



# OIL, ELECTRIFICATION, EFFICIENCY AND UNCERTAINTY



FUELS OF THE FUTURE SEMINAR

JULY 19, 2018

KEVIN BOOK

MANAGING DIRECTOR



# DISCLOSURES

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## Risks

Legislative, regulatory and diplomatic agendas are subject to change.

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By: *Kevin Book*

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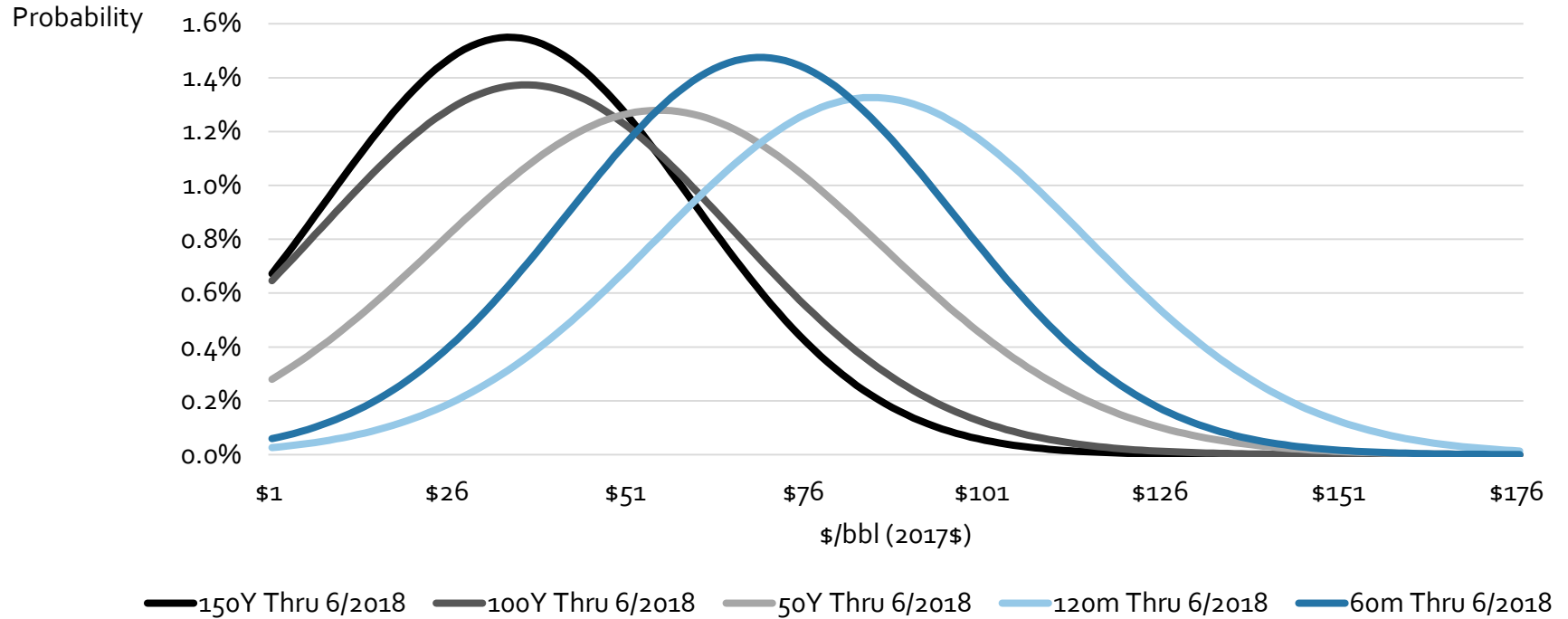
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# AGENDA

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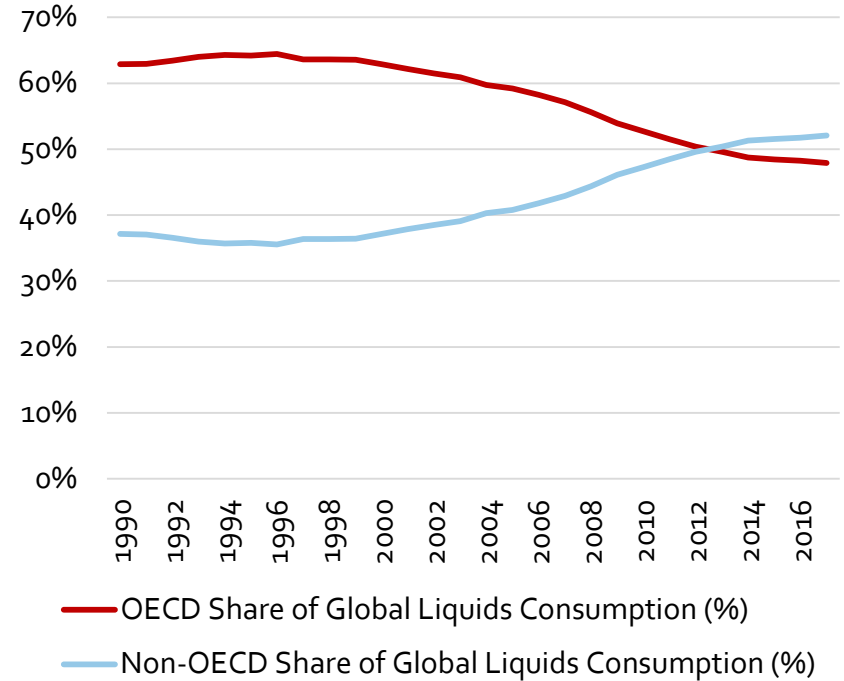
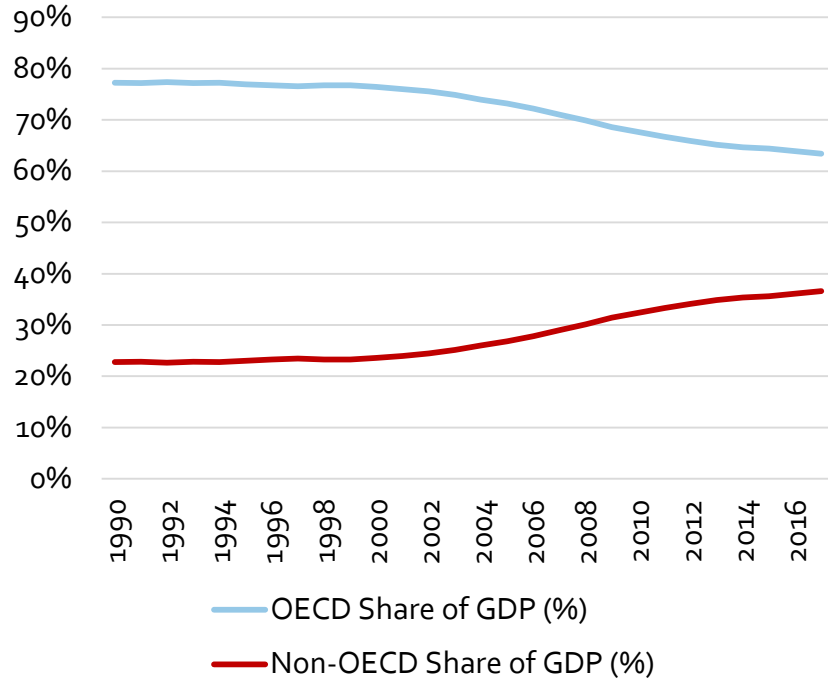
1. Analytical Myopia vs. Long-Term Projections
2. A Simplified, Long-Term Baseline for Discussion Purposes
3. Conceptual Framework of Transportation Policy Options
4. EVs, Efficiency, Price Sensitivity and Politics
5. Discussion

