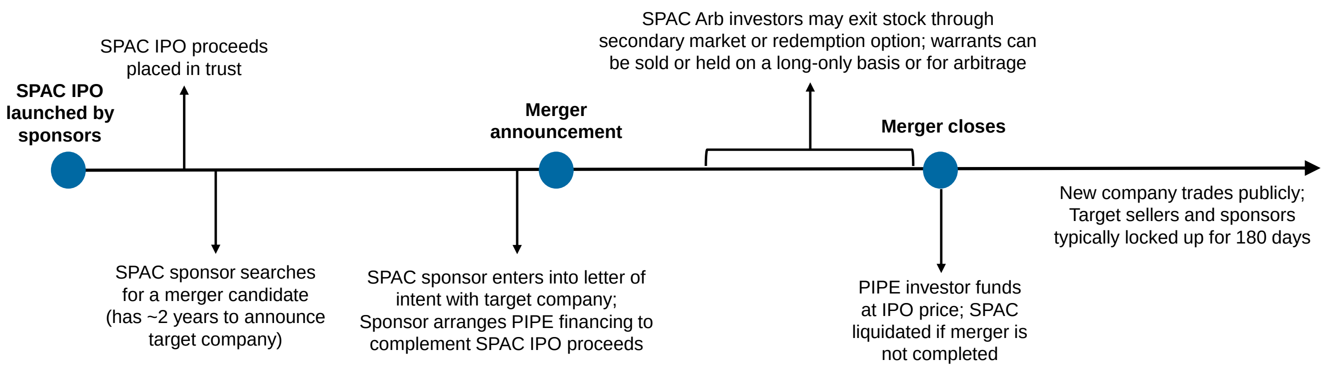
**Hydraulic Spacking: The SPAC capital raising boom, and why Biden's early stage energy policies are more likely to increase oil imports rather than reduce emissions**

Among the many parabolic charts we're looking at: the surge in capital raising by Special Purpose Acquisition Companies (SPACs). Let's keep it simple: a SPAC is an alternative way for companies to go public that differs from a traditional initial public offering (IPO) in its process, speed, disclosure and regulatory requirements. The diagram highlights key participants: SPAC sponsors, investors in the SPAC IPO, institutional funding which often takes place when the SPAC merges with a private company to bring it public, and investors who own the new company for the long haul. Most "blind pool" SPACs formed over the last 2 years have not found a company to merge with yet. Even so, in this note I share our findings on returns to date for key SPAC participants in closed transactions. **Bottom line: there are large wealth transfers from some SPAC participants to others; SPACs may allow companies to "leave less money on the table" in the IPO process; the SPAC boom may end up bringing a lot of earlier stage, much riskier companies to market; and while absolute returns for buy-and-hold SPAC investors have been high, this is less true when considering investment alternatives in a rising market.**




This is not a SPAC primer[1]; please consult one if you want to learn more. SPAC terms and conditions are like snowflakes and are constantly changing. Here are some basics before we get into performance (supporting charts appear on pages 4 and 5):

- *Volume*. SPACs revived a moribund US new issue market and have represented around half of all new IPOs by volume and by number of issuing companies since Jan 2019
- *Sectors and profitability*. The 85 completed SPAC IPOs since Jan 2019 have been dominated by tech, electric vehicle, healthcare and industrial companies (specialty chemicals, aerospace, metals & mining). These companies tend to be early-stage and unprofitable: 69 had negative free cash flow or negative net income
- *More to come*. As of mid-January, 52 SPACs had announced mergers that weren't completed and 264 SPACs were still looking for companies to bring public. These numbers are rising daily as the SPAC boom rolls on
- *Risk tolerance for new companies*. Lack of profitability is not unique to SPACs: 80% of traditional IPOs in 2020 had negative earnings at IPO (risk tolerance for unproven business models is very high). Similarly, the share of new unprofitable companies as % of US equity market cap has risen to the highest levels since 2000. See page 5 for charts on IPO profitability and unprofitable company shares of total market capitalization
- *Complementary Financing*. In most completed SPAC IPOs since Jan 2019, sponsors arranged for additional institutional equity financing (structured as a "PIPE", Private Investment in Public Equity) to allow for larger deal sizes, and to deal with potential redemptions by SPAC holders at the time of the merger. PIPE investors conduct "over the wall" due diligence and see company projections before the merger announcement, and then fund at the merger

[1] There are many of them. One example: "*Going public through a SPAC*", Morgan Lewis LLP, December 2, 2020.

