodity data services, with leadership roles at S&P Global Platts and The Petrochemical Standard.



**W. Ian Laird**  
CFO & General Counsel

35+ years as a finance lawyer, investment banker and private equity investor, with extensive experience structuring financings that address commodity price risk in energy, mining, pulp and paper.



**Keith Holecek**  
Managing Director

20+ years developing database products and creating user interfaces, including 13 years at S&P Global Platts.



**Het Shah**  
Managing Director

20 years in physical and financial markets and trading algorithms for S&P Global Platts, hedge funds and global data aggregators.



**Adam Koh**  
Editorial Director

A former academic and commercial cannabis cultivator, Adam is our resident cannabis & hemp expert, and leads editorial analysis and commentary for our reports.



**Kari Tewalt**  
Director of Operations

Kari is responsible for multiple aspects of operations, planning, and strategic initiatives. She spent 6 years at S&P Global Platts in Sales Operations.



**Paul Quilkey**  
Sr. Advisor

25+ years creating and leading global trading businesses in commodities, foreign exchange, and equities within banks, hedge funds, and public companies.



**Dixie Barrett**  
Special Advisor

Dixie negotiates commercial terms with exchanges & marketplaces. She has 30 years in trading services among global commodities companies, including S&P Global Platts.

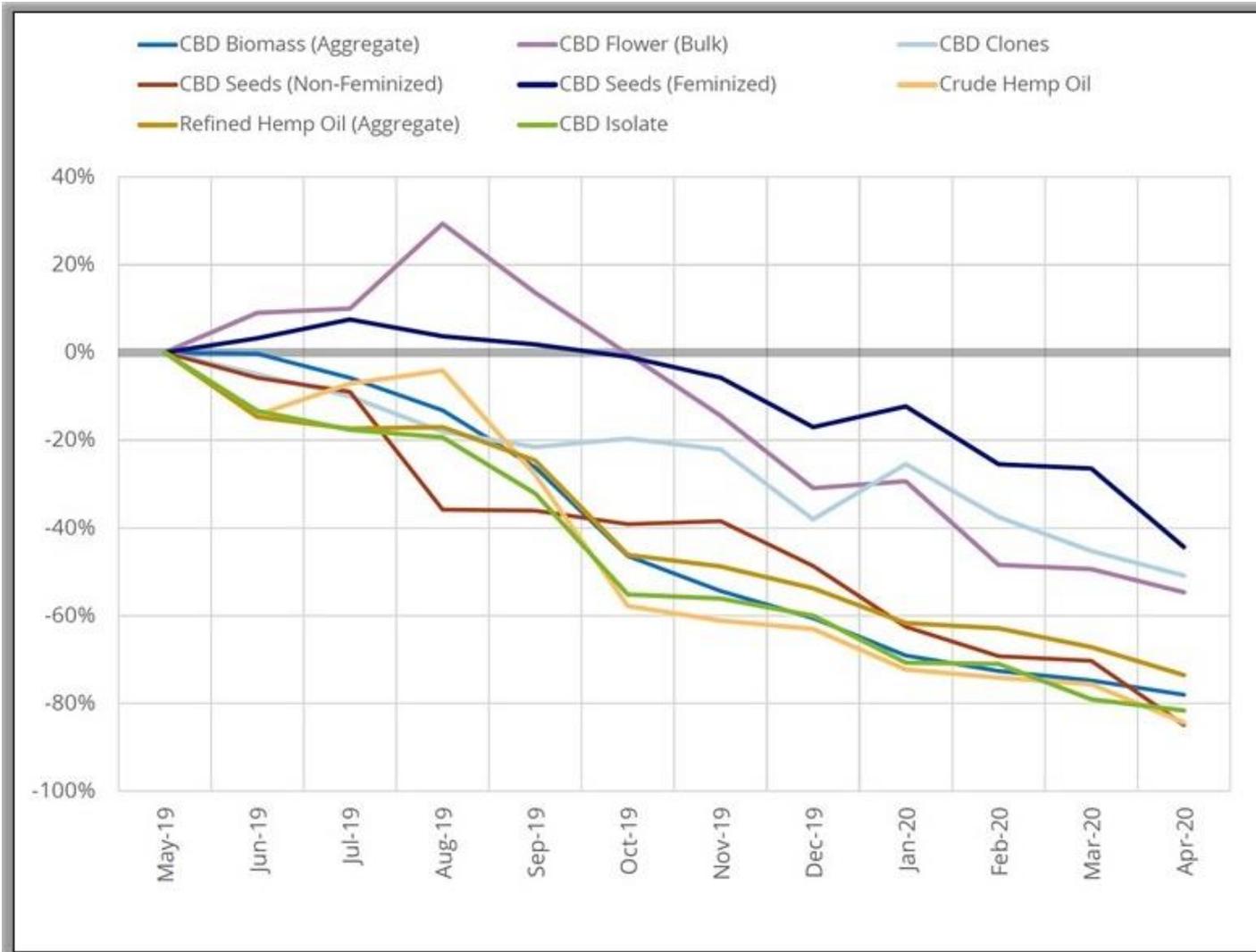


**Dr. MJ, Ph.D.**  
Special Advisor

30+ years advising exchanges and financial institutions on quantitative methods, market economics, trading & risk.

**HEMP**  
BENCHMARKS<sup>®</sup>

# Wholesale Price Trends



## May 2019 to April 2020:

- Prices remained relatively stable through the first half of the growing season.
- Prices deteriorated rapidly as issues with the harvest and difficulties with securing off-take agreements began to become clear.
- Prices are continuing to decline in a sluggish market, exacerbated by COVID19
- Still substantial uncertainty about supply and demand surrounding the 2020 grow season.

May 21, 2020

Jonathan Miller, General Counsel  
U.S. Hemp Roundtable  
Capitol Riverfront 100 M Street, S.E. Suite 600  
Washington, DC 20003

Dear Jonathan:

In support of the burgeoning US industrial hemp market, I'd like to offer the following data points to illustrate the difficulties facing growers and processors. Since July 2019, the average price of biomass across the country fell precipitously for six months. Specifically, the midpoint of prices fell 84 percent.