# PRELUDE: ANALYTICAL UNCERTAINTY AND THE OIL MARKET



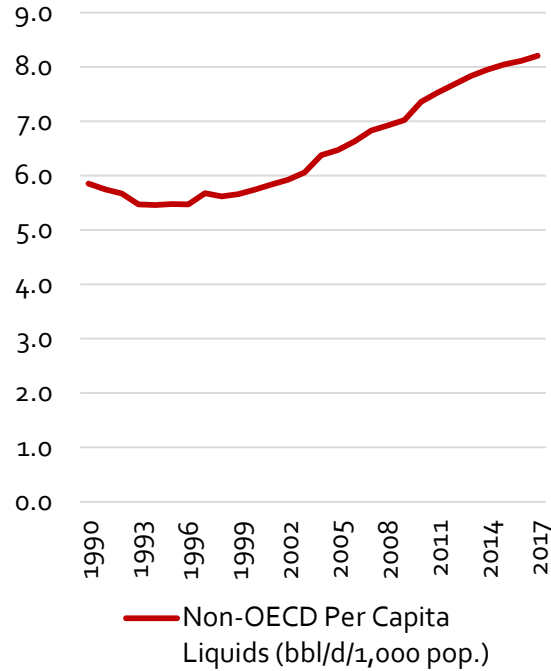
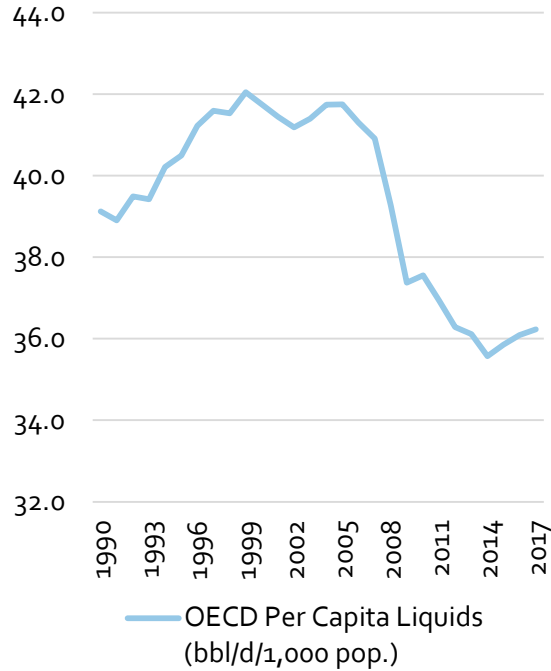
Source: ClearView Energy Partners, LLC, using BEA, BP and EIA data

# NON-OECD CONSUMPTION REPRESENTS A GROWING SHARE OF THE TOTAL



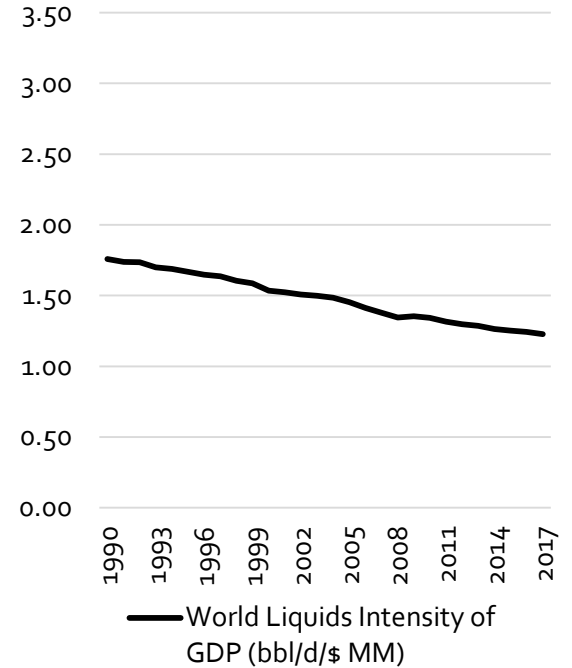
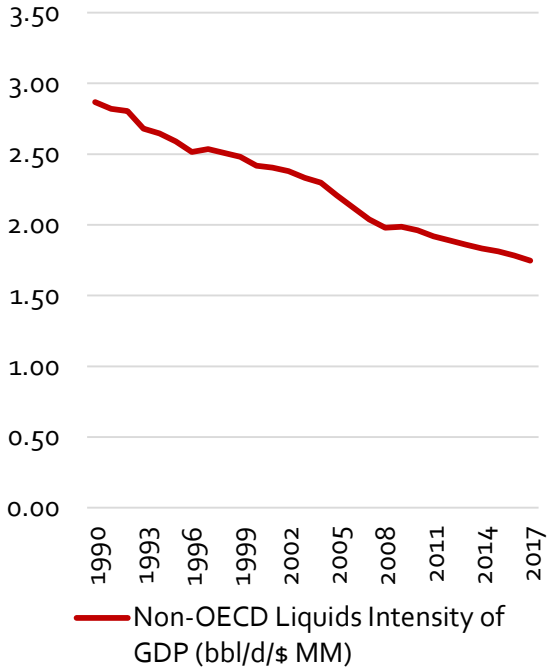
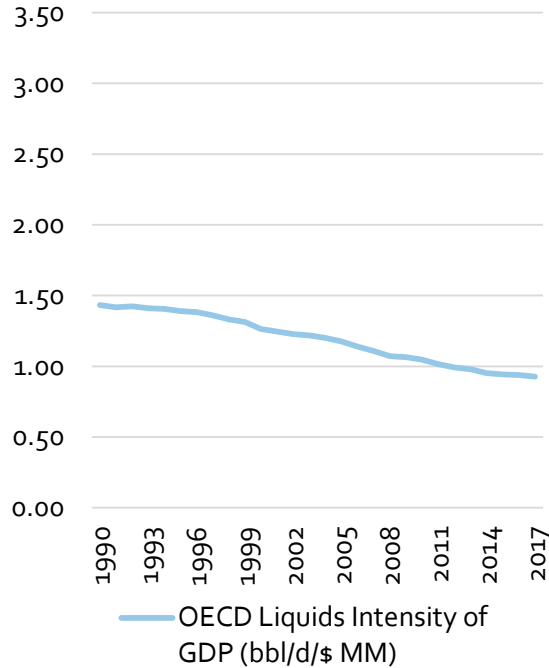
Source: ClearView Energy Partners, LLC, using BEA, BP and World Bank data

# PER CAPITA LIQUIDS CONSUMPTION: OECD, NON-OECD AND TOTAL



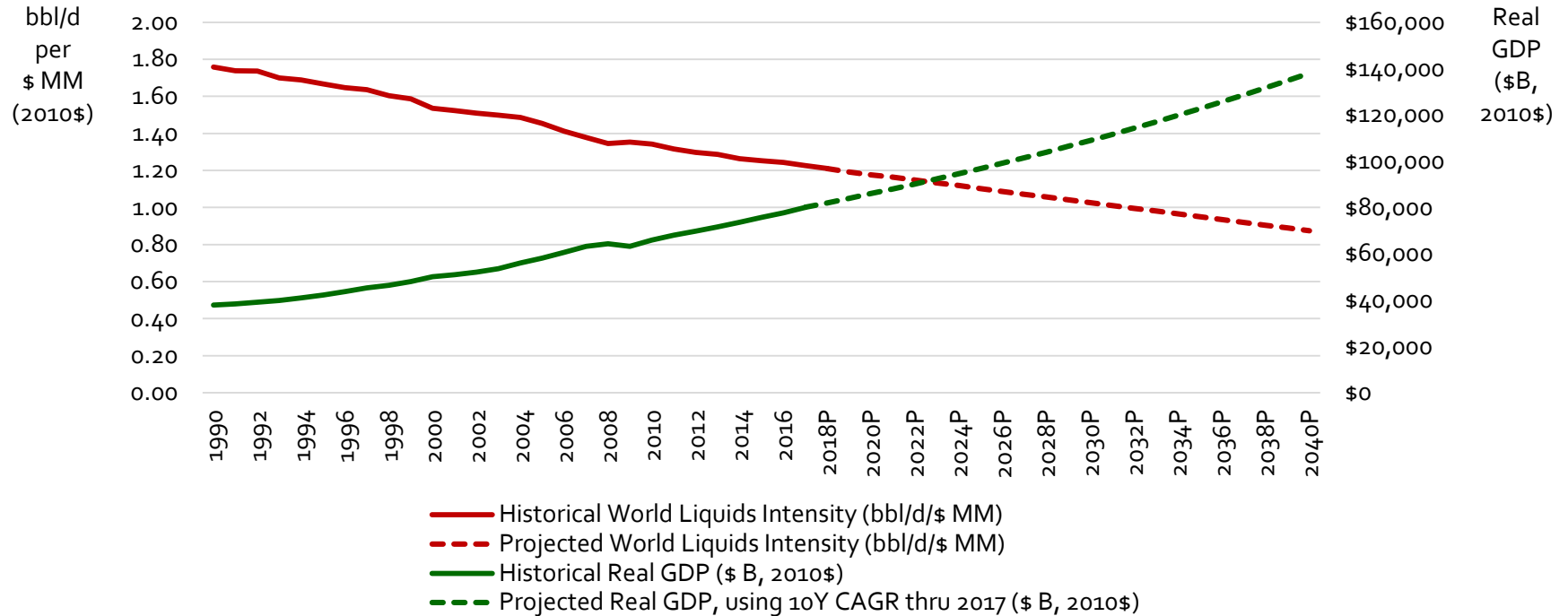
Source: ClearView Energy Partners, LLC, using BEA, BP and World Bank data