**Return analysis: Completed and liquidated SPAC IPOs since January 2019**

Our return analysis covers 85 completed SPAC IPOs and 5 SPAC liquidations since Jan 2019. We analyzed SPAC participant returns on an absolute basis, and relative to investment alternatives such as traditional IPOs and the Russell 2000 Growth Index. Results:

- **SPAC sponsor** return estimates are imprecise given variation in terms, but appear to have been extremely high given our estimate of their share allocations relative to upfront expenses, even after accounting for forfeitures, concessions and vesting provisions. The only way I can think of for sponsors to lose money: if post-merger share values fall below upfront costs, or when SPACs are liquidated with no merger
- **"SPAC Arb investors".** Before the merger, SPAC investors can redeem shares for cash if SPAC prices decline or sell in the secondary market if shares rise; they also receive warrants in the new company. A "SPAC Arb investor" is one that we assume exercises that option every time, cashing out of stock and warrant positions right before the merger. SPAC Arb returns have been very attractive, even for weaker deals
- **Buy-and-hold investors** are assumed to retain their positions after the merger and include upfront SPAC buyers, PIPE investors funding at the time of the merger and post-merger buyers. Buy-and-hold *absolute* returns have been high (other than for the worst performers). However, in rallying markets, **investors should always consider what they could have earned on other investments**. Note how median *relative* returns for buy-and-hold investors are negative irrespective of which benchmark is used. Average returns are higher than median given a few deals with very high returns (DraftKings, Virgin Galactic, Immunovant)
- **Buy-and-hold investor returns are materially lower for SPAC IPOs with more than 180 days elapsed since the merger ("seasoned")**, after which private equity holders of the target company can sell shares
- **PIPE investors** can earn additional returns when sponsors provide some of their economics to them ("concessions"), although our market contacts indicate that concessions have been declining
- Dispersion of absolute and excess buy-and-hold returns is enormous. As a result, investors could end up with substantially higher or lower returns than median or average returns depending on which SPACs they participated in. In principle, active management could add substantial value in this market

**Return analysis for investors in SPAC companies brought public or liquidated from Jan 1, 2019 to Jan 22, 2021**

| Investor scenario and cumulative returns | Average | Median | Seasoned Median | Stdev | 85th percen. | 15th percen. |
|---|---|---|---|---|---|---|
| SPAC Arb investor returns | 40% | 14% | | 78% | 93% | 3% |
| SPAC investor buy-and-hold gross return | 90% | 45% | 8% | 143% | 218% | -17% |
| SPAC investor buy-and-hold return vs IPO Index | -24% | -73% | -115% | 151% | 116% | -152% |
| SPAC investor buy-and-hold return vs Russell 2000 Growth Index | 27% | -21% | -53% | 146% | 165% | -92% |
| PIPE investor gross returns | 63% | 26% | -2% | 118% | 158% | -24% |
| PIPE investor returns vs IPO index | -24% | -48% | -98% | 118% | 102% | -124% |
| PIPE investor returns vs Russell 2000 Growth Index | 11% | -18% | -61% | 121% | 107% | -80% |
| PIPE investor + sponsor concessions gross returns | 96% | 41% | 13% | 201% | 176% | -20% |
| PIPE investor + sponsor concessions returns vs IPO Index | 18% | -39% | -95% | 205% | 135% | -118% |
| PIPE investor + sponsor concessions returns vs Russell 2000 Growth Index | 44% | -5% | -54% | 202% | 135% | -74% |
| Post-merger buy-and-hold investor gross returns | 44% | 10% | -1% | 102% | 110% | -29% |
| Post-merger buy-and-hold investor returns vs IPO index | -34% | -53% | -100% | 113% | 62% | -127% |
| Post-merger buy-and-hold investor returns vs Russell 2000 Growth Index | -8% | -34% | -63% | 106% | 66% | -82% |
| SPAC sponsor returns | 958% | 682% | | 870% | 1713% | 178% |
| SPAC sponsor returns less concessions, forfeiture and vesting | 648% | 418% | | 679% | 1260% | 39% |

Source: JP Morgan Asset Management, Bloomberg, Dealogic, JP Morgan Securities. February 1, 2021.

