

**S&P Dow Jones  
Indices**

A Division of **S&P Global**

# **S&P GSCI** *Methodology*

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# Introduction

## Index Objective and Overview of the S&P GSCI

The S&P GSCI index measures commodity market performance.

The S&P GSCI is a benchmark for investment in the commodity markets and is designed to be a tradable index accessible to market participants. The S&P GSCI is calculated primarily on a world production-weighted basis and comprises the principal physical commodities that are the subject of active, liquid futures markets. There is no limit on the number of contracts that may be included in the S&P GSCI; any contract that satisfies the eligibility criteria and the other conditions specified in this methodology are included. This feature enhances the suitability of the S&P GSCI as a benchmark for commodity market performance and to reflect general levels of price movements and inflation in the world economy. The S&P GSCI is calculated and maintained by S&P Dow Jones Indices.

## Definitions

All definitions and terms used in this methodology can be referenced in our S&P Dow Jones Indices' GSCI Reference Guide.

## Currency, Currency Hedged, and Risk Control Indices

Currency, currency hedged, and risk control versions of the indices may be available. For a list of available currency, currency hedged, and risk control indices, please contact Client Services at [index\\_services@spglobal.com](mailto:index_services@spglobal.com).

*For more information on currency, currency hedged, and risk control indices, please refer to S&P Dow Jones Indices' Index Mathematics Methodology.*

## Supporting Documents

This methodology is meant to be read in conjunction with supporting documents providing greater detail with respect to the policies, procedures and calculations described herein. References throughout the methodology direct the reader to the relevant supporting document for further information on a specific topic. The list of the main supplemental documents for this methodology and the hyperlinks to those documents is as follows:

Supporting Document	URL
S&P Dow Jones Indices' Commodities Indices Policies & Practices Methodology	<a href="#">Commodities Indices Policies &amp; Practices</a>
S&P Dow Jones Indices' GSCI Reference Guide	<a href="#">GSCI Reference Guide</a>
S&P Dow Jones Indices' Index Mathematics Methodology	<a href="#">Index Mathematics Methodology</a>

This methodology was created by S&P Dow Jones Indices to achieve the aforementioned objective of measuring the underlying interest of each index governed by this methodology document. Any changes to or deviations from this methodology are made in the sole judgment and discretion of S&P Dow Jones Indices so that the index continues to achieve its objective.

# Eligibility Criteria

## Non-Financial Commodities

A Contract must be on a physical commodity and may not be on a financial commodity (e.g., securities, currencies, interest rates, etc.). The Contracts on a particular commodity need not require physical delivery by their terms in order for the commodity to be considered a physical commodity.

## Certain Contract Characteristics

The following criteria must be satisfied:

1. The Contract must have a specified expiration or term or provide in some other manner for delivery or settlement at a specified time, or within a specified time period, in the future.
2. The Contract must, at any given point in time, be available for trading at least five months prior to its expiration or such other date or time period specified for delivery or settlement.
3. The Trading Facility on which the Contract is traded must allow market participants to execute spread transactions, through a single order entry, between the pairs of Contract Expirations included in the S&P GSCI that, at any given point in time, will be involved in the rolls to be affected in the next three Roll Periods.

## Denomination and Geographical Requirements

Contract must be denominated in U.S. dollars and traded on or through a Trading Facility that has its principal place of business or operations in a country that is a member of the Organization for Economic Cooperation and Development (OECD) during the relevant Annual Calculation Period or Interim Calculation Period.

## Availability of Daily Contract Reference Prices

The following criteria must be satisfied:

1. Daily Contract Reference Prices for such Contract generally must have been available on a continuous basis for at least two years prior to the proposed date of inclusion. In appropriate circumstances, S&P Dow Jones Indices may determine that a shorter time period is sufficient or that historical Daily Contract Reference Prices for such Contract may be derived from Daily Contract Reference Prices for a similar or related Contract.
2. At and after the time a particular Contract is included in the S&P GSCI, the Daily Contract Reference Price for such Contract must be published between 10:00 AM and 4:00 PM, Eastern Time, on each Contract Business Day by the Trading Facility on or through which it is traded and must generally be available to all members of, or participants in, such Facility (and S&P Dow Jones Indices ) on the same Contract Business Day from the Trading Facility or through a recognized third-party data vendor. Such publication must include, at all times, Daily Contract Reference Prices for at least one Contract Expiration that is five months or more from the date the determination is made, as well as for all Contract Expirations during such five-month period.

## Availability of Volume Data

Volume data with respect to such Contract must be available, from sources satisfying the criteria specified in *Contract Volume and Liquidity Requirements*, for at least the three months immediately preceding the date on which the determination is made.

## Other Requirements With Respect to Trading Facilities

The Trading Facility on or through which a Contract is traded must:

1. make price quotations generally available to its members or participants (and to S&P Dow Jones Indices) in a manner and with a frequency that is sufficient to provide reasonably reliable indications of the level of the relevant market at any given point in time;
2. make reliable trading volume information available to S&P Dow Jones Indices with at least the frequency required by S&P Dow Jones Indices to make the monthly determinations described in *Intra-Year Changes in the Composition of the S&P GSCI*;
3. accept bids and offers from multiple participants or price providers (i.e., it must not be a single-dealer platform); and
4. be accessible by a sufficiently broad range of participants. Such access may be provided either (a) by the Trading Facility making clearing services reasonably available, thereby eliminating counterparty credit considerations, or (b) by a network of brokers or dealers who are willing to intermediate transactions with third parties, thereby enabling such third parties to enter into transactions based on prices posted on such Facility.

## Contract Trading Hour Requirements

S&P Dow Jones Indices may exclude a Contract from the S&P GSCI that otherwise satisfies the criteria and conditions for inclusion if it finds such Contract's Overall Trading Window is insufficient to support the tradability of the S&P GSCI taken as a whole.

## Total Dollar Value Trading Requirement

The following criteria must be satisfied:

1. In order to be added to the S&P GSCI, a Contract that is not included in the S&P GSCI at the time of determination (which may be either a Monthly Observation Date or the time of the annual determination of the composition of the S&P GSCI), and is based on a commodity that is not represented in the S&P GSCI at such time, must have an annualized Total Dollar Value Traded, over the relevant Annual Calculation Period or Interim Calculation Period, of at least US\$ 15 billion.
2. In order to continue to be included in the S&P GSCI, a Contract already in the S&P GSCI at the time of determination, and that is the only Designated Contract on the relevant S&P GSCI Commodity, must have an annualized Total Dollar Value Traded of at least US\$ 5 billion over the relevant Annual Calculation Period or Interim Calculation Period, and of at least US\$ 10 billion during at least one of the three Annual Observation Periods.
3. In order to be added to the S&P GSCI, a Contract that is not in the S&P GSCI at the time of determination, and is based on a S&P GSCI Commodity on which there are one or more Designated Contracts already in the S&P GSCI at such time, must have an annualized Total Dollar Value Traded, over the relevant Annual Calculation Period or Interim Calculation Period, of at least US\$ 30 billion.

4. In order to continue to be included in the S&P GSCI, a Contract that is already in the S&P GSCI at the time of determination, and is based on a S&P GSCI Commodity on which there are one or more Designated Contracts already in the S&P GSCI at such time, must have an annualized Total Dollar Value Traded of at least US\$ 10 billion over the relevant Annual Calculation Period or Interim Calculation Period, and of at least US\$ 20 billion during at least one of the three Annual Observation Periods.

Notwithstanding any provisions to this methodology, the Total Dollar Value Traded (TDVT) and Total Quantity Traded (TQT) of any Contract are calculated based on the relevant volume of such Contract together with the volume of any Related Contract. Any other modifications to the definitions included in this methodology that are necessary are deemed to have been made for purposes of calculating the relevant TDVT's and TQT's.

The Total Dollar Value Traded measures the extent to which a commodity is the subject of Contract trading. Analyzing this feature through the use of dollar values is free from contract-dependent characteristics such as contract size and, thus, makes it possible to compare the results for all Contracts. The minimum TDVT requirement, therefore, further enhances the tradability of the S&P GSCI by excluding those Contracts that do not represent sufficient trading activity in the relevant commodity.

### **Reference Percentage Dollar Weight Requirement**

The following criteria must be satisfied:

1. In order to continue to be included in the S&P GSCI, at the time of determination, a Contract must have a Reference Percentage Dollar Weight of at least 0.10%.
2. In order to be added to the S&P GSCI, a Contract must have a Reference Percentage Dollar Weight of at least 1.00% at the time of determination.

The Reference Percentage Dollar Weight is calculated based on the proposed composition of the S&P GSCI determined according to the procedures set forth above. Any Contract that does not satisfy the applicable Reference Percentage Dollar Weight requirement is excluded from such proposed composition, and the CPWs of the remaining Contracts are recalculated according to the procedure set forth in *Contract Production Weights*, until the proposed S&P GSCI contains only Contracts that satisfy the applicable Reference Percentage Dollar Weight requirements.

### **Determination of the Number of Contracts**

**Selection of Contracts on the same S&P GSCI Commodity and among several S&P GSCI Commodities.** In the event that two or more Contracts on the same S&P GSCI Commodity satisfy the eligibility criteria set forth above, such Contracts are included in the S&P GSCI in the order of their respective TQT's, with the Contract having the highest TQT being included first. No further Contracts are included if such inclusion results in the TVM for such Commodity exceeding the TVM Upper Level.

If under the procedure set forth in the preceding paragraph, additional Contracts could be included with respect to several S&P GSCI Commodities at the same time, the procedure is first applied to the S&P GSCI Commodity that has the lowest TVM at the time of determination. Subject to the other eligibility criteria, the Contract with the highest TQT on such Commodity is included. Before any additional Contract on any S&P GSCI Commodity is included, the TVM's for all S&P GSCI Commodities are recalculated. The selection procedure described above is, then, repeated with respect to the Contracts on the S&P GSCI Commodity that then has the lowest TVM.

The TVM of any Contract and all other measures related to the TVM are calculated based on the relevant volume of such Contract together with the volume of any Related Contract. Any other modifications to the definitions included in this methodology that are necessary in order to implement such calculations are hereby deemed to have been made for purposes of calculating the relevant TVM's.



Between the First and a Related Contract, only the Contract with the greater TQT over the relevant Calculation Period is included in the S&P GSCI.