# LIQUIDS INTENSITY OF GDP: OECD, NON-OECD AND TOTAL



Source: ClearView Energy Partners, LLC, using BEA, BP and World Bank data

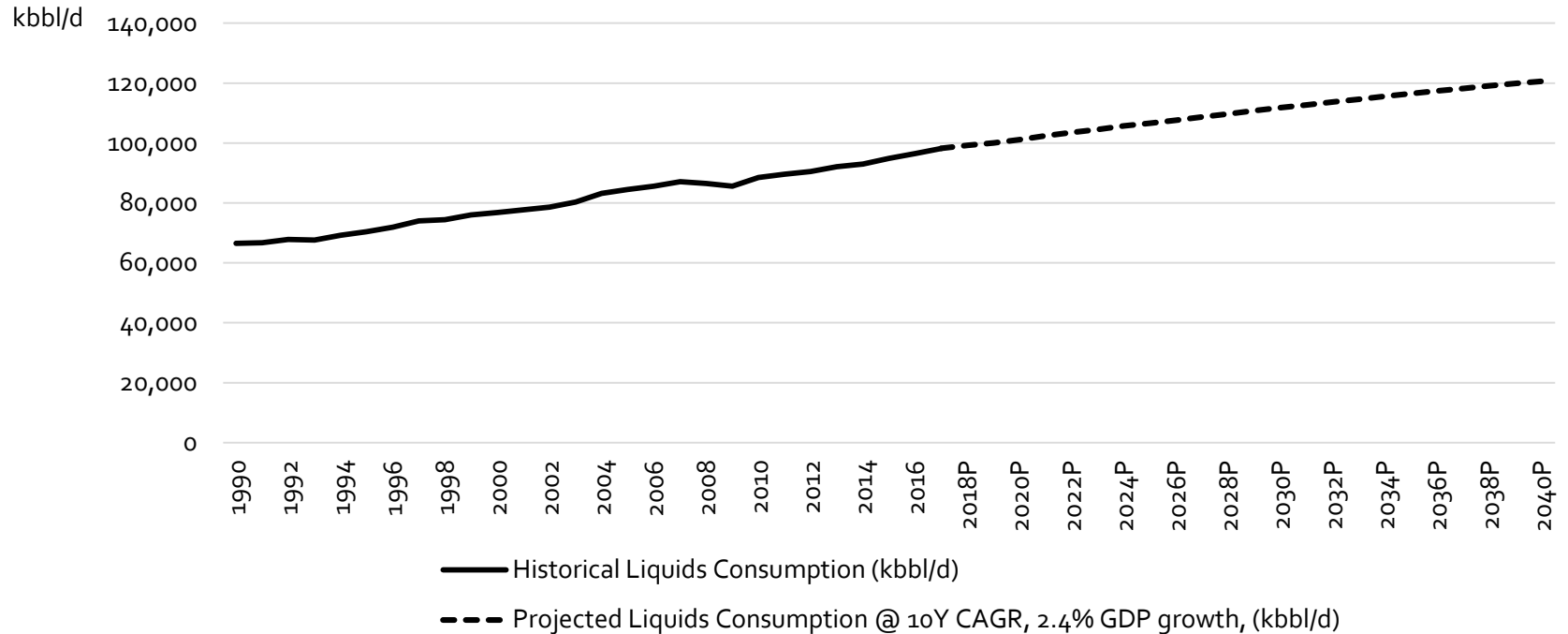
# A SIMPLIFIED GDP-BASED PROJECTION FOR DISCUSSION PURPOSES (1)