Many growers were unable to sell biomass at harvest time, so to preserve the quality of their crops, they entered into tolling agreements to process the biomass into crude oil or further refined products. The industry-standard contract structure requires hemp producers to pay a processing fee that would be paid on a profit-sharing percentage as soon as the processor sold the (semi) refined product. It is our understanding that many growers are still awaiting payments for their 2019 crop. Not surprisingly, using Colorado as a national benchmark as it is arguably the nation's most active market participant in terms of both growing and processing, prices for processed hemp fell 21% to 32% between January 2020 and April 2020 as follows:

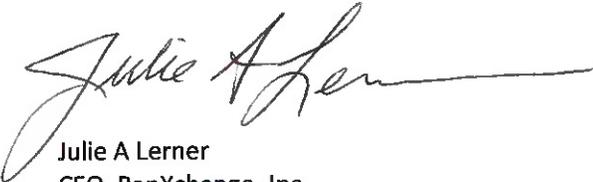
Note that PanXchange publishes its benchmark prices on the last Wednesday of every month, averaging price inputs from the entire month, which is sufficient in a burgeoning market such as hemp. As such, the month end average of prices in January for Winterized crude oil was \$550 per kilogram and the end April price was \$375 per kilogram. Additional information on historical prices may be made available upon request.

 THE FUTURE OF COMMODITIES <sup>™</sup> © 2020 PanXchange, Inc.	Percent Price decline end January 2020 to end April 2020
Colorado Winterized crude	32%
Colorado Full Spectrum Distillate	21%
Colorado Broad Spectrum Distillate	31%
Colorado Isolate	30%

PanXchange, Inc. is a market structure solution for physical commodities that feed and fuel the world. We were the first and now the leading benchmark price provider in US industrial hemp, issuing our first suite of benchmark prices in January 2019. In August 2019, we launched the industry's first institutional grade trading platform for growers, processors, trade houses, and end-users to manage their physical deal flows. All PanXchange benchmark prices come from this group of vetted platform members. The benchmarking methodology follows [IOSCO](#) guidelines, and every data point has a clear audit trail.

I am the Founder and CEO of PanXchange, Inc., and I designed the trading platform based on my background as a former physical commodity trader. I began my career with Cargill, International in Geneva, Switzerland, and later became their senior trader for Latin American sugar. I've also been in the US energy industry with Sempra Energy Trading and US agricultural weather derivatives with XL Financial. As such, I have a tremendous appreciation in the need for accurate benchmark pricing in nascent markets such as hemp and stand behind the data that our team has recorded.

Sincerely,

  
Julie A Lerner  
CEO, PanXchange, Inc.