As described above, within each commodity group, the order in which additional Contracts are added is based on the TQT's of the relevant Contracts. If the Contracts on a particular S&P GSCI Commodity have sufficient liquidity to support the portion of the S&P GSCI that is attributable to such Commodity (as measured by the TVM), then no further Designated Contracts on such Commodity are necessary. If, however, the TVM of such Commodity is relatively low, it may be necessary or appropriate to include additional Contracts as Designated Contracts. This serves to spread the liquidity attributable to the relevant S&P GSCI Commodity across a broader range of Contracts, thereby enhancing the tradability of the S&P GSCI. However, no additional Contracts are added if their addition would cause the TVM of the relevant S&P GSCI Commodity to exceed the TVM Upper Level. In those circumstances, no further liquidity in the relevant S&P GSCI Commodity is necessary.

### **Intra-Year Changes in the Composition of the S&P GSCI**

The composition of the GSCI is reviewed on a quarterly basis during any given S&P GSCI Year. If on any Monthly Observation Date, the TVM of any Designated Contract is below the TVM Threshold for the relevant S&P GSCI Year, the composition of the S&P GSCI with respect to the S&P GSCI Commodity underlying such Contract will be re-determined.

### **Sources of Information**

The following are the sources of the information used to determine the eligibility of Contracts for inclusion in the S&P GSCI pursuant to the requirements set forth in *Eligibility Criteria*. If any of the sources identified below is unavailable with respect to the determination of the S&P GSCI for a particular S&P GSCI Year, S&P Dow Jones Indices will identify appropriate alternative sources and the composition of the S&P GSCI for such S&P GSCI Year will be based on such alternative sources. In addition, if S&P Dow Jones Indices believes that one or more of the sources identified below contains a manifest error, it may use an alternative source to obtain the necessary information. Any such alternative sources used by S&P Dow Jones Indices will be publicly disclosed at the time that the composition of the S&P GSCI for the next S&P GSCI Year is announced.

**General Eligibility Requirements.** The identification of those commodities that satisfy the general eligibility requirements is based on the FIA Reports that are published with respect to the relevant Annual Calculation Period or Interim Calculation Period, and directly from the particular Trading Facilities. The determination as to whether a particular Trading Facility has its principal place of business or operations in an OECD country is based on the most recent data published by the OECD available on the date of determination.

**Contract Volume and Liquidity Requirements.** In order to determine whether a particular Contract satisfies the volume and liquidity requirements described above, S&P Dow Jones Indices may use any available sources that it believes to be reasonably reliable including, but not limited to, data contained in the FIA Reports. In the event of manifest error, S&P Dow Jones Indices may supplement, and make corrections to, any such data.

Volume data used to determine whether a particular Contract is eligible to be included in the S&P GSCI are the data for the relevant Annual Calculation Period or Interim Calculation Period, provided that in the case of a Contract that has been trading for fewer than 12 months, the determination is made based on data for the period of time during which the Contract has been trading, with such data being annualized.

Volume data with respect to a given Contract are calculated based on the volumes of all Contract Expirations of such Contract that have been traded within the relevant Annual Calculation Period or Interim Calculation Period.

**Adjustments in Special Circumstances.** In applying volume data for purposes of calculating the S&P GSCI, S&P Dow Jones Indices may make any such adjustments as it believes to be reasonably necessary in order to take into account any unique or unusual factors with respect to the relevant S&P GSCI Commodity.

# Calculation of the Contract Production Weights

## Overview of the Contract Production Weights

The S&P GSCI is a production-weighted index, designed to reflect the relative significance of each of the constituent commodities to the world economy, while preserving the tradability of the index by limiting eligible Contracts to those with adequate liquidity. In addition to determining the list of Designated Contracts S&P Dow Jones Indices ascertains the quantity of each such Designated Contract to be included in the S&P GSCI, i.e. the Contract Production Weights (CPWs). The calculation of the CPWs of the Designated Contracts involves a four-step process: (1) determination of the World Production Quantity (WPQ) of each S&P GSCI Commodity (2) determination of the World Production Average (WPA) of each S&P GSCI Commodity over the WPQ Period (3) calculation of the CPW based on the Contract's percentage of the relevant TQT and (4) certain adjustments to the CPWs.

## World Production Quantities

**Determination of WPQ's.** The WPQ of each S&P GSCI Commodity is equal to the total world production of the S&P GSCI Commodity (except as otherwise set forth in this section) over the WPQ Period.

The WPQ Period is defined as the five-year period for which complete world production data is available for all S&P GSCI Commodities from sources determined by S&P Dow Jones Indices to be reasonably accurate and reliable. The data is reported on a two year lag.

**Livestock Production Quantities.** The annual production quantity for cattle, which is stated in terms of carcass weight, is converted into an equivalent quantity of live cattle by multiplying the production quantity of cattle for a given year by the ratio of live weight of cattle to the dressed weight of cattle (ALW/ADW) for that year.

In addition, cattle and hog production quantities are based on world industrial production data, rather than total world production data.

**Regional Production Data.** If an S&P GSCI Commodity is primarily a regional commodity, based on its production, use, pricing, transportation or other factors, S&P Dow Jones Indices may determine the WPQ of such S&P GSCI Commodity based on regional, rather than world, production. At present, natural gas is the only S&P GSCI Commodity where the WPQ is determined based on regional (North American) production.

## World Production Averages

The WPA of each S&P GSCI Commodity is equal to its WPQ over the WPQ Period, divided by five. The WPA is simply the average annual production amount of the S&P GSCI Commodity based on the WPQ over a five-year period.

## Contract Production Weights

In calculating the CPW of each Designated Contract on a particular S&P GSCI Commodity, the WPA of such Commodity is allocated to those Designated Contracts that can best support liquidity.

With respect to each Designated Contract, the CPW is equal to (i) the Percentage TQT for such Contract multiplied by (ii) the WPA of the underlying S&P GSCI Commodity (after any necessary conversion made for purposes of the calculation) and divided by (iii) 1,000,000. However, if the calculation of the CPWs for

the Designated Contracts on a particular S&P GSCI Commodity results in the TVM of such Contracts being below the TVM Reweighting Level, then the CPWs for all such Contracts are reduced until the TVM of such Contracts is equal to the TVM Reweighting Level. This is achieved by setting the TVM for each such Contract at the TVM Reweighting Level, and reducing the CPW for such Contract accordingly. The adjustment procedure is designed to ensure that the CPW of each Designated Contract is at a level sufficient to support trading activity in the S&P GSCI, but not disproportionately high. The final CPWs are rounded to seven digits of precision. The new CPWs are implemented during the designated January roll period.

### CPW Adjustment Procedure

The following procedure is used to adjust the CPWs of Designated Contracts, under the circumstances described above:

1. Determine the set "A" of all Designated Contracts to be re-weighted. If the set A is empty, then no adjustment is necessary.
2. Compute the CPWs for all Designated Contracts in A according to the following formula:

$$CPW_i = \frac{\text{Percentage } TQT_i * WPA_i}{1,000,000}$$

3. Re-compute the TVM's for all Contracts in A and partition A into the following subsets:  
 AL = {Contracts with TVM below the TVM Reweighting Level}  
 AE = {Contracts with TVM at the TVM Reweighting Level}  
 AH = {Contracts with TVM above the TVM Reweighting Level}
4. If AL is empty, then no further adjustment is necessary.
5. For each of the Contracts in AH, leave the CPW as specified in step (2).
6. Solve the set of linear equations for the CPWs of all Contracts in AL and AE

$$TQT_i * \sum_{k \in C} (CPW_k * ACRP_k) = ISL * CPW_i * TVMRL$$

(where C is the set of all Contracts in the prospective index composition).

7. Repeat steps (3) through (6) until no further adjustment is necessary.

### Quarterly Review of Index Composition

On each Quarterly Observation Date, S&P Dow Jones Indices calculates the TVM of each Designated Contract, based on volume data for the relevant Interim Calculation Period. If on any such Date, the TVM of any Designated Contract is below the TVM Threshold, S&P Dow Jones Indices adjusts the composition of the S&P GSCI, with respect to the S&P GSCI Commodity underlying such Contract (but not with respect to any other S&P GSCI Commodities), according to the following principles:

- a. All eligible Contracts, whether previously included in the S&P GSCI or not, on such Commodity as of such Date are identified, based on the eligibility criteria.
- b. The CPWs of all Contracts so identified are determined, provided that the Percentage TQT for each such Contract is determined based on volume data for the relevant Interim Calculation Period for which such data are available for all Contracts on the relevant S&P GSCI Commodity.
- c. At the beginning of the new S&P GSCI Period following the foregoing adjustments, the S&P GSCI is re-normalized.

In order to maintain the liquidity and tradability of the S&P GSCI throughout each S&P GSCI Year, this section provides a mechanism to review and reallocate the distribution of CPWs among the Designated Contracts on a particular S&P GSCI Commodity in the course of such Year, if there has been a significant decline in the liquidity of any such Contract. Any such reallocation may result in new Contracts on the

same S&P GSCI Commodity being included in the S&P GSCI, or Designated Contracts that have been previously included in the S&P GSCI being excluded. For this purpose, the liquidity of each Designated Contract is measured by its Trading Volume Multiple, which is calculated and reviewed on each Monthly Observation Date.

If any changes are made to the composition of the S&P GSCI (including changes regarding the relative weight of any Designated Contract) according to the procedure described above, the manner in which such changes are effected are determined by S&P Dow Jones Indices, based on market conditions and other relevant factors, and publicly announced as soon as reasonably practicable, which is expected to be at least three weeks prior to the implementation of such changes.

## **Sources of Information**

**Sources of Information for the Determination of CPWs.** S&P Dow Jones Indices decides the sources of information used in determining the CPWs for a given S&P GSCI Period. S&P Dow Jones Indices will generally use the same sources of information used to determine the CPWs for or during the immediately preceding S&P GSCI Year. If such sources are not reasonably available or do not contain the necessary information, or if S&P Dow Jones Indices determines the information included in any such sources is inaccurate, unreliable or contains manifest error, S&P Dow Jones Indices will identify alternative sources of information. To the extent practicable, S&P Dow Jones Indices will publicly announce the sources used to determine the CPWs for or during a given S&P GSCI Period at the time that the composition of the S&P GSCI and the calculation of the CPWs for such Period are announced.

**Sources of Conversion Factors.** The factors used to effect the conversions, which are necessary in order to convert the units of measurement used in the WPQs into the units of measurement used with respect to the applicable Contracts are derived from publicly available sources selected by S&P Dow Jones Indices.

**Sources for Cattle Adjustment Factors.** The factor used to make the adjustment, with respect to the conversion of dressed weight for cattle into live cattle weight, is derived from publicly available sources selected by S&P Dow Jones Indices, such as the U.S. Department of Agriculture, Agricultural Statistics.