Source: ClearView Energy Partners, LLC, using BEA, BP, EIA and World Bank data

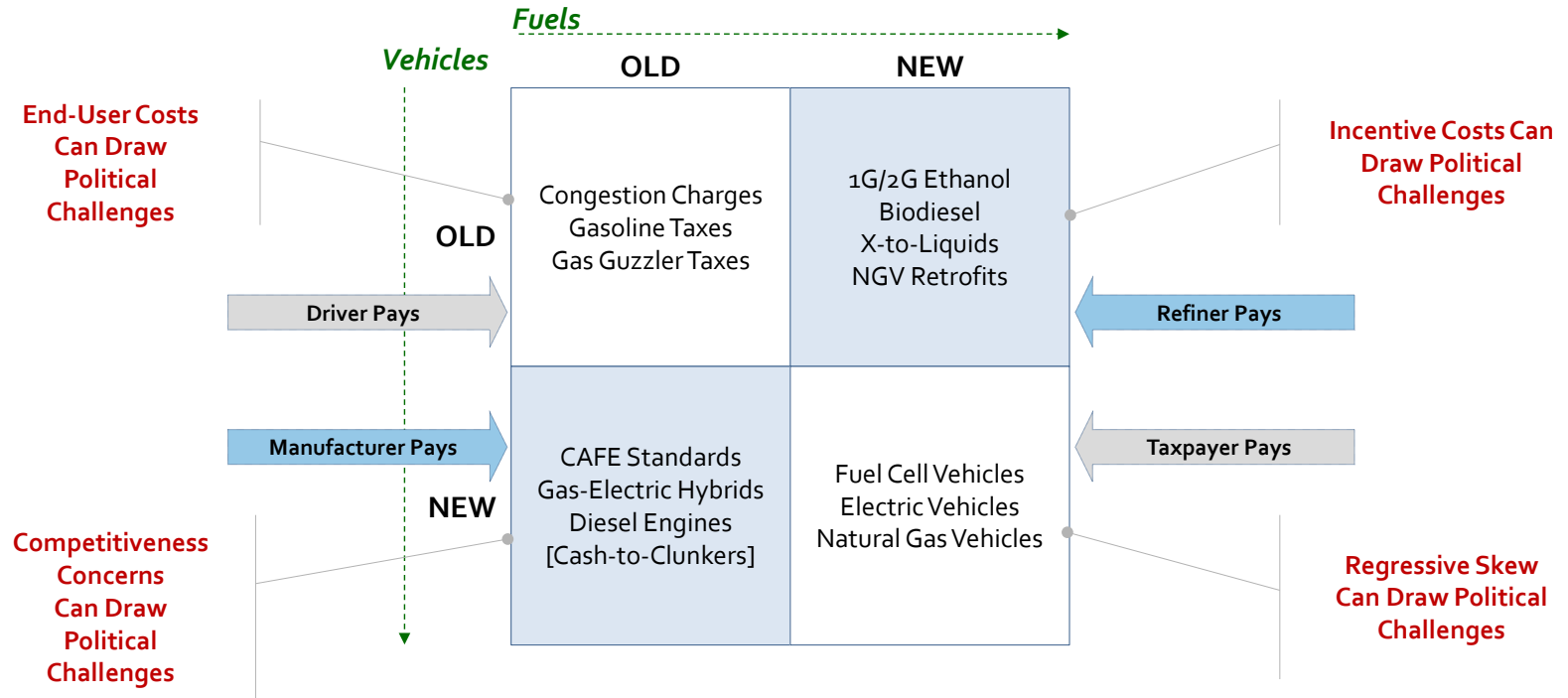


# A SIMPLIFIED GDP-BASED PROJECTION FOR DISCUSSION PURPOSES (2)



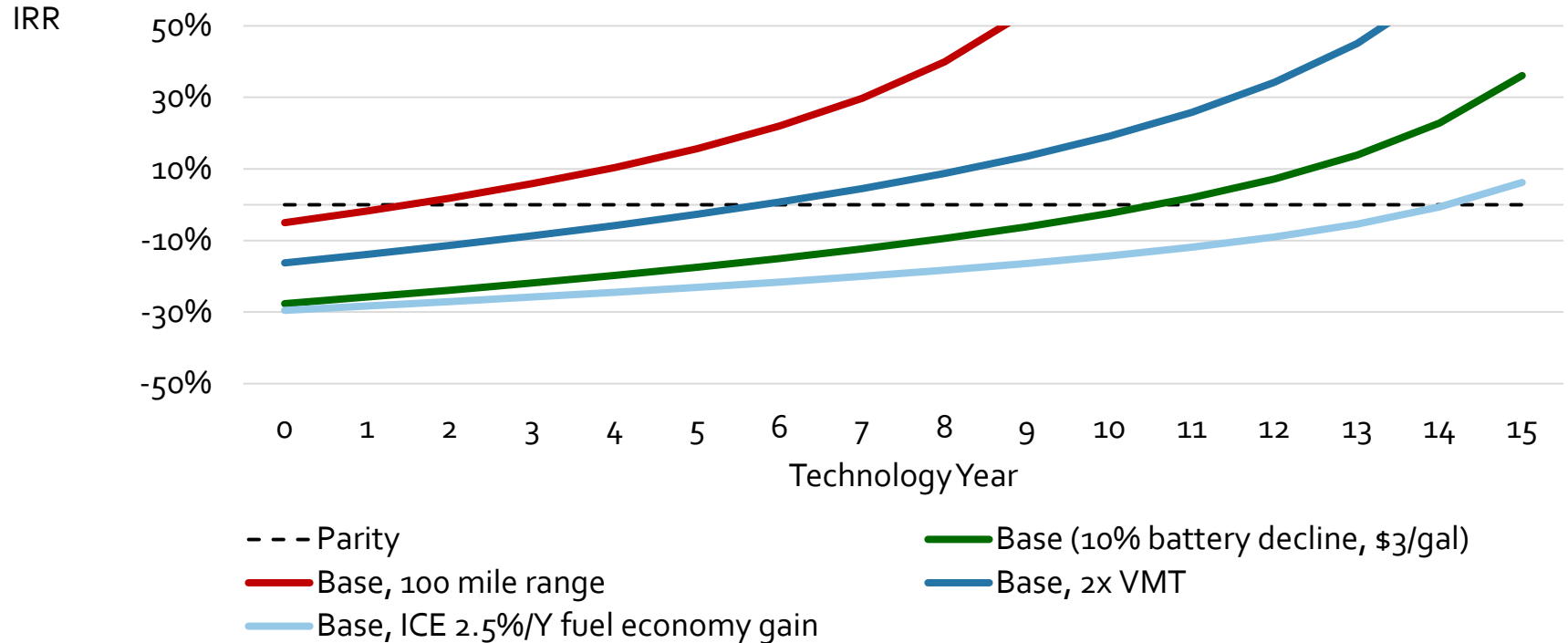
Source: ClearView Energy Partners, LLC, using BEA, BP, EIA and World Bank data

# A UNIVERSE OF POLICY OPTIONS...AND POLITICAL CHALLENGES



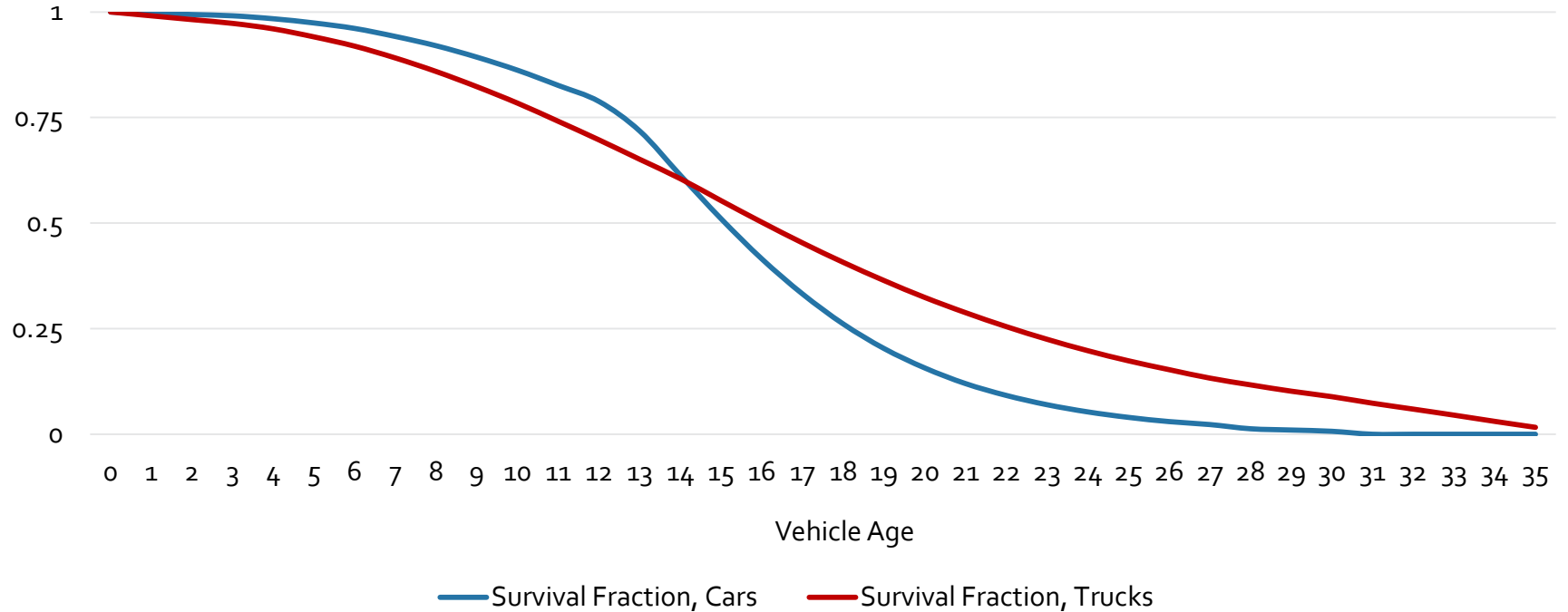
Source: ClearView Energy Partners, LLC

# EV vs. ICEV: ORGANIC BREAKEVEN (IRR BASIS) IN ~10Y ON U.S. ROADS



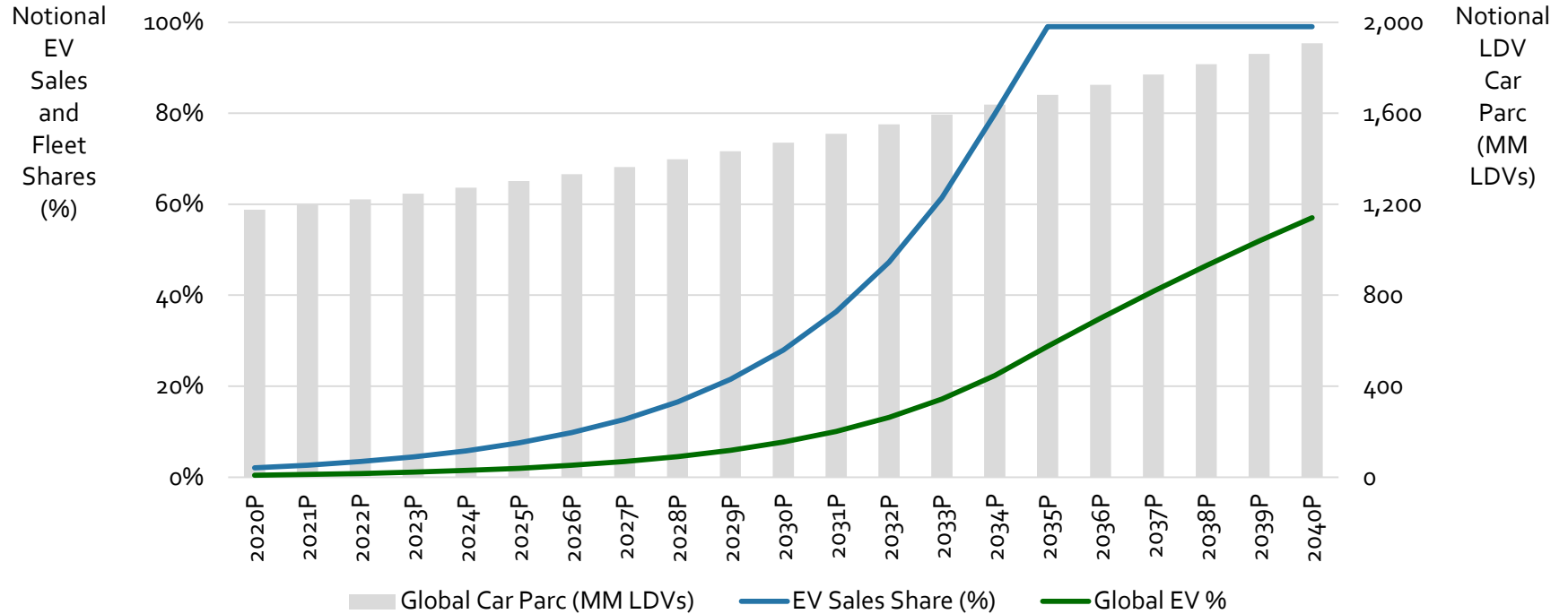
Source: ClearView Energy Partners, LLC, using BEA, BNEF, BTS, DOE, EIA, EPA, FHWA and industry data

