



The Place for Power in Your Portfolio

April 2023

A Better Mousetrap

On January 18, Intercontinental Exchange (“ICE”) launched the first index that tracks the broad U.S. electricity market, the ICE U.S. Carbon Neutral Power Index (“ICECNPI”)¹. ICECNPI combines the next 12 months of exchange-traded U.S. electricity (“power”) futures with sufficient carbon allowance futures to achieve a net-zero carbon footprint based on independently sourced data.

As the most consumed commodity in the U.S., power is a major component of CPI, and as an inflation hedge, power exhibits the strongest correlation of the major commodities to year-over-year changes in CPI². The risk, return, and correlation profile of ICECNPI, furthermore, delivers greater risk-adjusted returns to traditional investment portfolios than other commodities³.

For portfolios that use ETFs for exposure to energy, commodities, or utilities, ICECNPI offers an attractive alternative.

- **Better returns, higher Sharpes.** In a historical back test of results from January 1, 2017 through December 31, 2022, ICECNPI delivered higher returns over 5-year, 3-year, and 1-year periods ended December 31, 2022, and higher Sharpe ratios over 5 and 3 years.
- **Better diversification, lower correlations.** Over the same back test period, ICECNPI shows minimal correlations with every major asset class and lower correlations with the SPDR S&P 500 ETF (ticker “SPY”) and the iShares IBOXX Investment Grade Corporate Bond ETF (ticker “LQD”) than either the GSG, XLE, VDE, XLU, or VPU ETF.
- **Better risk-adjusted returns in traditional investment portfolios.** A historical back test of a portfolio with ICECNPI, GSG, XLE, VDE, XLU, and VPU, generates higher returns with lower standard deviations of returns than portfolios without ICECNPI. Any optimization of a portfolio with these ETFs will place the portfolio with the maximum allocation to ICECNPI on the efficient frontier with the highest return per unit of risk.

ETFs for Replacement by ICECNPI

April 10, 2023 (\$millions)

Security	Ticker	Objective	AUM
Energy Select SPDR Fund	XLE	Invests in large-cap U.S. integrated, exploration & production, and oil field services energy stocks	\$39,764
Vanguard Energy ETF	VDE	Invests in large, medium, and small-cap exploration & production, oil field services, and refining energy stocks	7,830
Utilities Select Sector SPDR Fund	XLU	Invests in U.S. electrical power providers and natural gas distributors	16,284
Vanguard Utilities ETF	VPU	Invests in utilities stocks of all cap sizes	5,489
iShares S&P GSCI Commodity ETF	GSG	Invests in a diversified group of commodities to track the GSCI Total Return Index	1,107



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Power Outperforms Energy, Utilities, and Commodity ETFs

ICECNPI reaped the benefit of the upward move in the entire energy complex with the war in Ukraine and inflation, but outperformed XLE and VDE, its most significant substitutes in the energy sector, by margins ranging from 8% to 15% over 5-year, 3-year, and 1-year periods. The margin of outperformance versus GSG, the broad commodity ETF, was even greater, ranging from just under 14% to over 50%. As a substitute for the utilities ETFs, ICECNPI posted similar returns for the past year, but dramatically higher results over 3 and 5 years.

Annual Returns No Dividends Reinvested December 31, 2022

years	start year	ICECNPI	XLE	VDE	XLU	VPU	GSG
5	2017	18.3%	5.4%	4.9%	9.1%	8.9%	5.2%
3	2019	23.8%	14.7%	14.9%	10.3%	9.7%	10.9%
1	2022	77.3%	63.6%	62.2%	1.4%	1.0%	24.2%

Sharpe Ratios of Annual Returns December 31, 2022

years	start year	ICECNPI	XLE	VDE	XLU	VPU	GSG
5	2017	0.84	0.16	0.14	0.44	0.43	0.26
3	2019	0.94	0.37	0.38	0.43	0.41	0.48
1	2022	1.79	1.82	1.73	0.06	0.05	1.00

The cost of higher returns would typically be the higher volatility of those returns, and lower Sharpe ratios, but ICECNPI delivered the highest Sharpes across the board versus all 5 ETFs over 3 and 5 years, and the second highest Sharpe by only a small margin for 2022.