# Designated Contract Expirations

## Use of Designated Contract Expirations in Calculating the S&P GSCI

As indicated above, the Total Dollar Weight of the S&P GSCI can only be determined based on the prices of actual Contracts. Because Designated Contracts by definition call for delivery or settlement on specified dates or during specified terms, it is necessary to determine the Designated Contract Expirations that will be included in the S&P GSCI in order to identify the appropriate prices of such Contracts to be used in calculating the value of the S&P GSCI. The identification of the Designated Contract Expirations during a given S&P GSCI Year is made by S&P Dow Jones Indices at the time that the composition of the S&P GSCI for such Year is determined or when contracts are added. This section of the methodology sets forth the procedures for determining the Designated Contract Expirations for each Designated Contract.

## Identification of Designated Contract Expirations

S&P Dow Jones Indices determines the Designated Contract Expirations for each Designated Contract during a given S&P GSCI Year, provided that each such Designated Contract Expiration must be an Active Contract.

With respect to certain Contracts, a number of Contract Expirations have historically exhibited low trading volumes and are generally regarded as inactive. This may be due to seasonal cycles of supply and demand in the underlying commodity or other production, distribution, or economic factors. Inactive Contracts, although available for trading, might not generate accurate and reliable market prices because of the low level of trading activity. For this reason, the S&P GSCI is calculated only based on the prices of Active Contracts.

Once a Contract Expiration is identified as a Designated Contract Expiration, the S&P GSCI is calculated based on such Contract Expiration for the given S&P GSCI Year. However, if S&P Dow Jones Indices determines during the course of an S&P GSCI Year that a Contract Expiration that has been included as a Designated Contract Expiration is no longer an Active Contract, such Designated Contract Expiration will be deleted from the S&P GSCI for the remainder of that S&P GSCI Year. Conversely, if a new Contract is added to the S&P GSCI on an intra-year basis, S&P Dow Jones Indices will identify the Designated Contract Expirations with respect to such Contract for the remainder of the relevant S&P GSCI Year.

## Failure to Trade Designated Contract Expirations

**Deletion of Designated Contract Expirations.** If a Trading Facility deletes a Contract Expiration that is a Designated Contract Expiration, such Contract Expiration will no longer constitute a Designated Contract Expiration for the remainder of the S&P GSCI Year in which the deletion occurs. The S&P GSCI will be calculated based on the remaining Designated Contract Expirations for the rest of the relevant S&P GSCI Year.

**Delay in Trading of Designated Contract Expirations.** If two consecutive Designated Contract Expirations for a particular Designated Contract have not been made available for trading on or through the relevant Trading Facility at least six months prior to the date on which the Roll Period is scheduled to begin, with respect to the first of these two Designated Contract Expirations, S&P Dow Jones Indices will determine what action should be taken. Such action may include a decision to delete the Designated Contract Expirations or the Designated Contract from the S&P GSCI for the remainder of the S&P GSCI Year, or a to include such Contract Expirations or Designated Contract if the Designated Contract Expiration is made available by a specified date.

Any action taken will be publicly announced prior to the effective date of the change in the composition of the S&P GSCI.

### **Replacement of Contracts**

If trading in all Contract Expirations with respect to a particular Designated Contract is terminated, or the relevant Trading Facility announces that no additional Contract Expirations will be made available with respect to a Designated Contract, an eligible replacement Contract on the relevant S&P GSCI Commodity may be included in the S&P GSCI. To the extent practicable, any such replacement will be in effect on the next Monthly Observation Date.

If another Contract replaces a Designated Contract and the timing or procedure contemplated above is not practicable, a determination will be made as to the date from which the S&P GSCI will be calculated using the replacement Contract. In making this determination, S&P Dow Jones Indices expects to take into account a number of factors, including any differences between the existing Contract and the replacement Contract specifications, Contract Expirations, and other matters. These factors may make it necessary or advisable to effect the transfer from the existing Contract to the replacement Contract over a series of days. It is anticipated that such a transfer will be implemented in a manner similar to the rolling of the S&P GSCI that takes place during each Roll Period.

If a replacement contract is to be included in the S&P GSCI, S&P Dow Jones Indices will publicly announce the manner in which the transfer from the existing Contract to the replacement Contract will be implemented, and whether the CPWs of the other Designated Contracts on the relevant S&P GSCI Commodity and/or the Normalizing Constant will be recalculated.

# The Normalizing Constant

## Purpose of the Normalizing Constant

In order to assure continuity of the S&P GSCI and to allow comparisons of the value of the S&P GSCI to be made over time, it is necessary to make an adjustment to the calculation of the S&P GSCI each time the CPWs are changed. The factor used to make this adjustment is the Normalizing Constant (NC) and is used in the same manner as similar factors applied to the calculation of other published financial market indices. The NC is determined each time the composition of the S&P GSCI is changed pursuant to the procedures set forth in this methodology.

## Calculation of the Total Dollar Weight of the S&P GSCI on Non-Roll Days

The formula for calculating the Total Dollar Weight of the S&P GSCI on any S&P GSCI Business Day that does not occur during a Roll Period is the following:

$$TDW_d = \sum_c (CPW_d^c * DCRP_d^c)$$

where:

$c$  = the Designated Contract

$d$  = the S&P GSCI Business Day on which the calculation is made

$DCRP$  = the Daily Contract Reference Price

The Total Dollar Weight, which forms the basis for the calculation of the Normalizing Constant, is equal to the sum of the Dollar Weights of all Designated Contracts. The Dollar Weight of each Designated Contract is in turn calculated by multiplying the appropriate CPW by the applicable Daily Contract Reference Price (DCRP) on the day on which the calculation is made. Accordingly, the formula above can generally be used to calculate the Total Dollar Weight. However, during a Roll Period, as described in *Calculation of the S&P GSCI*, the S&P GSCI is calculated based on the DCRP of the First Nearby Contract Expiration and the Roll Contract Expiration of each Designated Contract, reflecting the fact that the S&P GSCI is being rolled from one Contract Expiration to the next.

As a result, the calculation of the Total Dollar Weight of the S&P GSCI during a Roll Period is adjusted to reflect the fact that different DCRP's are used for each Designated Contract (e.g., the respective DCRP of the First Nearby Contract Expiration and the Roll Contract Expiration). Further, because the roll implemented in January (and in any other Roll Period in which a re-weighting is implemented) involves changes not only in the Contract Roll Weights but also the CPWs, a special formula is needed for calculation of the Total Dollar Weight during such Roll Periods.



## Calculation of the Normalizing Constant

**The Total Dollar Weight Ratio.** The Total Dollar Weight Ratio is calculated according to the following:

$$TDWR = \frac{\sum_c (CPW_{new}^c * DCRP_d^c)}{\sum_c (CPW_{old}^c * DCRP_d^c)}$$

where:

$c$  = the Designated Contract

$d$  = the S&P GSCI Business Day on which the calculation is made

$CPW_{new}$  = CPWs that take effect on the first day of the new S&P GSCI Period

$CPW_{old}$  = the CPWs for the prior S&P GSCI Period

$DCRP$  = the Daily Contract Reference Price

**The Normalizing Constant.** With respect to a given S&P GSCI Period, the Normalizing Constant ( $NC_{new}$ ) is calculated on the last S&P GSCI Business Day of the previous S&P GSCI Period and is equal to the product of (i) the Normalizing Constant for the S&P GSCI Period ending on such day ( $NC_{old}$ ) and (ii) the Total Dollar Weight Ratio on such day, based on the Daily Contract Reference Price of the First Nearby Contract Expiration for each Designated Contract on such Day. The Normalizing Constant is rounded to seven digits of precision.

The formula for calculating the Normalizing Constant is the following:

$$NC_{new} = NC_{old} * TDWR$$

# Calculation of the S&P GSCI and Related Indices

## Overview of the Calculation Process

Because the S&P GSCI is designed as a tradable index that can be used to replicate actual commodity market performance, the calculation of the S&P GSCI takes into account the fact that a person holding positions in the First Nearby Contract Expiration of each Designated Contract would need to roll such positions forward as they approach settlement or delivery. For this reason, the methodology for calculating the S&P GSCI includes a rolling procedure designed to replicate the rolling of actual positions in the Designated Contracts. Moreover, because the rolling of actual positions in a Designated Contract on a single day could be difficult to implement or, if completed on a single day, could have an adverse impact on the market, such rolling would most likely take place over a period of several days. The rolling of the S&P GSCI into new Designated Contract Expirations (Roll Contract Expirations), therefore, similarly takes place over periods of several days, which constitute the Roll Periods. The calculation of the S&P GSCI, consequently, takes into account price levels of the First Nearby Contract Expiration on each S&P GSCI Commodity and, during the Roll Periods, price levels of the Roll Contract Expirations as well. Once the Roll Period has been completed, the Roll Contract Expiration becomes the First Nearby Contract Expiration.

In contrast, the S&P GSCI ER represents the return of a portfolio of commodity futures contracts, the composition of which reflects the CPWs of all Designated Contracts and the CRWs of all Designated Contract Expirations. The S&P GSCI ER is, therefore, calculated based on the Contract Daily Return.

The S&P GSCI TR reflects the performance of a total return investment in commodities — Contract Daily Return plus the daily interest on the funds hypothetically committed to the investment.

The S&P GSFPI is designed as a measure of the fair value of the S&P GSCI CME Futures Contracts and, therefore, does not reflect the rolling of the hypothetical positions in the S&P GSCI Commodities included in the S&P GSCI. In addition, the S&P GSFPI is calculated based on the CPWs and NC scheduled to be implemented on the first S&P GSCI Business Day of the month in which the first available S&P GSCI CME Futures Contract expires, which might not be the same as the CPWs and NC in effect on the day of calculation.

## Calculation of the S&P GSCI

**Daily Calculation of the S&P GSCI.** The value of the S&P GSCI on each S&P GSCI Business Day is equal to the Total Dollar Weight of the S&P GSCI divided by the Normalizing Constant. The value of the S&P GSCI is calculated on each S&P GSCI Business Day at such time as Daily Contract Reference Prices for the relevant Contract Expirations become available but, in any event, by no later than the S&P GSCI Settlement Time. The Daily Contract Reference Price for each First Nearby Contract Expiration or Roll Contract Expiration used in calculating the S&P GSCI is determined according to the procedure set forth below. The S&P GSCI is indexed to a value of 100 on January 2, 1970.