# SCRAPPY TRUTH: SURVIVAL FRACTIONS MEDIATE FLEET TRANSITIONS



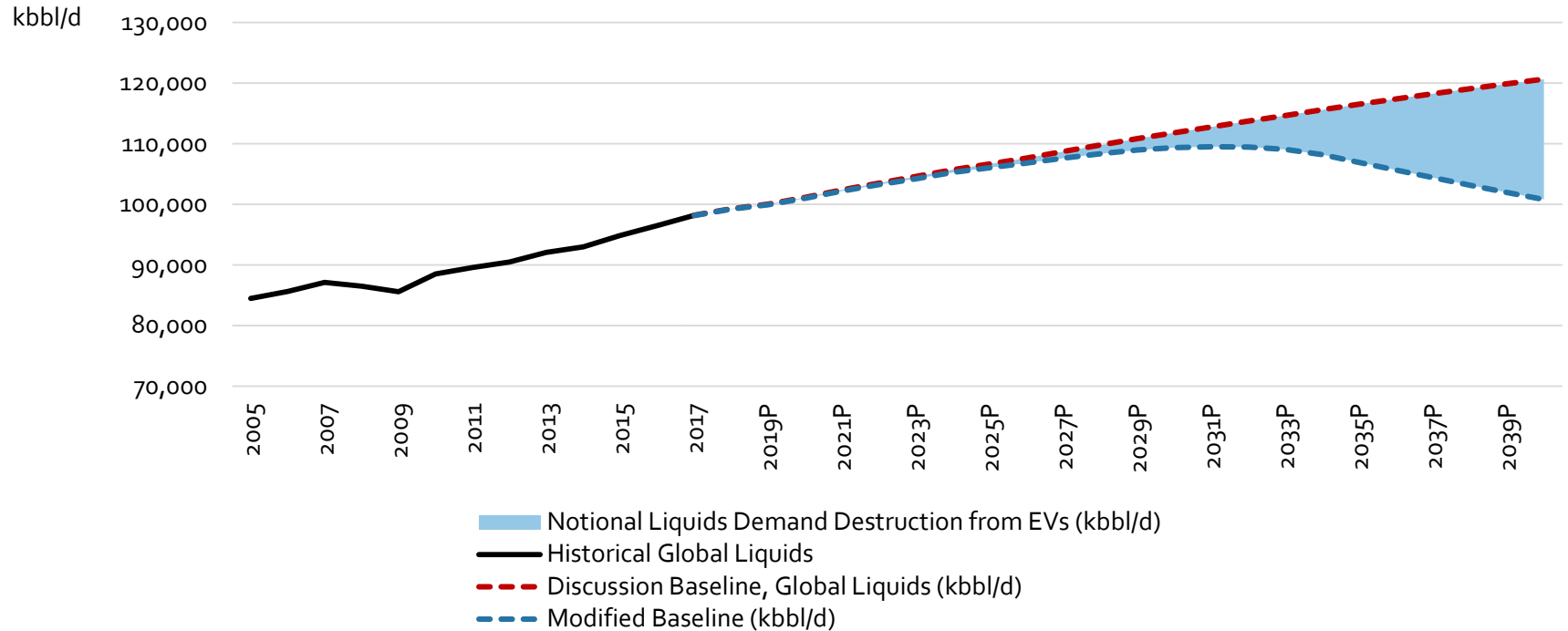
Source: ClearView Energy Partners, LLC, using EPA data

# SCENARIO: LDV SALES GROW, EV SHARE HITS 100% IN 2035



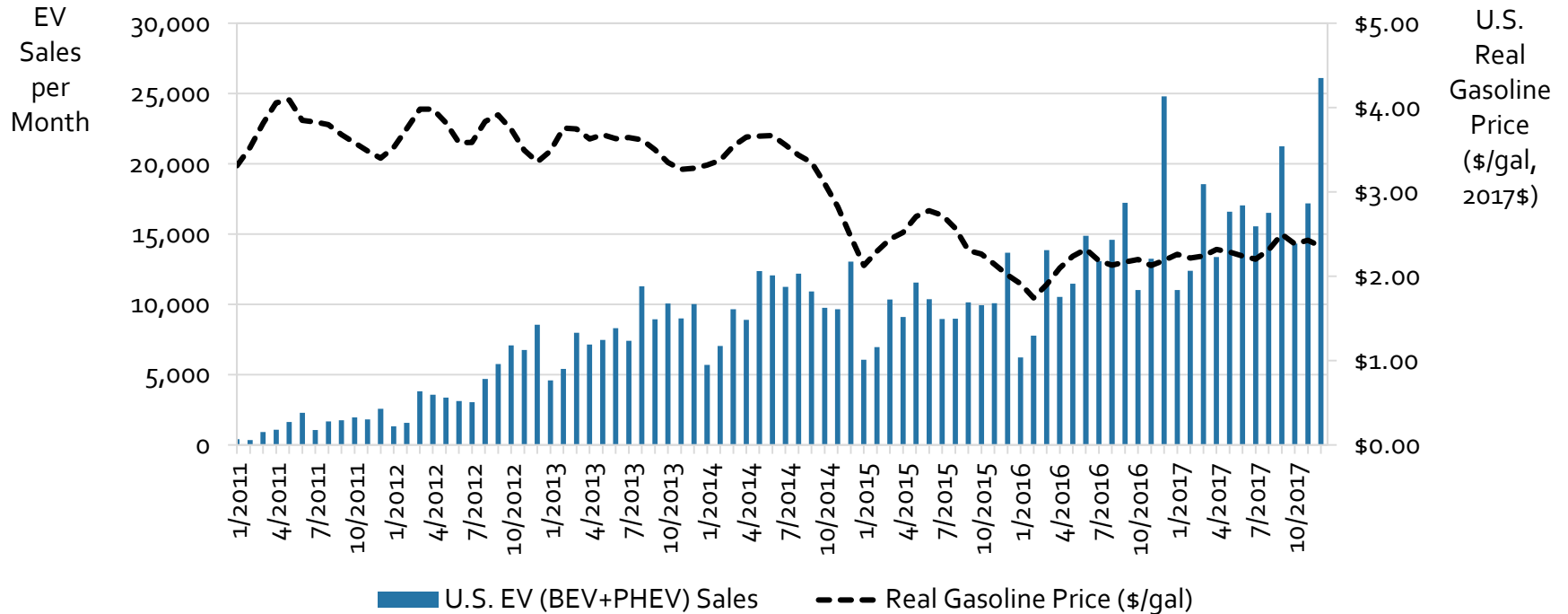
Source: ClearView Energy Partners, LLC, using BEA, BP, DOE, EIA, EPA, FHWA, hybridcars.com, insideEVs.com and OICA data

# DISCUSSION SCENARIO: IMPACTS FOR TOTAL LIQUIDS DEMAND



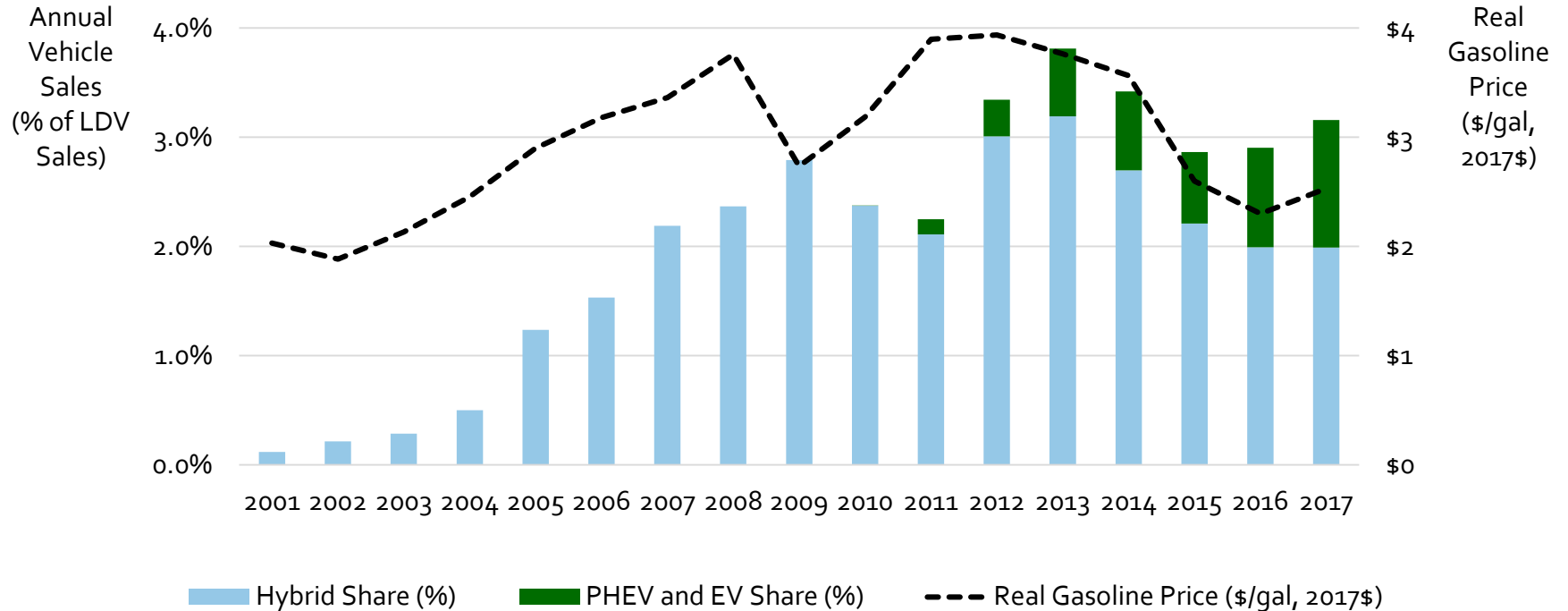
Source: ClearView Energy Partners, LLC, using BEA, BP, DOE, EIA, EPA, FHWA, hybridcars.com, insideEVs.com and OICA data