# **Industrial Hemp Index Methodology**

1

# Introduction

2

# Introduction

## Mission Statement & Background

PanXchange provides both antiquated and nascent physical commodity markets the technology that yields price discovery and instant market access. PanXchange focuses on improving market structures across the full spectrum of commodities and geographies.

Our goal is to bring transparency and efficiency through providing dependable price discovery by combining our patented OTC platform service with traditional price reporting agency (PRA) techniques. Our methodology follows the International Association of Securities Commissions (IOSCO) guidelines, yet it is our goal to disrupt and revolutionize the way commodity markets are priced and traded.

As a full service market structure company, we not only focus on market pricing but also bringing efficiencies to less standard and nascent markets. This includes global tendering operations, financial derivative partnerships, public private partnerships (PPP), as well as various customized white-labeled partnerships where our expertise and technology can be applied.

## PanXchange in Industrial Hemp

By creating the first industrial hemp index in January of 2019, PanXchange established itself as an early leader in the market, recognizing the dynamics of the industrial hemp market. As of January 2020, PanXchange publishes nine monthly index prices.

These indices represent the various stages of the industrial hemp supply chain in the United States. While PanXchange remains geographically agnostic; Colorado, Oregon and Kentucky were first identified as not only the three most liquid trading hubs, but also serve as regional indicators into the supply chain across the country.



## Table of Contents

- **Section 1:** The introduction provides a concise explanation of PanXchange, including a mission statement and basic revenue model.
- **Section 2:** Describes the data collection process, calculation, and publishing methods of the PanXchange industrial hemp index data. This section is intended to provide information around how we gather and calculate index prices and should be a basis for an understanding how commodity indices function.
- **Section 3:** Defines the current industrial hemp indices assessed by PanXchange. This includes product definitions and specifications such as quality and location. This list will be expanded as market dictates and may be altered by PanXchange at any time.

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## Data Collection & Price Reporting

# Data Collection & Price Reporting

## How Price Data is Collected

### Price Reporting Portal

PanXchange receives price data from market participants submitted to the PanXchange OTC trading platform and the price submission portal for review.

Today, the primary information used to assess PanXchange's benchmark prices are collected using this method; however it is expected that over time, increasingly more transactions will occur via the PanXchange OTC platform.

Market participants are given access to the portal upon reaching a formal price submission agreement with PanXchange which includes thorough vetting process insuring the quality of data inputs. The portal consists of a simple grid, requiring the submitter to enter the transaction type, price, volume and units, product type, CBD content, location, and date. The inputs are defined as follows:

**Transaction Types:** (1) Confirmed buy or sell trade in which the submitter was a confirmed buyer or seller. (2) An "assessed price" is one which the submitter has seen in the market, however has not taken any buy or sell action on. (3) Reported trades, which are defined as prices that are quoted indirectly to a price submitter.

**Volume:** Information on volume is collected from price submitters however is not used in the calculation of the

*indices. Volume is an important metric used by the price assessment team to provide appropriate context behind each data input.*

**Location:** Location input is seen as one of the most important aspects of the data input process. Accuracy of location allows for the price assessment team to precisely apply freight spreads to all locations not falling in the indexed location.

**Date:** Price Submitters are given a range of four weeks' time from the previous index release to the next release. Ensuring that the price submitted is within the proper index range of spot and week ahead pricing

Each price point submitted through this portal is subsequently reviewed by the team of market analysts. All information received is logged securely into the PanXchange database by the analyst upon receipt of the data along with any accompanying information that can assist in verifying or normalizing the prices. This data is cross referenced and analyzed in relation to other relevant data received from the market to determine validity of data.

If submitted price data does not aide in the calculation of the seven main benchmark prices, the data is still taken into our internal system and used for general market analysis.

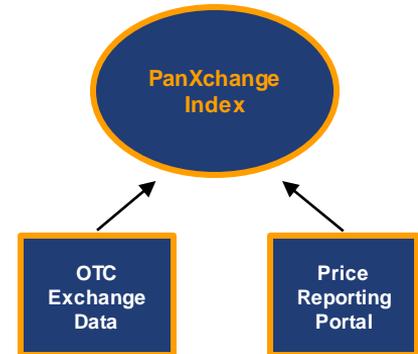
### PanXchange OTC Exchange

In addition to the price reporting portal, PanXchange also offers market participants an OTC bilateral exchange, which

aims to create the ultimate level of price transparency and efficiency for spot and forward transactions. The platform is the core of the PanXchange business model and is fully expected to transform the flow of physical commodities and will replace the submission portal to become the primary source of data input.