In formulaic terms, the calculation of the S&P GSCI is as follows, with the results of such calculation rounded to seven digits of precision:

$$S \ \& \ P \ GSCI_d = \frac{TDW_d}{NC}$$

The S&P GSCI, above, is the S&P GSCI Spot Index. The S&P GSCI Spot Index reflects only the prices of the First Nearby Contract Expirations, and during a Roll Period, the Roll Contract Expirations, on each S&P GSCI Business Day. The value of the S&P GSCI, therefore, is calculated solely based on the CPW

of each Designated Contract, and of the Daily Contract Reference Prices of the First Nearby Contract Expiration and/or the Roll Contract Expiration of each Designated Contract. These components together constitute the Total Dollar Weight (TDW) of the S&P GSCI. The TDW of the S&P GSCI is, then, divided by the Normalizing Constant to assure index continuity.

**Determination of Daily Contract Reference Prices.** The Daily Contract Reference Prices used in performing the calculations described in any of the provisions of this methodology are the most recent Daily Contract Reference Prices of the First Nearby Contract Expirations or Roll Contract Expirations as made available by the relevant Trading Facility to its members or participants (and S&P Dow Jones Indices) as of the S&P GSCI Settlement Time on the S&P GSCI Business Day on which the calculation is made, subject to the following:

- i. If the relevant Trading Facility fails to make available a Daily Contract Reference Price on a day that is a Contract Business Day, or if S&P Dow Jones Indices determines the available Daily Contract Reference Price reflects a manifest error, the relevant calculation is delayed until such time as such Price is made available or corrected. If a Daily Contract Reference Price has not been made available or the error has not been corrected, by the relevant Trading Facility by 04:00 PM, Eastern Time, S&P Dow Jones Indices may determine the appropriate Daily Contract Reference Price for the relevant Designated Contract for purposes of calculating the S&P GSCI. In that event, S&P Dow Jones Indices will disclose the basis for its determination of such Daily Contract Reference Price
- ii. If any S&P GSCI Business Day is not a Contract Business Day with respect to any Designated Contract Expiration, then the calculations will be made based on the most recently available Daily Contract Reference Price for the First Nearby Contract Expiration or Roll Contract Expiration on the most recent Contract Business Day, regardless of whether such Contract Business Day is also a S&P GSCI Business Day.
- iii. Notwithstanding the foregoing provisions of this section, if the Daily Contract Reference Price for any Contract Expiration on any S&P GSCI Business Day is corrected or finally made available by the relevant Trading Facility sufficiently early on the next S&P GSCI Business Day to enable S&P Dow Jones Indices to recalculate the S&P GSCI, then the value of the S&P GSCI for such S&P GSCI Business Day will be recalculated based on such Daily Contract Reference Price.
- iv. A Daily Contract Reference Price determined according to the procedure set forth in this section will be used in calculating the S&P GSCI regardless of whether such Price is a Limit Price.

**Contract Roll Weights and Roll Contract Expirations.** In calculating the Total Dollar Weight of the S&P GSCI during a Roll Period, the Contract Roll Weights of the First Nearby Contract Expiration and the Roll Contract Expiration of each S&P GSCI Commodity are equal to: (i) on the first day of the Roll Period with respect to such Commodity, 0.8 and 0.2, respectively; (ii) on the second day of the Roll Period, 0.6 and 0.4, respectively; (iii) on the third day of the Roll Period, 0.4 and 0.6 respectively; (iv) on the fourth day of the Roll Period, 0.2 and 0.8, respectively; and (v) on the fifth day of the Roll Period, 0.0 and 1.0, respectively, subject to the provisions in *Adjustment of Roll Period*.

This section specifies the procedures for rolling the First Nearby Contract Expiration of each Designated Contract into the appropriate Roll Contract Expiration. The roll is essentially implemented by adjusting the Contract Roll Weights of each of the First Nearby Contract Expiration and the Roll Contract Expiration, on each day of the Roll Period, in a manner that shifts the calculation of the S&P GSCI by a *pro rata* amount per day from the First Nearby Contract Expiration to the Roll Contract Expiration for each Designated Contract. The roll is reflected in the modified procedures for determining the Total Dollar Weight of the S&P GSCI during a Roll Period.

**Adjustment of Roll Period.** On any S&P GSCI Business Day, the occurrence of any of the following circumstances will result in an adjustment of a Roll Period according to the procedure set forth in this section:

- i. if such S&P GSCI Business Day is not a Contract Business Day with respect to any First Nearby Contract Expiration or Roll Contract Expiration;
- ii. the applicable Daily Contract Reference Price of any such Contract Expiration on such S&P GSCI Business Day is a Limit Price;

- iii. S&P Dow Jones Indices determines the Daily Contract Reference Price published by a Trading Facility for a particular Designated Contract Expiration reflects manifest error and such error is not corrected by the S&P GSCI Settlement Time, or the Trading Facility for any reason fails to publish a Daily Contract Reference Price for such Contract Expiration by 04:00 PM, Eastern Time. If the day is otherwise a Contract Business Day and the circumstances described in clauses (ii) and (iv) of this section do not exist with respect to such Contract Expiration on the relevant day, S&P Dow Jones Indices may determine the appropriate Daily Contract Reference Price for the relevant Designated Contract and determine the rolling of the S&P GSCI based on such Daily Contract Reference Price. S&P Dow Jones Indices will disclose the basis for its determination of such Daily Contract Reference Price. If the Trading Facility makes available a Daily Contract Reference Price or corrected Daily Contract Reference Price for such Contract Expiration prior to the opening of trading in such Contract Expiration on the next Contract Business Day, then the rolling of the portion of the S&P GSCI implemented on the prior S&P GSCI Business Day will be revised based on such Daily Contract Reference Price; or
- iv. trading in the relevant Contract Expiration for such S&P GSCI Business Day is terminated prior to the time at which, as of the opening of trading on such Day (as defined under the rules or policies of the relevant Trading Facility), trading in such Contract Expiration was scheduled to close, and trading in such Contract Expiration does not resume at least 10 minutes prior to, and continue until, the scheduled closing time (or the rescheduled closing time if such closing time was rescheduled as a result of the termination).

In any such event, the portion of the roll that would otherwise have taken place on such S&P GSCI Business Day will take place on the next Contract Business Day (provided that such Day is also a S&P GSCI Business Day) on which none of the circumstances identified in this section exist.

If on any day during a Roll Period the Daily Contract Reference Price of any First Nearby Contract Expiration or Roll Contract Expiration is a Limit Price, no Daily Contract Reference Price is available, or trading in the relevant Designated Contract is terminated earlier than scheduled (and does not resume within the specified time period), the portion of the roll that would otherwise have taken place on that day will be deferred until the next day on which such circumstances do not exist. This limitation is based on the fact that, under the circumstances described in this section, it would be difficult or impossible to liquidate and/or establish actual positions in the market and to perform the roll. Delaying the rolling of the S&P GSCI, therefore, serves to replicate the steps that would need to be taken in rolling actual market positions.

Under this procedure, if any of the enumerated circumstances exists on the first day of the Roll Period with respect to a First Nearby Contract Expiration or a Roll Contract Expiration, then no portion of the roll will be performed and 40% of the roll will be implemented on the next S&P GSCI Business Day. If such circumstances also exist on the second S&P GSCI Business Day of the Roll Period, then 60% of the roll will be performed on the third day, and so forth. If such circumstances exist throughout the five S&P GSCI Business Days initially designated as the Roll Period, then the entire roll will be performed on the next succeeding S&P GSCI Business Day on which none of these circumstances exist. This roll procedure also applies to the rolling of the S&P GSCI into the new CPWs and Normalizing Constant during the January Roll Period, or during any other Roll Period in which a re-weighting of the S&P GSCI is effected.

The only exception to the foregoing is that if the relevant Trading Facility makes available a Daily Contract Reference Price that reflects manifest error, and such error is not corrected by the S&P GSCI Settlement Time, or if the Trading Facility fails to make available any Daily Contract Reference Price by 4:00 PM, Eastern Time, on a day on which trading otherwise occurred, S&P Dow Jones Indices may determine the Daily Contract Reference Price to be used in implementing that day's roll. In such instances, S&P Dow Jones Indices will disclose the basis for its determination. If the Trading Facility, then, makes available a Daily Contract Reference Price or a corrected Daily Contract Reference Price prior to the opening of trading on the next Contract Business Day, S&P Dow Jones Indices will revise the calculation accordingly. This provision is intended to address the unlikely situation in which trading has taken place on or through a Trading Facility during the trading day, and market participants may therefore have rolled actual positions, but the Trading Facility, due to communications or equipment failures or other problems,

publishes an erroneous Daily Contract Reference Price or fails to publish a Daily Contract Reference Price by 04:00 PM, Eastern Time.

### Calculation of the S&P GSCI ER

**Calculation of TDW During a Roll Period.** The formula for calculating the Total Dollar Weight of the S&P GSCI on any S&P GSCI Business Day that occurs during a Roll Period (other than a January Roll Period or any other Roll Period in which a re-weighting of the S&P GSCI is effected) is the following:

$$TDW_d = \sum_c CPW^c * (CRW1_d^c * DCRPI_d^c + CRW2_d^c * DCRP2_d^c)$$

where

$c$  = each Designated Contract

$d$  = the S&P GSCI Business Day on which the calculation is made

$CRW1$  = the Contract Roll Weight of the First Nearby Contract Expiration

$CRW2$  = the Contract Roll Weight of the Roll Contract Expiration

$DCRP$  = the Daily Contract Reference Price of each respective Contract Expiration

On any S&P GSCI Business Day that does not occur during a Roll Period, the Total Dollar Weight of the S&P GSCI is calculated according to the procedure set forth above. During a Roll Period, however, the Total Dollar Weight reflects the fact that the S&P GSCI is being rolled from one Contract Expiration to the next. As a result, the formula for Total Dollar Weight during a Roll Period must be adjusted to reflect the fact that different Daily Contract Reference Prices are for each Designated Contract (i.e., the respective Daily Contract Reference Prices of the First Nearby Contract Expiration and the Roll Contract Expiration).

**Calculation of TDW in Connection with Changes in the Composition of the S&P GSCI.** The CPWs and NC for a given S&P GSCI Period are implemented during the Roll Period of the calendar month in which such S&P GSCI Period begins. In calculating the value of the S&P GSCI on each day of such Roll Period, (i) the Contract Roll Weight of the First Nearby Contract Expiration of each Designated Contract, as determined and adjusted in prior sections, is multiplied by the applicable Daily Contract Reference Price of such Contract Expiration and the CPW of the relevant Designated Contract for the prior S&P GSCI Period, and divided by the NC for the prior S&P GSCI Period, and (ii) the Contract Roll Weight of the Roll Contract Expiration of each Designated Contract, as determined and adjusted in prior sections, is multiplied by the applicable Daily Contract Reference Price of such Contract Expiration and the CPW of the relevant Designated Contract for the new S&P GSCI Period and divided by the NC for such new S&P GSCI Period.