# U.S. EV SALES VS. REAL GASOLINE, 2011 – 2017, CORRELATION = -0.67



Source: ClearView Energy Partners, LLC, using BEA, EIA, insideEVs.com and hybridcars.com data

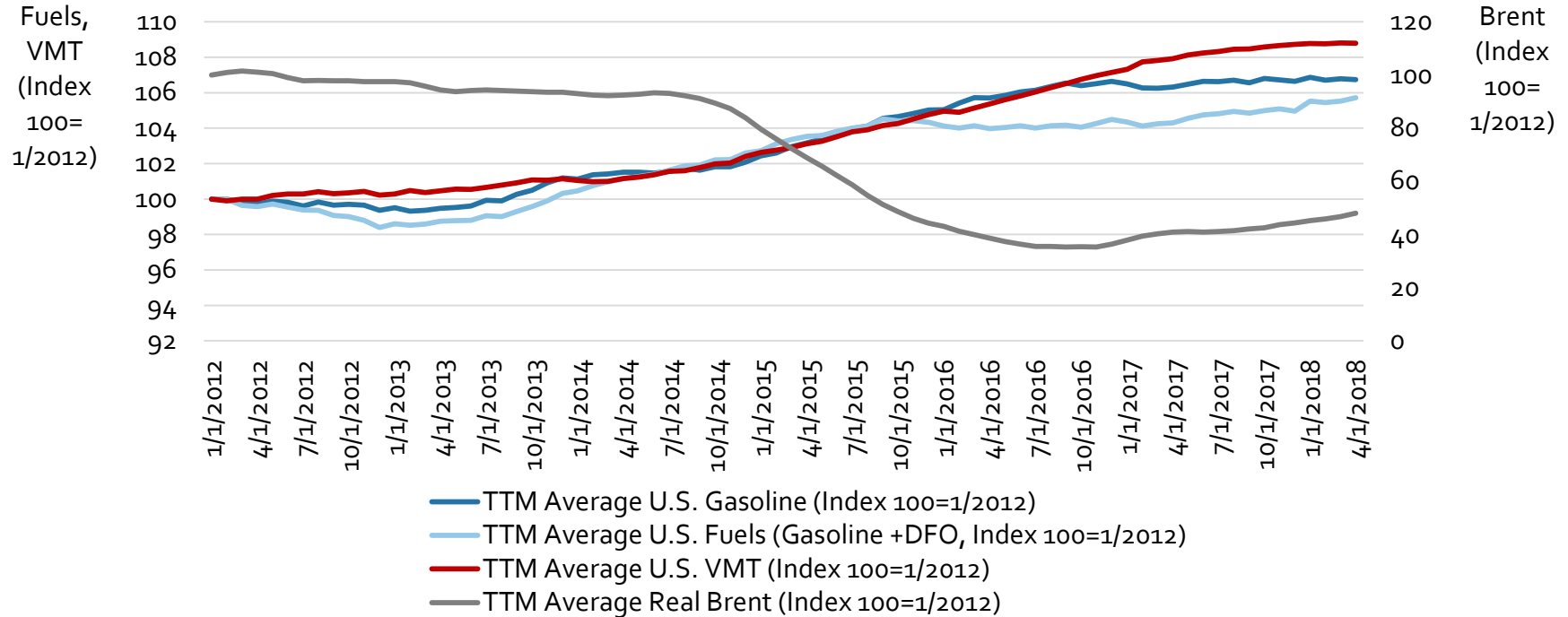
# U.S. ELECTRIFIED VS. REAL GASOLINE, 2001-2017, CORRELATION = +0.64



Source: ClearView Energy Partners, LLC, using BEA, DOE, EIA, insideEVs.com and hybridcars.com data