Transactions include any offer or bid that has been accepted by an anonymous counterparty and matched for trade and is thus a legally binding contract.

Pricing data also includes any firm bids or offers that are posted on the platform which are open to the market. Bids and offers are reviewed by market analysts to determine whether the price data reflects current market conditions.



# Data Collection & Price Reporting

## Market

Grid View **23**

[Map View](#)

Filter By State

Filter By Product

Reset

[Review Market Rules](#)

[Guided Walkthrough](#)

ID	Counterparty Status	COA Status	Product	CBD	Shipment	Incoterms	Location	Bid	Quantity	Offer
270	Restricted		CBD Isolate	99.5%	Dec 03, 2019 to Dec 10, 2019	FOB	Hopkinsville, KY	\$2000.00 /kg	25 kg	
269	Restricted		Broad Spectrum Distillate (THC)	93%	Dec 03, 2019 to Dec 10, 2019	FOB	Osceola, IL	\$3600.00 /kg	100 kg	
267	Restricted	Approved	Biomass - Flower	8%	Nov 30, 2019 to Dec 07, 2019	DAP	Lexington, KY		100,000 lbs	\$9.00 /kg
266	Restricted	Approved	Winterized Crude Oil	53.81%	Nov 30, 2019 to Dec 31, 2019	EXW	Berthoud, CO		1 kg	\$1000.00 /kg
265	Restricted		Biomass - Pelletized	6%	Nov 30, 2019 to Dec 07, 2019	FOB	Denver, CO Portland, OR Lexington, KY	\$6.00 /lbs	100,000 lbs	
264	Restricted	Approved	Winterized Crude Oil	71.20%	Nov 28, 2019 to Dec 31, 2019	EXW	Berthoud, CO		5 kg	\$1250.00 /kg

## Data Collection & Price Reporting

### Information Sources

PanXchange conducts confidential interactions with market participants in the form of price submissions in order to source the data used for its benchmark price.

PanXchange asks sources to meet a set of standards which confirms the following:

*(1) If there is a notable disparity on a price submission from different parties reporting on the same product type, this information is discounted from the assessment.*

*(2) Any information received from sources which have been shown to provide inaccurate or misleading data is excluded from the assessment.*

*(3) PanXchange's policy is to assess, affirm, and verify all data for accuracy and reliability. If data fails to meet PanXchange's quality standards, then our market analysts will initiate procedures to rectify or reject a specific data submission.*

*(4) Certain standard tests are also carried out to apply: restrictions on the weight a single party can have on a monthly price, individual case assessment of outliers and anomalies, and reported trade verifications when there is a lack of reported transactions.*

PanXchange judges the validity of the sources for price data received on monthly basis based upon the following:

**Vested Interest:** The motivation of the source in submitting prices.

**Track Record:** The previous reliability of information obtained from the source.

**Date Received:** When the price data was submitted in relation to the date of publishing.

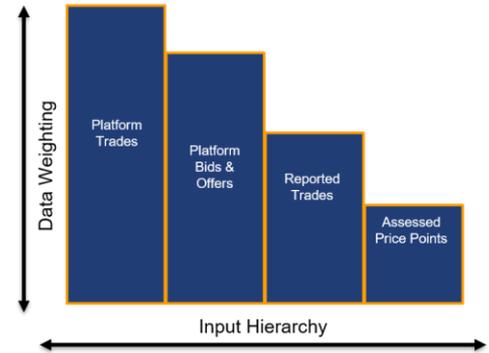
PanXchange is constantly seeking to increase the number of companies participating in the price assessment process. The business development team is tasked with establishing and maintaining commercial relationships in a responsible and ethical manner and such relationships are monitored by the appropriate US and international business ethics standards.

The number of entities providing pricing information can vary significantly month-to-month, depending on market conditions, holidays, or any other normal obstructions to the regular course of business.

Should the number of entities providing market data repeatedly fall to a level that assessment quality may be affected, the benchmark administration team will review the long-term viability of the individual price index.

### How Prices Are Calculated

All pricing data points are compiled and deidentified prior to outlier identification and the data normalization process. Once compiled, prices are normalized to the appropriate



index location based on quality, location, and shipment period. Outliers are then identified and removed based on a subjective assessment by the index assessment team.