The formula for calculating the Total Dollar Weight of the S&P GSCI on any S&P GSCI Business Day that occurs during the January Roll Period, or during any other Roll Period in which a re-weighting of the S&P GSCI is effected, is the following:

$$TDW_d = \frac{NC_{new}}{NC_{old}} \times \sum_c [CPW1^c \times CRW1_d^c \times DCRPI_d^c] + \sum_c [CPW2^c \times CRW2_d^c \times DCRP2_d^c]$$

where

$c$  = each Designated Contract

$d$  = the S&P GSCI Business Day on which the calculation is made

$CRW1$  = the Contract Roll Weight of the First Nearby Contract Expiration

$CRW2$  = the Contract Roll Weight of the Roll Contract Expiration

$CPW1$  = the CPW of the First Nearby Contract Expiration

$CPW2$  = the CPW of the Roll Contract Expiration

$DCRP$  = the Daily Contract Reference Price of each respective Contract Expiration

During the January Roll Period, and during any other Roll Period in which a re-weighting of the S&P GSCI is implemented, the S&P GSCI rolls into the new CPWs and NC during the regularly scheduled monthly Roll Period. For example, on the first day of the January Roll Period, which is the fifth (5<sup>th</sup>) S&P GSCI Business Day of the month, 80% of the S&P GSCI is calculated based on the CPWs and NC for the prior S&P GSCI Period and 20% of the S&P GSCI is calculated based on the CPWs and NC for the S&P GSCI Period beginning on such Day. On the sixth (6<sup>th</sup>) through ninth (9<sup>th</sup>) S&P GSCI Business Days, the percentages are 60/40, 40/60, 20/80 and 0/100, respectively. On the ninth (9<sup>th</sup>) S&P GSCI Business Day, the roll is completed, unless the Roll Period is extended as a result of the occurrence of one of the events specified above.

In order to reflect this roll into the new CPWs and Normalizing Constant, the formula for the Total Dollar Weight of the S&P GSCI requires the additional adjustments detailed above. Specifically, because the CPWs of the First Nearby Contract Expiration and the Roll Contract Expiration will be different,  $CPW1$  and  $CPW2$ , as set forth above, must enter the calculation. In addition, the result of this calculation must be multiplied by the Total Dollar Weight Ratio, which reflects the change in the Total Dollar Weight resulting from the shift to new CPWs and, therefore, when multiplied by  $CRW1$  and  $CRW2$ , rolls the S&P GSCI into the new CPWs and the new Normalizing Constant.

**Calculation of the Contract Daily Return.** On any S&P GSCI Business Day, the Contract Daily Return is equal to the ratio of the Total Dollar Weight Obtained (TDWO) on such Day and the Total Dollar Weight Invested (TDWI) on the preceding S&P GSCI Business Day, minus one.

In formulaic terms, the Contract Daily Return is calculated as follows:

$$CDR_d = \frac{TDWO_d}{TDWI_{d-1}} - 1$$

The principal component of the calculation of the S&P GSCI ER is the determination of the Contract Daily Return (CDR) for a given S&P GSCI Business Day. The CDR is calculated by reference to the Total Dollar Weight of the S&P GSCI. The Contract Daily Return is generally defined as the percentage change in the Total Dollar Weight of the S&P GSCI from one S&P GSCI Business Day to the next. The Contract Daily Return, therefore, reflects the returns that would be realized by holding positions in the Designated Contract Expirations, appropriately weighted to reflect the CPWs, from the closing of the Trading Facilities on the prior day to the closing of such Trading Facilities on the day on which the calculation is performed. This feature of replicating the performance of actual market positions makes the S&P GSCI a tradable index.

As set forth in prior sections, the formula for calculation of the Total Dollar Weight of the S&P GSCI on those days that occur during a Roll Period differs from the formula used on other days. In addition, during the January Roll Period, or any other Roll Period in which a re-weighting of the S&P GSCI is implemented, a further adjustment to this formula must be made.

Once the appropriate formula for calculating the Total Dollar Weight of the S&P GSCI is determined, the Total Dollar Weight Invested, which reflects a hypothetical investment in the S&P GSCI based on the CPWs, CRW's and Daily Contract Reference Prices on the preceding S&P GSCI Business Day, and the

Total Dollar Weight Obtained, which reflects the return on the hypothetical investment and is calculated based on the CPWs and CRWs in effect on the preceding day but on the Daily Contract Reference Prices used to calculate the S&P GSCI on the current day, can be determined. The Contract Daily Return can, then, be calculated by dividing the Total Dollar Weight Obtained on the day on which the calculation is made by the Total Dollar Weight Invested of the preceding day.

**Daily Calculation of the S&P GSCI ER.** On any S&P GSCI Business Day, the value of the S&P GSCI ER is equal to the product of (i) the value of the S&P GSCI ER on the preceding S&P GSCI Business Day and (ii) one plus the Contract Daily Return on the S&P GSCI Business Day on which the calculation is made. The value of the S&P GSCI ER is indexed to a base value of 100 on January 2, 1970. The result of the foregoing calculation is then rounded to seven digits of precision.

In formulaic terms, the S&P GSCI ER is:

$$S\&P\ GSCI\ ER_d = S\&P\ GSCI\ ER_{d-1} * (1 + CDR_d)$$

The S&P GSCI ER is calculated on a cumulative basis beginning with the first day for which the S&P GSCI ER was calculated, which was January 2, 1970. The value of the S&P GSCI ER on any S&P GSCI Business Day, therefore, can be determined by reference to the value on the preceding S&P GSCI Business Day and the Contract Daily Return on the day of calculation.

### Calculation of the S&P GSCI TR

**The Treasury Bill Return.** On any given calendar day, the Treasury Bill Return is equal to:

$$TBR_d = \left[ \frac{1}{1 - \frac{91}{360} \times TBAR_{d-1}} \right]^{\frac{1}{91}} - 1$$

The subscript *d-1* on TBAR indicates that the Treasury Bill Rate used in the calculation is the Rate available on the preceding S&P GSCI Business Day.

**Daily Calculation of the S&P GSCI TR.** On any S&P GSCI Business Day, the value of the S&P GSCI TR is equal to the product of (i) the value of the S&P GSCI TR on the preceding S&P GSCI Business Day and (ii) one plus the sum of the Contract Daily Return and the Treasury Bill Return on the S&P GSCI Business Day on which the calculation is made and (iii) one plus the Treasury Bill Return for each non S&P GSCI Business Day since the preceding S&P GSCI Business Day. The result of the foregoing calculation is, then, rounded to seven digits of precision.

In formulaic terms:

$$S\&P\ GSCI\ TR_d = S\&P\ GSCI\ TR_{d-1} * (1 + CDR_d + TBR_d) * (1 + TBR_d)^{days}$$

where *days* is the number of non S&P GSCI Business Days since the preceding S&P GSCI Business Day. The S&P GSCI TR is set equal to 100 on January 2, 1970.

### Calculation of the S&P GSCI FPI Index

The S&P GSCI FPI is an index designed to mimic the S&P GSCI, with the following exceptions:

1. The FPI Index does not incorporate the standard 5-day roll monthly period. There is no roll period.

2. The index always has a 100% weight in the current contract, and always uses the current Contract Production Weights (CPW) for the underlying contracts and current Normalizing Constant (NC) based on the S&P GSCI to calculate the index level through the 11<sup>th</sup> business day of the month. On the 12<sup>th</sup> business day of the month, the current contracts, CPWs and NCs are changed to reflect the current composition of the S&P GSCI.

The purpose of the S&P GSCI FPI Index is to serve as the underlying index for the S&P GSCI Futures Contracts available for trade at CME Group, which expire on the 11<sup>th</sup> business day of every month. The index also serves as a benchmark for the fair value of such futures contracts.

### **CPWs for the S&P GSCI Reduced Energy Index, S&P GSCI Light Energy Index, and S&P GSCI Ultra-Light Energy Index**

The S&P GSCI Reduced Energy Index, S&P GSCI Light Energy Index and S&P GSCI Ultra-Light Energy Index are three indices that are comprised of the same Designated Contracts as the S&P GSCI but whose Contract Production Weights (CPW) of all Designated Contracts in the energy sector have been divided by two (S&P GSCI Reduced Energy Index), by four (S&P GSCI Light Energy Index), or by eight (S&P GSCI Ultra-Light Energy Index). Because the CPWs of energy-related S&P GSCI Commodities are reduced in these indices, the relative weights of other S&P GSCI Commodities are necessarily increased. As a result, although the S&P GSCI Reduced Energy Index, the S&P GSCI Light Energy Index and the S&P GSCI Ultra-Light Energy Index contain all of the S&P GSCI Commodities that are included in the S&P GSCI, they are not world-production weighted in the same manner as the S&P GSCI.

### **Currency, Currency Hedged, and Risk Control Indices**

Currency, currency hedged, and risk control versions of the indices may be available. For a list of available currency, currency hedged, and risk control indices, please contact Client Services at [index\\_services@spglobal.com](mailto:index_services@spglobal.com).

*For more information on currency, currency hedged, and risk control indices, please refer to S&P Dow Jones Indices' Index Mathematics Methodology.*



# Index Governance

## Index Committee

S&P Dow Jones Indices has established an Index Committee to oversee the daily management and operations of the S&P GSCI, and is responsible for all analytical methods and calculation in the indices. The Committee is comprised of full-time professional members of S&P Dow Jones Indices staff. At each meeting, the Committee reviews any issues that may affect index constituents, statistics comparing the composition of the indices to the market, commodities that are being considered as candidates for addition to an index, and any significant market events. In addition, the Index Committee may revise index policy covering rules for selecting commodities, or other matters.

S&P Dow Jones Indices considers information about changes to its indices and related matters to be potentially market moving and material. Therefore, all Index Committee discussions are confidential.

All references to methodology-related decisions made by S&P Dow Jones Indices in this document represent decisions made by the Index Committee.

S&P Dow Jones Indices' Index Committees reserve the right to make exceptions when applying the methodology if the need arises. In any scenario where the treatment differs from the general rules stated in this document or supplemental documents, clients will receive sufficient notice, whenever possible.

In addition to the daily governance of indices and maintenance of index methodologies, at least once within any 12-month period, the Index Committee reviews the methodology to ensure the indices continue to achieve the stated objectives, and that the data and methodology remain effective. In certain instances, S&P Dow Jones Indices may publish a consultation inviting comments from external parties.