Better Diversification with Power

ICECNPI provides better diversification than the energy, commodity, or utility ETFs here, exhibiting lower correlations with every other asset class, but most importantly with the S&P 500 and U.S. investment grade bonds.

Correlations of Selected ETFs January 1, 2017-December 31, 2022

description	ticker	ICECNPI	XLE	VDE	GSG	XLU	VPU	SPY	LQD
ICE U.S. Carbon Neutral Power Index	ICECNPI	1.00	0.13	0.14	0.21	0.05	0.05	0.08	0.02
Energy Select SPDR Fund	XLE	0.13	1.00	0.99	0.63	0.39	0.41	0.64	0.13
Vanguard Energy ETF	VDE	0.14	0.99	1.00	0.64	0.37	0.40	0.64	0.13
iShares S&P GSCI Commodity Indexed ETF	GSG	0.21	0.63	0.64	1.00	0.17	0.18	0.36	0.09
Utilities Select Sector SPDR Fund	XLU	0.05	0.39	0.37	0.17	1.00	0.99	0.63	0.31
Vanguard Utilities ETF	VPU	0.05	0.41	0.40	0.18	0.99	1.00	0.64	0.31
SPDR S&P 500 ETF	SPY	0.08	0.64	0.64	0.36	0.63	0.64	1.00	0.31
iShares IBOXX Igrade Corporate Bond ETF	LQD	0.02	0.13	0.13	0.09	0.31	0.31	0.31	1.00



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Power in the Portfolio Energy Allocation

The contribution from power to a portfolio comes from its returns, the variability of its returns, and the correlation of those returns with returns of other assets in the portfolio. In a historical back test from January 1, 2017 through December 31, 2022, ICECNPI delivered better returns at lower risk (measured by historical volatility) than the Energy Select SPDR Fund (XLE), the Vanguard Energy ETF (VDE), the iShares S&P GSCI Commodity Indexed ETF (GSG), the Utilities Select Sector SPDR Fund (XLU), and the Vanguard Utilities ETF (VPU).

In efficient frontier analysis assets are allocated by their volatilities for the minimum variance portfolio and by their returns divided by their volatilities (Sharpe ratio) for the optimal portfolio. With the lowest volatilities, XLU and GSG receive the largest allocations in the minimum variance portfolio, but ICECNPI receives the dominant allocation in the maximum return and optimal return portfolios due to minimal differences in volatility, but large differences in returns. The risk, return, and correlation profile of ICECNPI will always place the portfolio with the maximum allocation to power on the efficient frontier with the highest return per unit of risk.

Efficient Frontier Analysis

ICECNPI, XLE, VDE, GSG, XLU, and VPU ETF Portfolio

January 1, 2017 - December 31, 2022

Parameters	ICECNPI	XLE	VDE	XLU	VPU	GSG
Annual Returns	18.3%	5.4%	4.9%	9.1%	8.9%	5.2%
Annualized Volatility	21.8%	33.8%	34.0%	20.9%	20.8%	19.9%
Minimum Weight	0%	0%	0%	0%	0%	0%
Maximum Weight	65%	65%	65%	65%	65%	65%

weights

Efficient Frontier	Portfolio Returns	Portfolio Volatility	ICECNPI	XLE	VDE	XLU	VPU	GSG
Minimum Variance Portfolio	10.65%	13.64%	31.0%	0.0%	0.0%	31.6%	3.9%	33.4%
Maximum Return Portfolio	15.09%	16.28%	65.0%	0.0%	0.0%	35.0%	0.0%	0.0%
Optimal Portfolio	15.09%	16.28%	65.0%	0.0%	0.0%	35.0%	0.0%	0.0%



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²See [cnicfunds.com/media](http://www.cnicfunds.com/media), “Electricity and Inflation”, <http://www.cnicfunds.com/wp-content/uploads/2023/03/Electricity-and-Inflation-2.pdf>

³ See [cnicfunds.com/media](http://www.cnicfunds.com/media), “The Power of Electricity in Portfolio Allocation”, <http://www.cnicfunds.com/wp-content/uploads/2023/03/Power-of-Electricity-in-Portfolio-Allocation-3.pdf>