Once outliers are removed, data points are then assigned a weight based on the data input type. The inputs are weighted in order of importance as follows:

- Platform Trades
- Platform Bids & Offers
- Price Submission – Confirmed Transactions
- Price Submission – Market Assessments
- Price Submission – Reported Prices

Once calculated, the price assessments are then verified by the index assessment team and published on the exchange and in the market newsletter the last Thursday of the month.

# Data Collection & Price Reporting

## Assessment Guidelines

When insufficient, inadequate, or no transaction information exists, or when a transaction-based methodology will not produce representative prices, the PanXchange benchmark administration team will make a subjective market assessment based on a broad spectrum of factual market information. The benchmark administration team maintains a deep and intimate knowledge base and network of hemp producers, processing labs, and consumer product manufacturers therefore are able to make such subjective assessments.

The following regional benchmarks are included in our monthly assessments:

### Hemp Biomass:

- Colorado (per \$ CBD Content/lb)
- Oregon (per \$ CBD Content/lb)
- Kentucky (per \$ CBD Content/lb)
- Great Plains Region (per \$ CBD Content/lb)
- North East Region (per \$ CBD Content/lb)

### Refined Products:

- Colorado Winterized Crude (per kg.)
- Colorado Full Spectrum Distillate (per kg.)
- Colorado Broad Spectrum Distillate (per kg.)
- Colorado Isolate (per kg.)

The criteria and procedures that are used to make an assessment of market value are based in the application of intelligent judgement. The level of normalization is dependent on analyst judgement based on interactions with the market and observed variance in market value from a base standard.

## Governance

PanXchange employs a number of governance checks to ensure the reliability and application of the methodology and to consult with the market as to any changes in our processes and procedures.

PanXchange holds governance meetings upon request with all market analysts to review price collection processes and ensure data collection follows the standards outlined in this methodology.

Although physical index pricing does not fall under a regulatory body in the United States, PanXchange strives to follow IOSCO benchmarking principles and views such principles as best practices.

## Publication

The PanXchange industrial hemp indices are published the last Wednesday of the month by 2:30 pm MT. The publication includes all indices calculated and is combined with brief market commentary, which is meant to provide anecdotal color to price movements. Publication is distributed to subscribers and exchange members and it not meant for redistribution to any other recipient. PanXchange holds the right to change the timing and/or method of distribution with a minimum of one month written prior notice.

## Inquiries

All feedback on methodology, inquiries about index pricing calculations and any other questions or comments should be directed to [hemp@panxchange.com](mailto:hemp@panxchange.com)

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## Price Definitions

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**Hemp Biomass** is defined as industrial hemp that has been dried and homogenized through the process of milling or grinding. Biomass consists of leaves, stalks and flowers, and is not to contain foreign organic materials such as mold and mildew. **Biomass trades on the percentage of CBD content on a dry weight basis per pound (CBD%/lb.) or also denoted (/point).**

**Winterized Crude Oil** is hemp biomass that has been refined using CO2 supercritical extraction, or other hydrocarbon extraction methods to produce a thick but viscous, amber to gold colored liquid. The extraction process of winterized crude oil does not filter out specific cannabinoids, producing a product that is full spectrum, and typically has a CBD concentration between 50-70%. **Winterized crude oil is commonly priced per kilogram or (/kg).**

**CBD Full Spectrum Distillate** is a highly refined industrial hemp extract typically containing more than 75% CBD. The distillation process involves the use of solvents such as butane or alcohol, or solventless extraction methods to produce gold to clear viscous liquid. Full spectrum distillate contains an undisturbed and full cannabinoid profile, showing measurable amounts of CBD, THC and other cannabinoids such as (CBG, CBC, CBN, etc.) **Full Spectrum Distillate is commonly priced per kilogram or (/kg).**

**CBD Broad Spectrum Distillate (THC Free)** is a full spectrum distillate (defined above) that has gone under a THC remediation process, thus removing THC to an undetectable level, while preserving measurable amounts of minor cannabinoids (CBG, CBC, CBN, etc.) **Broad Spectrum Distillate is commonly priced per kilogram or (/kg).**

**CBD Isolate** is a pure, white, crystalline powder commonly exceeding 96% CBD content. Through the refining process, all organic plant matter such as waxes, chlorophyll and plant oils have been removed resulting in highly concentrated product, free of THC and other cannabinoids. **Isolate is commonly priced per kilogram or (/kg).**

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Contact

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