*For information on:*

- *Quality Assurance*
- *Internal Reviews of Methodology*
- *Calculations and Pricing Disruptions*
- *Error Correction*
- *Expert Judgment*
- *Data Hierarchy*
- *Unexpected Exchange Closures*

*Please refer to S&P Dow Jones Indices' Commodities Indices Policies & Practices document.*

## Commodity Index Advisory Panel

S&P Dow Jones Indices has established a Commodity Index Advisory Panel to assist it in connection with the operation of the S&P GSCI. The Panel meets on an annual basis and at other times at the request of the Index Committee. The principal purpose of the Panel is to advise the Index Committee with respect to, among other things, the calculation of the S&P GSCI, the effectiveness of the S&P GSCI as a measure of commodity futures market performance and the need for changes in the composition or methodology of the S&P GSCI. The Panel acts solely in an advisory and consultative capacity; the Index Committee makes all decisions with respect to the composition, calculation and operation of the S&P GSCI. Certain members of the Panel may be affiliated with clients of S&P Dow Jones Indices. Also, certain members of the Panel may be affiliated with entities which, from time to time, may have investments linked to the S&P GSCI, either through transactions in the Contracts included in the S&P GSCI, futures contracts on the S&P GSCI or derivative products linked to the S&P GSCI.

# Index Dissemination

Index levels are available through S&P Dow Jones Indices' Web site at [www.spdji.com](http://www.spdji.com), major quote vendors, numerous investment-oriented Web sites, and various print and electronic media.

## Tickers

The table below lists headline indices covered by this document. All currency, currency hedged, risk control, and return type versions of the below indices that may exist are also covered by this document. Please contact [index\\_services@spglobal.com](mailto:index_services@spglobal.com) for a complete list of indices covered by this document.

Index Name	S&P DJI Index Code	Bloomberg Ticker, Real Time	Bloomberg Ticker	Reuters RIC
S&P GSCI	SPGSCI	SPGSCI	SPGCC	.SPGSCI
S&P GSCI Agriculture	SPGSAG	SPGSAG	SPGCAG	.SPGSAG
S&P GSCI Agriculture & Livestock	SPGSAL	SPGSAL	SPGCAL	.SPGSAL
S&P GSCI All Cattle	SPGSAC	SPGSAC	SPGCAC	.SPGSAC
S&P GSCI All Crude	SPGSCR	SPGSCR	SPGCCR	.SPGSCR
S&P GSCI All Metals	SPGSAM	SPGSAM	SPGCAM	.SPGSAM
S&P GSCI All Wheat	SPGSWT	SPGSWT	SPGCWT	.SPGSWT
S&P GSCI Covered Call Select	SPCLCI	--	SPCLCI	--
S&P GSCI Energy	SPGSEN	SPGSEN	SPGCEN	.SPGSEN
S&P GSCI Energy & Metals	SPGSEM	SPGSEM	SPGCEM	.SPGSEM
S&P GSCI Four Energy Commodities	SPGSFE	--	--	.SPGSFE
S&P GSCI Grains	SPGSGR	SPGSGR	SPGCGR	.SPGSGR
S&P GSCI Industrial Metals	SPGSIN	SPGSIN	SPGCIN	.SPGSIN
S&P GSCI Light Energy	SPGSLE	SPGSLE	SPGCLE	.SPGSLE
S&P GSCI Livestock	SPGSLV	SPGSLV	SPGCLV	.SPGSLV
S&P GSCI Multiple Contract	SPMCCI	--	SPMCCI	--
S&P GSCI Non Energy	SPGSNE	SPGSNE	SPGCNE	.SPGSNE
S&P GSCI Non Livestock	SPGSNL	SPGSNL	SPGCNL	.SPGSNL
S&P GSCI Non Natural Gas	SPGSXN	SPGSXN	SPGCXN	.SPGSXN
S&P GSCI Non Precious Metals	SPGSXP	SPGSXP	SPGCXP	.SPGSXP
S&P GSCI Petroleum	SPGSPT	SPGSPT	SPGCPT	.SPGSPT
S&P GSCI Precious Metals	SPGSPM	SPGSPM	SPGCPM	.SPGSPM
S&P GSCI Reduced Energy	SPGSRE	SPGSRE	SPGCRE	.SPGSRE
S&P GSCI Softs	SPGSSF	SPGSSF	SPGCSF	.SPGSSF
S&P GSCI Ultra Light Energy	SPGSUE	SPGSUE	SPGCUE	.SPGSUE
S&P GSCI Capped Commodity	SPGSUCE	SPGSCP	SPGCCP	.SPGSCP
S&P GSCI Capped Component	SPGSUC	SPGSUC	SPGCUC	.SPGSUC
S&P GSCI Enhanced Capped Commodity	SPGSCIESC	--	SGECCP	--
S&P GSCI Enhanced Capped Component	SPGSCIE27C	SGESCI	SGECCI	.SGESCI
S&P GSCI 1 Month Forward	SG1MCI	--	SG1MCI	.SG1MCI
S&P GSCI 2 Month Forward	SG2MCI	--	SG2MCI	.SG2MCI
S&P GSCI 3 Month Forward	SG3MCI	--	SG3MCI	.SG3MCI
S&P GSCI 4 Month Forward	SG4MCI	--	SG4MCI	.SG4MCI
S&P GSCI 5 Month Forward	SG5MCI	--	SG5MCI	.SG5MCI
S&P GSCI 6 Month Forward	SG6MCI	--	SG6MCI	--
S&P GSCI 12 Month Forward	SG12MCI	--	SG12MCI	--
S&P GSCI Dynamic Roll	SPDYCI	--	SPDYCI	--
S&P GSCI Enhanced Commodity	SPGSCIES	SPGSES	SPGCES	.SPGSES

**FTP**

Daily index level data is available via FTP on subscription.

*For product information, please contact S&P Dow Jones Indices, [www.spdji.com/contact-us](http://www.spdji.com/contact-us).*

**Web site**

*For further information, please refer to S&P Dow Jones Indices' Web site at [www.spdji.com](http://www.spdji.com).*

# Appendix A: Contracts Included in the S&P GSCI for 2018

S&P Dow Jones Indices has performed the annual calculation to determine the initial CPWs for the S&P GSCI 2018, as required by the S&P GSCI Methodology, based on trading volume from September 2016 to August 2017. The audited results of the calculations are presented in this Appendix. No new commodities will enter at this time and no existing commodities will be removed.

## **Contracts included in the 2018 S&P GSCI**

**Table 1 (on the next page)** identifies the Contracts included in the 2018 S&P GSCI as well as the Contract Production Weights and Designated Contract Expirations for each such Contract in 2018. The Reference Percentage Dollar Weights were calculated based on the Average Contract Reference Prices for the 2018 Annual Calculation Period; actual Percentage Dollar Weights on any given S&P GSCI Business Day will vary depending on actual 2017 Daily Contract Prices.

**Table 1: Contracts Included in the S&P GSCI for 2018**

Trading Facility	Commodity	Ticker <sup>(1)</sup>	2017 CPW	2018 CPW	2018 ACRP (\$)	Unit	2017 PDW <sup>(2)</sup>	2018 RPDW	2018 TDVT (USD bn)	2018 TVM	Designated Contract											
											Expirations at Month Begin <sup>(3)</sup>											
											1	2	3	4	5	6	7	8	9	10	11	12
CBT	Chicago Wheat	W	19593.74	18577.02	4.3471	bu	3.25%	3.03%	713.3	117.8	H	H	K	K	N	N	U	U	Z	Z	Z	H
KBT	Kansas Wheat	KW	5539.8	6791.687	4.4017	bu	0.93%	1.12%	264.1	117.8	H	H	K	K	N	N	U	U	Z	Z	Z	H
CBT	Corn	C	35028.78	36718.35	3.6148	bu	4.83%	4.98%	1571.5	157.8	H	H	K	K	N	N	U	U	Z	Z	Z	H
CBT	Soybeans	S	9317.775	9939.278	9.8231	bu	3.49%	3.66%	2659.4	363.1	H	H	K	K	N	N	X	X	X	X	F	F
ICE - US	Coffee	KC	18863.52	19130.13	1.4099	lbs	1.01%	1.01%	493.7	244	H	H	K	K	N	N	U	U	Z	Z	Z	H
ICE - US	Sugar	SB	356948.3	371030.6	0.1787	lbs	2.43%	2.49%	628.8	126.4	H	H	K	K	N	N	V	V	V	H	H	H
ICE - US	Cocoa	CC	4.482378	4.499853	2161.0833	MT	0.37%	0.36%	228.6	313.3	H	H	K	K	N	N	U	U	Z	Z	Z	H
ICE - US	Cotton	CT	56919.26	58443.26	0.7267	lbs	1.58%	1.59%	275.2	86.4	H	H	K	K	N	N	Z	Z	Z	Z	Z	H
CME	Lean Hogs	LH	89422.62	89508.52	0.6602	lbs	2.25%	2.22%	282.4	63.7	G	J	J	M	M	N	Q	V	V	Z	Z	G
CME	Live Cattle	LC	94811.31	95985.02	1.1282	lbs	4.08%	4.06%	711.8	87.6	G	J	J	M	M	Q	Q	V	V	Z	Z	G
CME	Feeder Cattle	FC	22425.74	24819.72	1.3454	lbs	1.15%	1.25%	219.5	87.6	H	H	J	K	Q	Q	Q	U	V	X	F	F
NYM / ICE	WTI Crude Oil	CL	12637.76	13241.68	49.7308	bbbl	23.97%	24.70%	18080.2	366	G	H	J	K	M	N	Q	U	V	X	Z	F
NYM	Heating Oil	HO	71069.42	64895.68	1.5925	gal	4.32%	3.88%	2837.4	366	G	H	J	K	M	N	Q	U	V	X	Z	F
NYM	RBOB Gasoline	RB	78841	76651.74	1.5944	gal	4.79%	4.58%	3355.4	366	G	H	J	K	M	N	Q	U	V	X	Z	F
ICE - UK	Brent Crude Oil	LCO	8679.141	8574.135	52.5200	bbbl	17.39%	16.89%	12363.7	366	H	J	K	M	N	Q	U	V	X	Z	F	G
ICE - UK	Gasoil	LGO	286.6551	263.1475	469.5417	MT	5.13%	4.63%	3392.4	366	G	H	J	K	M	N	Q	U	V	X	Z	F
NYM / ICE	Natural Gas	NG	32577.49	33432.15	3.1088	MMBtu	3.86%	3.90%	4232.1	542.8	G	H	J	K	M	N	Q	U	V	X	Z	F
LME	Aluminum	MAL	48.692	52.096	1856.8542	MT	3.45%	3.63%	2407.6	331.8	G	H	J	K	M	N	Q	U	V	X	Z	F
LME	Copper	MCU	19.68	20.44	5776.2708	MT	4.34%	4.43%	4930.6	556.7	G	H	J	K	M	N	Q	U	V	X	Z	F
LME	Nickel	MNI	1.658	1.784	10234.8958	MT	0.65%	0.68%	1228	896.5	G	H	J	K	M	N	Q	U	V	X	Z	F
LME	Lead	MPB	9.894	10.322	2239.1250	MT	0.85%	0.87%	569.6	328.5	G	H	J	K	M	N	Q	U	V	X	Z	F
LME	Zinc	MZN	12.58	12.86	2704.1250	MT	1.30%	1.30%	1892.1	725.3	G	H	J	K	M	N	Q	U	V	X	Z	F
CMX	Gold	GC	85.00658	89.70059	1251.1583	oz	4.06%	4.21%	7958.7	945.3	G	J	J	M	M	Q	Q	Z	Z	Z	Z	G
CMX	Silver	SI	787.0504	794.1235	17.4504	oz	0.52%	0.52%	1877.5	1806.1	H	H	K	K	N	N	U	U	Z	Z	Z	H

(1) Tickers are Reuters RIC Codes.