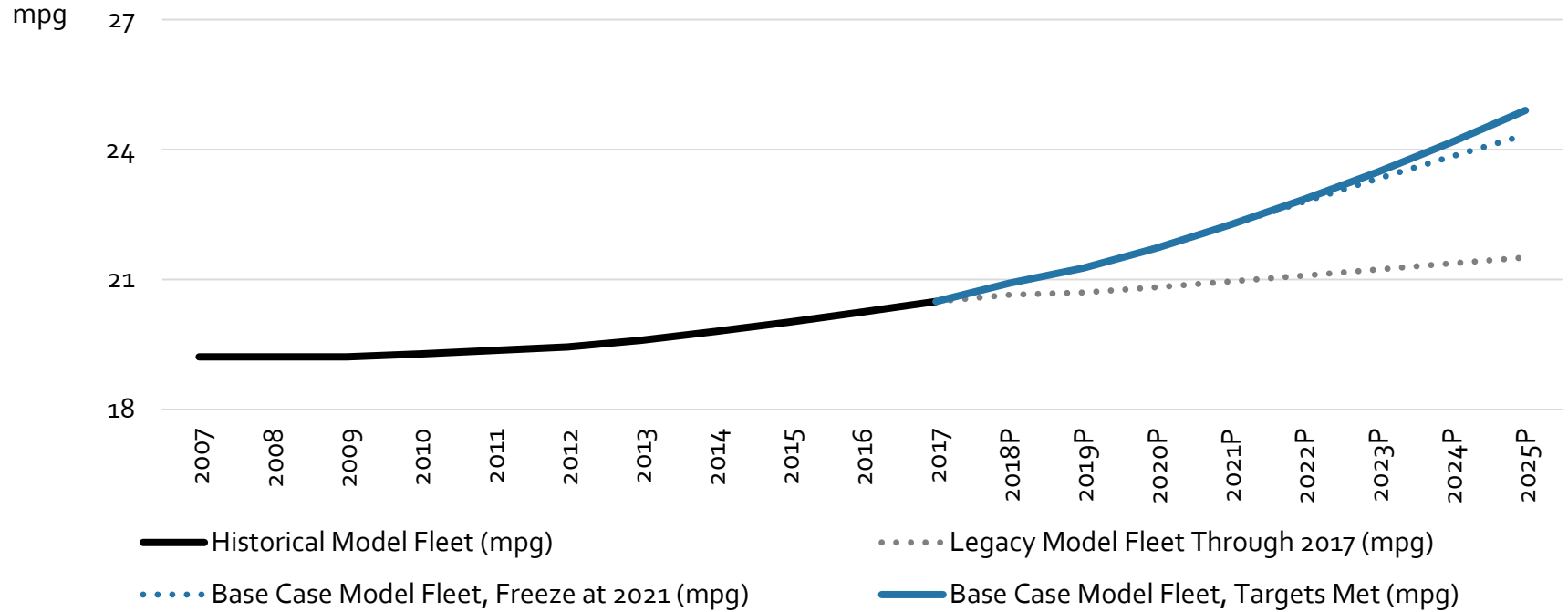


# U.S. TRANSPORTATION FUELS DIVERGING FROM U.S. VMT



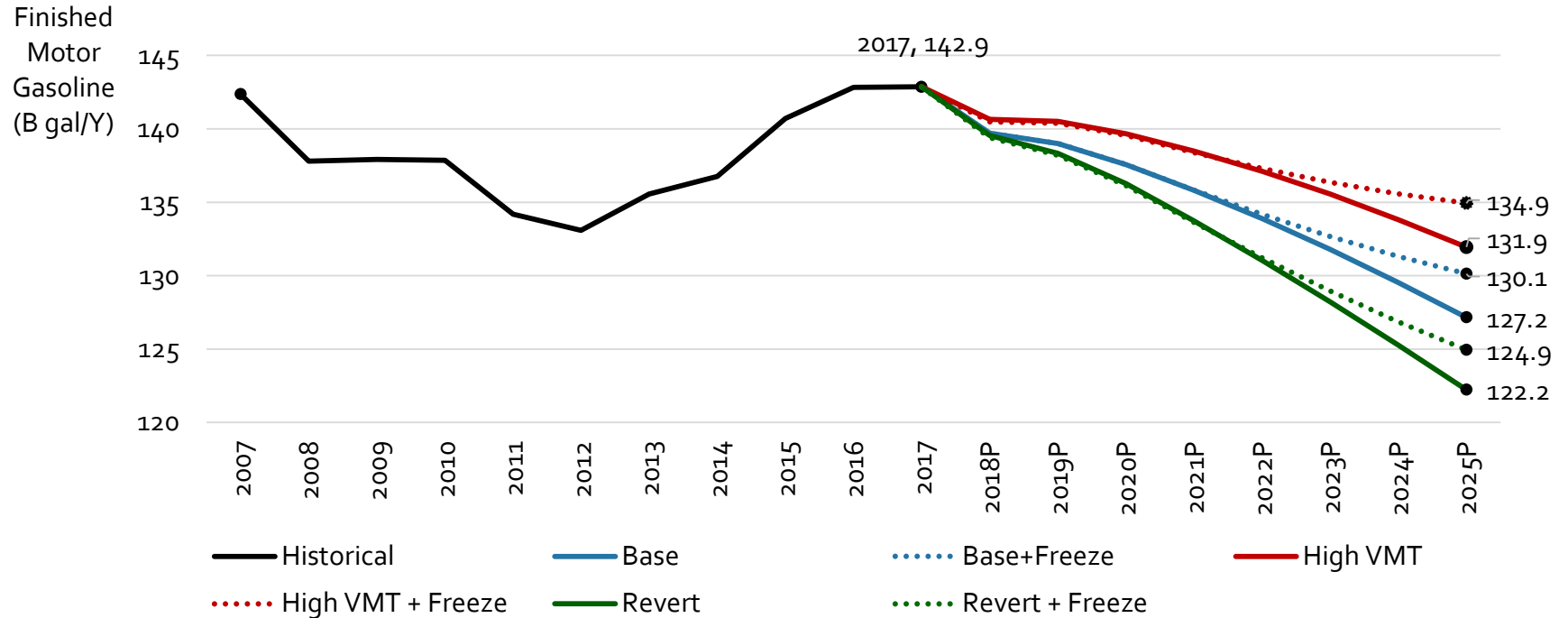
Source: ClearView Energy Partners, LLC, using BEA, EIA and FHWA data

# FROM THE DRIVEWAY TO THE SCRAPYARD: EMBEDDED EFFICIENCY GAINS



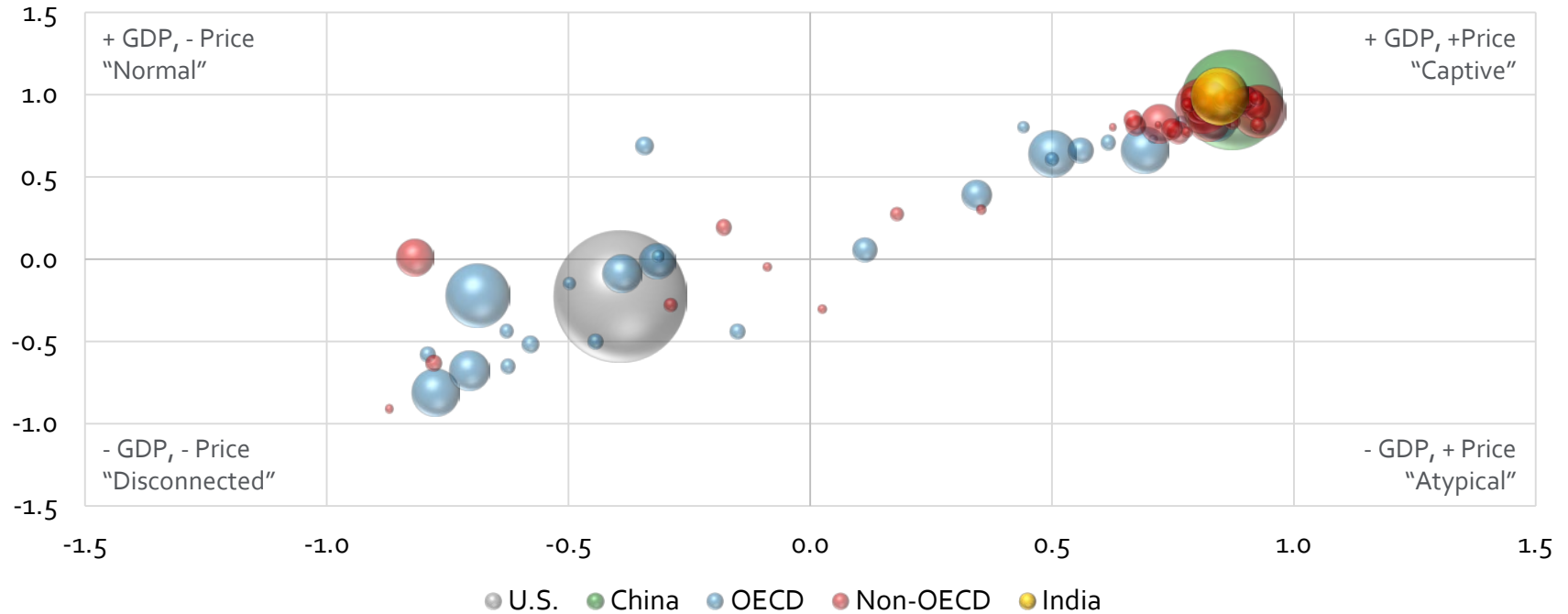
Source: ClearView Energy Partners, LLC, using BEA, BTS, EIA, EPA, FHWA and industry data

# U.S. GASOLINE DEMAND PROJECTION



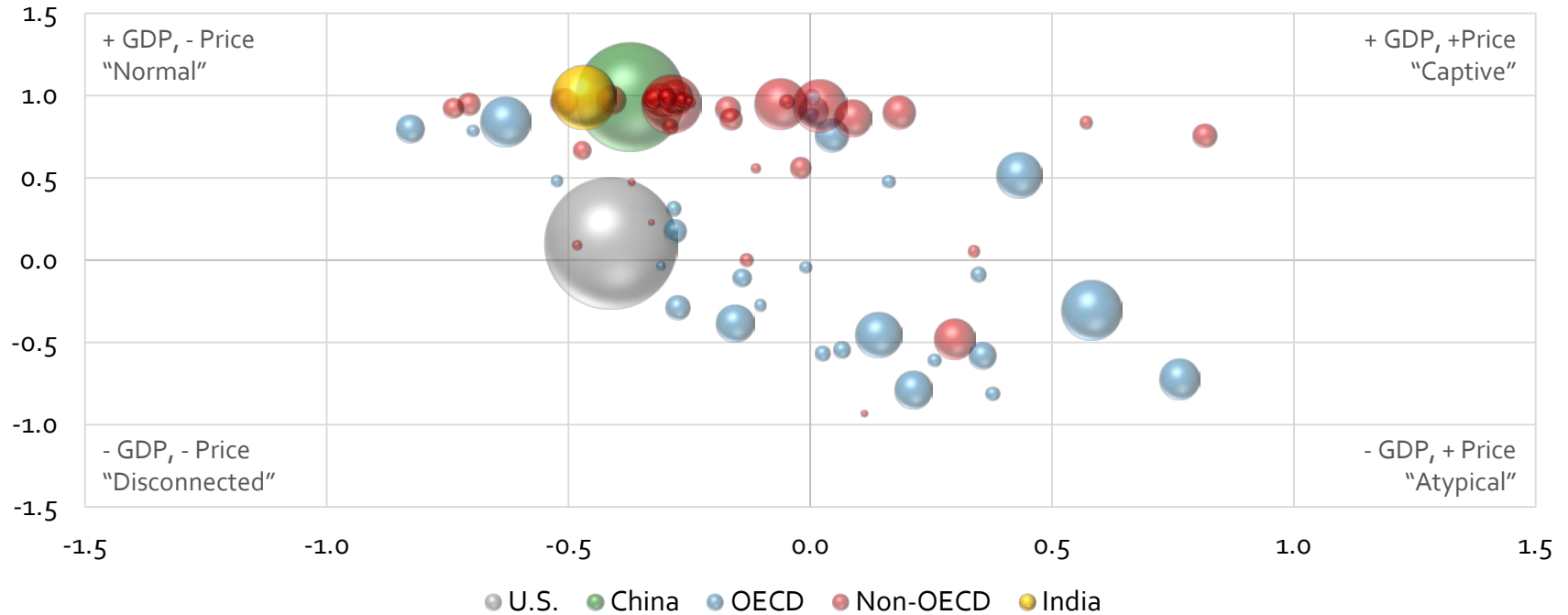
Source: ClearView Energy Partners, LLC, using BEA, BTS, EIA, EPA, FHWA and industry data