(2) Using the ACRP's for the 2017 Annual Calculation Period.

(3) Future Months included in the S&P GSCI at the beginning of each calendar month, starting with January 2018. Table 2 contains Month letter codes.

**Abbreviations:**

bbbl Barrels                      lbs Pounds                      bu Bushel                      MMBtu Million British Thermal Units  
gal U.S. Gallons                      oz Troy Ounces                      MT Metric Tons

**Table 2: Month Letter Codes**

Month	Letter Code
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

**Composition of S&P GSCI Sub-Indices**

**Table 3 (below)** demonstrates the effects of re-weighting on the principal S&P GSCI Sub-Indices. The Reference Percentage Dollar Weights were calculated based on Average Contract Reference Prices for the 2017 Annual Calculation Period; actual Daily Percentage Dollar Weights will vary, depending on actual 2017 Daily Contract Prices.

**Table 3: Composition of S&P GSCI Sub-Indices**

Sub-Index	2017 PDW*	2018 RPDW	Included Commodities
Energy	59.47%	58.58%	Crude Oil (and supporting contracts) and Natural Gas
Petroleum	55.60%	54.68%	Crude Oil (and supporting contracts)
Non-Energy	40.53%	41.42%	All commodities not included in Energy Sub-Index
Agriculture	17.89%	18.25%	Wheat (Chi. & Kan.), Corn, Soybeans, Coffee, Sugar, Cocoa and Cotton
Grains	12.50%	12.79%	Wheat (Chi. & Kan.), Corn and Soybeans
Livestock	7.48%	7.53%	Lean Hogs, Live Cattle and Feeder Cattle
Industrial Metals	10.57%	10.91%	Aluminum, Copper, Lead, Nickel and Zinc
Precious Metals	4.58%	4.73%	Gold and Silver

\* Based on the Average Contract Reference Prices for the 2017 Annual Calculation Period.

## WPAs and Conversion Factors

The WPAs, relevant units and conversion factors used for the Designated Contracts becoming effective during the first Roll Period for the S&P GSCI year 2018 are shown below.

**Table 4: World Production Averages for 2017 S&P GSCI Commodities**

S&P GSCI Commodity	WPQ Units	2017 WPA	2018 WPA	Percentage Change
Wheat	1000 MT	684,023	690,423	0.9%
Corn	1000 MT	889,771	932,688	4.8%
Soybeans	1000 MT	253,588	270,503	6.7%
Coffee	1000 MT	8,556	8,677	1.4%
Sugar	1000 MT	161,909	168,297	3.9%
Cocoa	1000 MT	4,482	4,500	0.4%
Cotton	1000 MT	25,818	26,509	2.7%
Lean Hogs	1000 MT	40,561	40,600	0.1%
Cattle	1000 MT	53,178	54,796	3.0%
Crude Oil	1000 MT	3,642,594	3,661,383	0.5%
Natural Gas	1000 Petajoules	34,398	35,300	2.6%
Aluminum	1000 MT	48,692	52,096	7.0%
Copper	1000 MT	19,680	20,440	3.9%
Nickel	1000 MT	1,658	1,784	7.6%
Lead	1000 MT	9,894	10,322	4.3%
Zinc	1000 MT	12,580	12,860	2.2%
Gold	1 kg	2,644,000	2,790,000	5.5%
Silver	1 MT	24,480	24,700	0.9%

Note: the contracts considered for inclusion in the S&P GSCI 2018 table are available on the S&P Dow Jones Indices' Web site.

### **Abbreviations:**

MT: Metric Tons

kg: Kilograms

## Contract Units and Conversion Factors for 2018 S&P GSCI Contracts

Table 5: Contract Units and Conversion Factors for 2018 S&P GSCI Contracts

Trading Facility	Contract	Contract Size	Units	Conversion Factor Between Contract Units and WPQ Units
CBT	Chicago Wheat	5,000	bu	1,000/36.7
KBT	Kansas City Wheat	5,000	bu	1,000/36.7
CBT	Corn	5,000	bu	1,000/39.4
CBT	Soybeans	5,000	bu	1,000/36.7
ICE - US	Coffee	37,500	lbs	2,204.62
ICE - US	Sugar	112,000	lbs	2,204.62
ICE - US	Cocoa	10	MT	1
ICE - US	Cotton	50,000	lbs	2,204.62
CME	Lean Hogs	40,000	lbs	2,204.62
CME	Live Cattle	40,000	lbs	2,204.62
CME	Feeder Cattle	50,000	lbs	2,204.62
NYM / ICE	Crude Oil	1,000	bbl	7.33
NYM	Heating Oil	42,000	gal	315
NYM	RBOB Gasoline	42,000	gal	355
ICE - UK	Brent Crude Oil	1,000	bbl	7.33
ICE - UK	Gasoil	100	MT	1
NYM / ICE	Natural Gas	10,000	MMBtu	947,086.29
LME	Aluminum	25	MT	1
LME	Copper	25	MT	1
LME	Nickel	6	MT	1
LME	Lead	25	MT	1
LME	Zinc	25	MT	1
CMX	Gold	100	oz	32.15075
CMX	Silver	5,000	oz	32,150.75

### **Sources and Notes:**

Contract Size / Units (Domestic Trading Facilities): *Futures Industry Association, Monthly Volume Report.*

Contract Size / Units (Foreign Trading Facilities): *Futures Industry Association, Futures and Options Fact Book.*

Bloomberg

### **Abbreviations:**

bbl: Barrels

gal: U.S. Gallons

lbs: Pounds

MMBtu: Million British Thermal Units

MT: Metric Tons

oz: Ounces

bu: Bushels



## Sources for World Production Data

According to the S&P GSCI Methodology, the WPQ Period for the 2018 S&P GSCI is 2010-2014. This is the most recent period for which data was available for all S&P GSCI Commodities.

<b>Commodity</b>	<b>Primary Source for Production Data</b>
<b>Wheat</b>	FAOSTAT <a href="http://faostat.fao.org/site/567/default.aspx#ancor">http://faostat.fao.org/site/567/default.aspx#ancor</a> (Commodity: "Wheat", Year 2010-2014)
<b>Corn</b>	FAOSTAT <a href="http://faostat.fao.org/site/567/default.aspx#ancor">http://faostat.fao.org/site/567/default.aspx#ancor</a> (Commodity: "Maize", Year 2010-2014)
<b>Soybeans</b>	FAOSTAT <a href="http://faostat.fao.org/site/567/default.aspx#ancor">http://faostat.fao.org/site/567/default.aspx#ancor</a> (Commodity: "Soybeans", Year 2010-2014)
<b>Coffee</b>	FAOSTAT <a href="http://faostat.fao.org/site/567/default.aspx#ancor">http://faostat.fao.org/site/567/default.aspx#ancor</a> (Commodity: "Coffee, green", Year 2010-2014)
<b>Sugar</b>	USDA <a href="http://www.fas.usda.gov/psdonline/psdQuery.aspx">http://www.fas.usda.gov/psdonline/psdQuery.aspx</a> (Commodity: "Sugar, Centrifugal", Year 2010-2014)
<b>Cocoa</b>	FAOSTAT <a href="http://faostat.fao.org/site/567/default.aspx#ancor">http://faostat.fao.org/site/567/default.aspx#ancor</a> (Commodity: "Cocoa beans", Year 2010-2014)
<b>Cotton</b>	*USDA <a href="http://www.fas.usda.gov/psdonline/psdQuery.aspx">http://www.fas.usda.gov/psdonline/psdQuery.aspx</a> (Commodity: "Cotton", Year 2010-2014)
<b>Lean Hogs</b>	UN Data <a href="http://data.un.org/Data.aspx?q=pork&amp;d=ICS&amp;f=cmlD%3a21110-2">http://data.un.org/Data.aspx?q=pork&amp;d=ICS&amp;f=cmlD%3a21110-2</a> FAOSTAT <a href="http://faostat.fao.org/site/567/default.aspx#ancor">http://faostat.fao.org/site/567/default.aspx#ancor</a> (Commodity: "Pig Meat", Year 2010-2014)
<b>Cattle</b>	UN Data <a href="http://data.un.org/Data.aspx?q=beef&amp;d=ICS&amp;f=cmlD%3a21110-1">http://data.un.org/Data.aspx?q=beef&amp;d=ICS&amp;f=cmlD%3a21110-1</a> USDA <a href="http://www.nass.usda.gov/Publications/Ag_Statistics/2016/Chapter07.pdf">http://www.nass.usda.gov/Publications/Ag_Statistics/2016/Chapter07.pdf</a> (Agriculture Statistics 2015, Table 7-9 and Table 7-65) FAOSTAT <a href="http://faostat.fao.org/site/569/DesktopDefault.aspx?PageID=569#ancor">http://faostat.fao.org/site/569/DesktopDefault.aspx?PageID=569#ancor</a> (Commodity: "Cattle Meat", Year 2010-2014)
<b>Crude Oil</b>	UN Data <a href="http://data.un.org/Data.aspx?q=crude+petroleum&amp;d=ICS&amp;f=cmlD%3a12010-0">http://data.un.org/Data.aspx?q=crude+petroleum&amp;d=ICS&amp;f=cmlD%3a12010-0</a>
<b>Natural Gas</b>	UN Data <a href="http://data.un.org/Data.aspx?q=natural+gas+&amp;d=ICS&amp;f=cmlD%3a12020-1">http://data.un.org/Data.aspx?q=natural+gas+&amp;d=ICS&amp;f=cmlD%3a12020-1</a>
<b>Aluminum</b>	USGS - MYB 2014 <a href="http://minerals.usgs.gov/minerals/pubs/commodity/aluminum/">http://minerals.usgs.gov/minerals/pubs/commodity/aluminum/</a> (Table 13: Aluminum, Primary: World Production By Country)
<b>Copper</b>	USGS - MYB 2014 <a href="http://minerals.usgs.gov/minerals/pubs/commodity/copper/">http://minerals.usgs.gov/minerals/pubs/commodity/copper/</a> (Table 22: Copper: World Refinery Production By Country)
<b>Nickel</b>	USGS - MYB 2013 <a href="http://minerals.usgs.gov/minerals/pubs/commodity/nickel/">http://minerals.usgs.gov/minerals/pubs/commodity/nickel/</a> (Table 12: Nickel: World Plant Production By Country) International Nickel Study Group <a href="http://www.insg.org/stats.aspx">http://www.insg.org/stats.aspx</a> (World Nickel Statistics - 2014 Primary Nickel Production)
<b>Lead</b>	USGS - MYB 2014 <a href="http://minerals.usgs.gov/minerals/pubs/commodity/lead/">http://minerals.usgs.gov/minerals/pubs/commodity/lead/</a> (Table 13: Lead: World Refinery Production By Country)
<b>Zinc</b>	USGS - MYB 2014 <a href="http://minerals.usgs.gov/minerals/pubs/commodity/zinc/">http://minerals.usgs.gov/minerals/pubs/commodity/zinc/</a> (Table 10: Zinc: World Smelter Production By Country)
<b>Gold</b>	USGS - MYB 2014 <a href="http://minerals.usgs.gov/minerals/pubs/commodity/gold/">http://minerals.usgs.gov/minerals/pubs/commodity/gold/</a> (Table 8: Gold: World Mine Production By Country)
<b>Silver</b>	USGS - MYB 2014 <a href="http://minerals.usgs.gov/minerals/pubs/commodity/silver/">http://minerals.usgs.gov/minerals/pubs/commodity/silver/</a> (Table 8: Silver: World Mine Production By Country)