# 2002-2011: ~55% “CAPTIVE” DEMAND (~41% NON-OECD)



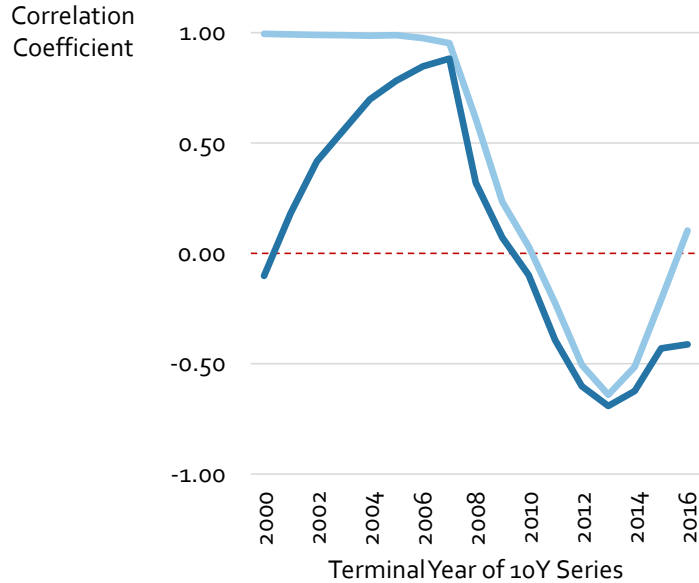
Source: ClearView Energy Partners, LLC, using BEA, BP and World Bank data

# 2007-2016: ~63% “NORMAL DEMAND” (~38% NON-OECD)

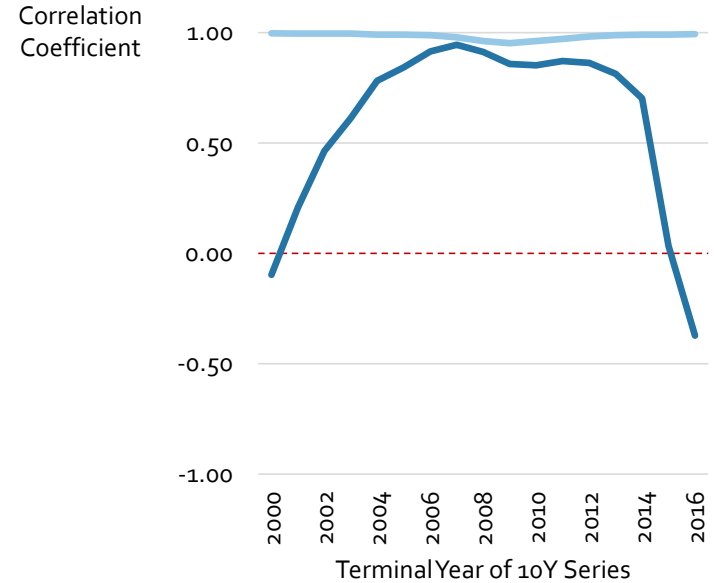


Source: ClearView Energy Partners, LLC, using BEA, BP and World Bank data

# CHANGING CONSUMPTION CORRELATIONS: U.S. AND CHINA



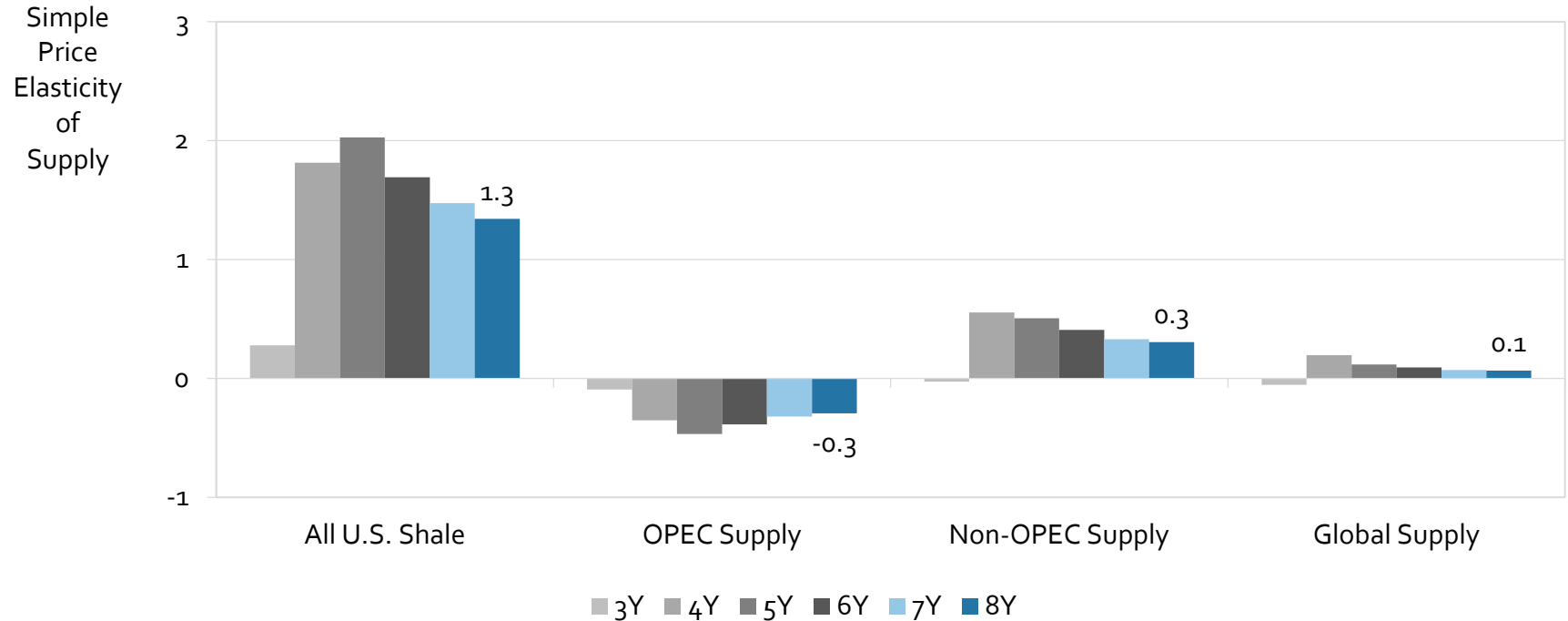
- Consumption vs. Real GDP (2010\$), U.S.
- Consumption vs. Real Brent (2010\$), U.S.



- Consumption vs. Real GDP (2010\$), China
- Consumption vs. Real Brent (2010\$), China

Source: ClearView Energy Partners, LLC, using BEA, BP and World Bank data

# SUPPLY MATTERS, TOO: HIGHLY ELASTIC U.S. TIGHT OIL PRODUCTION?



Source: ClearView Energy Partners, LLC, using EIA data

# FUTURE FUELS? POLITICAL PREFERENCES MATTER, AS WELL (1)

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*Source: Bloomberg*



## FUTURE FUELS? POLITICAL PREFERENCES MATTER, AS WELL (2)

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Source: AFP/Getty Images

## SETTING UP DISCUSSION

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1. 20Y is a long time (in a world of 5Y investment cycles, that's 15 cycles). Ten-cycle comparison: first horizontal fracked well in PA in 2004, oil price collapse in 2014.
2. 20Y is, therefore, long enough for the LDV fleet to change dramatically, significantly diminishing petroleum consumption relative to a *status quo* baseline.
3. Policy incentives can accelerate this result, but low oil prices can slow it down.
4. AVs that increase EV capacity utilization could also accelerate this result.
5. Even so, "new vehicles, old fuels" still may be easier than "new vehicles, new fuels."
6. EVs aside, efficiency and price sensitivity already appear to be taking their toll.



# DISCUSSION