## Appendix B: Calculation of S&P GSCI Forwards

S&P Dow Jones Indices calculates forward month versions of the S&P GSCI indices. S&P GSCI forward indices measure the S&P GSCI Spot, Excess Return, and Total Return indices based on First Nearby Contract Expirations that would be in the index on the specified forward dates.

For example, on December 11, 2015 the Designated Contracts of the S&P GSCI three-month forward include those Designated Contract Expirations which would be in the S&P GSCI on March 11, 2016 -- i.e. the First Nearby Contract Expiration is moved forward three-months.

The forward indices follow the same rules, weights and calculation methodology as the S&P GSCI, with the exception that the Designated Contract Expirations are advanced (contract months specified in Table 1) by the number of months identified by the specific forward (1 through 6 and 12 month forward). There are seven forward month versions of the S&P GSCI: one-month forward, two-months forward, three-months forward, four-months forward, five-months forward, six-months forward, and twelve-months forward.

The 12 Month Forward Index uses slightly different Designated Contract Expirations for two specific commodities. Feeder Cattle (commodity code: FC) and Gas Oil (commodity code: LGO) use the same Designated Contract Expirations as the main S&P GSCI Index.

## Appendix C: Calculation of S&P GSCI, Non-US Dollar Denominations

S&P Dow Jones Indices calculates a number of non-US dollar denominated versions of the S&P GSCI. Currently, S&P GSCI versions for the five following currencies are calculated: the Australia Dollar (AUD), the Euro (EUR), the Japanese Yen (JPY), the Swiss Franc (CHF) and the United Kingdom Pound (GBP). Based on the specific currency involved, Hedged and Unhedged versions of the S&P GSCI Spot, S&P GSCI Excess Return, and S&P GSCI Total Return are calculated. The Euro and Yen Unhedged versions of the S&P GSCI represent the value of the S&P GSCI translated into the specific currency. They are calculated by multiplying the previous day's S&P GSCI currency index by the ratio of the current underlying index level to the previous session's underlying index level, multiplied by the ratio of the current FX rate to the previous session's FX rate. The FX rates are obtained from WM using the 11:00 am NY (ET) rate.

The currency Hedged versions of the S&P GSCI offer an investment in the S&P GSCI based on the specific currency, but with minimal exchange rate risk. The Hedged indices are calculated by hedging the beginning-of-period balances using rolling one-month forward contracts. This shields the hypothetical value of the index at the start of each month from exchange rate fluctuations.

*For further details on currency hedged calculations, please refer to S&P Dow Jones Indices' Index Mathematics Methodology available at [www.spdji.com](http://www.spdji.com).*

## Appendix D: S&P GSCI Single Commodity Indices Contract Schedule

### Contracts for the S&P GSCI Single Commodity Indices 2018

Trading Facility	Commodity	Ticker (1)	2017 CPW	2018 CPW	2018 ACRP (\$)	Unit	2018 TDVT (USD bn)	Designated Contract Expirations at Month Begin (2)											
								1	2	3	4	5	6	7	8	9	10	11	12
CMX	Copper	HG	1	1	2.6280	lbs	1625.7	H	H	K	K	N	N	U	U	Z	Z	Z	H
IPE	Orange Juice	OJ	5643.639	5643.639	1.6766	lbs	9.9	H	H	K	K	N	N	U	U	X	X	F	F
NYM	Platinum	PL	4.636138	4.636138	964.4333	oz	220.4	J	J	J	N	N	N	V	V	V	F	F	F
NYM	Palladium	PA	1	1	784.7083	oz	117.8	H	H	M	M	M	U	U	U	Z	Z	Z	H
CBOT	Soybean Oil	BO	1	1	0.3387	lbs	611.8	H	H	K	K	N	N	Z	Z	Z	Z	Z	F
LME	Tin	MSN	0.2226	0.2226	20365.8333	MT	129.1	G	H	J	K	M	N	Q	U	V	X	Z	F
CBOT	Soybean Meal	SM	1	1	315	tons	791.1	H	H	K	K	N	N	Z	Z	Z	Z	Z	F

(1) Tickers are Reuters RIC Codes.

(2) Future months included in the S&P GSCI at the beginning of each calendar month, starting with January 2018.

#### Abbreviations:

lbs: Pounds

oz: Troy Ounces

MT: Metric Tons

# Appendix E: Calculation of the S&P GSCI Dynamic Roll Alpha Light Energy

The S&P GSCI Dynamic Roll Alpha Light Energy index measures a long position in the S&P GSCI Dynamic Roll Light Energy ER index and a short position in the S&P GSCI Light Energy ER index (the benchmark index), on a market neutral basis.

The Index aims to measure the effects of the different roll strategies between the S&P GSCI Dynamic Roll Light Energy index and the S&P GSCI Light Energy index while neutralizing the market directional bias.

## Long-Short Index

The index value is determined by measuring the difference between a long position in the S&P GSCI Dynamic Roll Light Energy ER index and a short position in the S&P GSCI Light Energy ER index.

## Calculation

On each Index Level Determination Date,  $t$ , a reference index level is determined by the following formula:

$$Ref_t = Ref_{t_r} * \left[ 1 + \frac{Enhanced_t}{Enhanced_{t_r}} - \frac{Bench_t}{Bench_{t_r}} \right]$$

where:

- $Ref_t$  = the Long-Short reference index level on date  $t$
- $Enhanced_t$  = the S&P GSCI Dynamic Roll Light Energy ER index on date  $t$
- $Bench_t$  = the S&P GSCI Light Energy ER index on date  $t$
- $t_r$  = the last Rebalancing Day preceding the date  $t$  (The rebalancing dates are the 9<sup>th</sup> S&P GSCI day of each month)

## Market Neutral Exposure

The final index value is determined by measuring the daily return of the Long-Short Index adjusted by the return of a target exposure weighted benchmark index.

## Market Neutral Exposure Calculation

On each Index Level Determination Date  $t$ , the index exposure to the benchmark index is determined by the following formulae:

$$Exposure_t = TargetExposure_{t-2}$$

$$TargetExposure_t = - \frac{RefVolatility_t}{BenchVolatility_t} * Correl_t$$

where:

- $TargetExposure_t$  = the exposure multiplier for the benchmark index
- $RefVolatility_t$  = the 120-day volatility of the reference index (of the daily natural log (ln) return)
- $BenchVolatility_t$  = the 120-day volatility of the benchmark index (of the daily ln-return)
- $Correl_t$  = the 120-day correlation of the reference and benchmark indices (of the daily ln-return)

**Index Calculation**

On each Index Level Determination Date  $t$ , the index level is determined by the following formula:

$$Index_t = Index_{t-1} * \left[ \frac{Ref_t}{Ref_{t-1}} + Exposure_{t-1} * \left( \frac{Bench_t}{Bench_{t-1}} - 1 \right) \right]$$

where:

$Index_t$  = the index level on Index Level Determination Date  $t$

The index start date is July 14, 1995, with a base level of 100.

## Appendix F: Calculation of the S&P GSCI Settlement Index Family

The daily calculation of any S&P GSCI Settlement Index on business day ( $t$ ) will use the settlement prices from business day ( $t$ ) for all commodity contracts that did not experience a market disruption on business day ( $t$ ). For each contract that experiences a market disruption on business day ( $t$ ), the disrupted settlement price from business day ( $t$ ) will be replaced by the settlement price on the first subsequent business day when that commodity contract does not experience a market disruption. Each commodity contract is evaluated independently. On any given business day ( $t$ ), if no commodity contract within an S&P GSCI Index experiences a market disruption, the S&P GSCI Settlement Index equals the corresponding standard S&P GSCI Index.

## Appendix G: S&P GSCI Grains Select

The S&P GSCI Grains Select is designed to reflect the performance of the largest commodity for each component included in the S&P GSCI Grains. It includes Corn, Soybeans and Chicago Wheat, but excludes Kansas Wheat.

The weights of Corn, Soybeans, and Chicago Wheat in the Select Index follow their respective weights in the underlying S&P GSCI Grains Index. The weight of Kansas Wheat is distributed proportionally to the other components of the Select Index. As a result, Wheat is underweighted in the Select Index relative to the underlying index.



# S&P Dow Jones Indices' Contact Information

## Contact Information

For questions regarding an index, please contact: [index\\_services@spglobal.com](mailto:index_services@spglobal.com).

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