**ASSUMPTIONS**

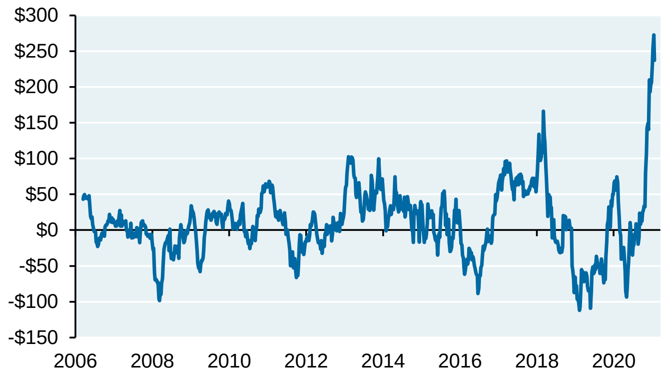
Universe = 85 closed SPAC mergers and 5 liquidated SPACs that were not closed; liquidations only impact sponsors and SPAC Arb investors
Sponsor share allocation = 20% of IPO SPAC shares without warrants; upfront costs = $3 mm + 2.5% underwriting fee; hold after merger closing
Second sponsor return scenario assumes 25% share forfeiture, and 25% subject to vesting at $15 per share
SPAC Arb investor buys at IPO date and exits both stock and warrant positions 7 days before the merger closing date
For SPAC buy-and-hold investors, returns reflect warrant valuations at prevailing prices, and any triggered warrant exchanges into shares or cash
PIPE investors commit prior to merger announcement, buy in at original IPO price, receive no warrants, fund at closing
PIPE concession scenario assumes that SPAC sponsors transfer 20% of their economics to facilitate closing
Post-merger investor buys the SPAC IPO at the time of the merger announcement at the prevailing price
IPO Index benchmark = average of IPOUSA Index and IPXO Index; these indexes do NOT include first day "pops" earned by syndicate participants

**Why are risk-return opportunities so attractive for SPAC sponsors and SPAC Arb investors?**

As illustrated below, the SPAC ecosystem involves **significant wealth transfers** from buy-and-hold investors to SPAC Arb investors, and from companies going public to SPAC Arb investors and SPAC sponsors. On the latter point, why might companies be willing to do that?

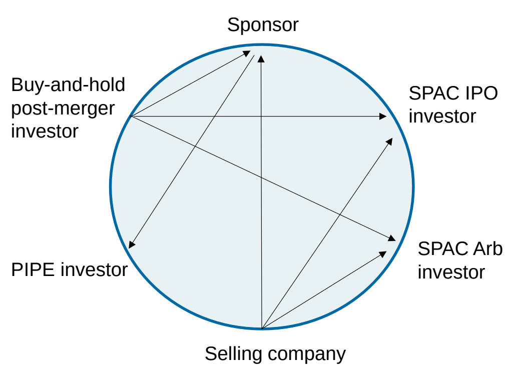
- The primary factor driving the SPAC boom may be **speed to market** for new companies rather than cost. Surging demand for risky assets may not last forever, and as shown below, there's been an enormous rise in investor flows into equities; private companies are taking advantage of this demand. SPACs also allow private companies to exert greater control over allocation of shares to institutional holders
- **The SPAC market also provides a venue for younger and riskier companies to go public**. We described above how most completed SPAC mergers involved private companies with negative free cash flow. The fact that sponsors have **overwhelming economic incentives to close SPAC transactions** to avoid losing their upfront expenses adds to this perception. During the SPAC marketing process to institutional and retail investors, management can use its own **financial projections** (insert smiley-faced emoji here), which may result in more companies going public with a lot of uncertainty about future prospects[2]
- Another premise of SPACs is that they might reduce the **amount that issuers leave on the table** when going public. Jay Ritter at the University of Florida, whose work we began citing in the Eye on the Market in 2007, estimates the average "first day pop" of traditional IPOs at 20% - 40% in the last 3 years (see page 5). It's hard to make an exact comparison to SPACs since there are multiple stages when appreciation can take place. So, we need to **indirectly** see if SPACs are cheaper methods of raising capital
- **There are two pieces of information suggesting that SPACs may be a cheaper vehicle for capital raising**. First, as shown above, SPAC buy-and-hold investors underperformed IPO benchmarks. However, there are a lot of assumptions required to create an IPO benchmark (holding period, weighting, purchase timing, etc), so let's put that aside for a moment. We also compared an investor buying every completed SPAC to an investor buying every IPO since Jan 2019. Each deal's return was compared to Russell 2000 Growth Index returns. **SPAC median/average excess returns: -21%/27%, and IPO median/average excess returns 17%/58%**. Hence, another sign that issuers may leave less money on the table by going public with SPACs

**Release the Krakens: investors load up on equity risk**
Global equity fund flows, $bn




Source: EPFR. February 3, 2021.12-week rolling sum.

**SPAC Wealth Transfers**




This stylized exhibit illustrates the most significant wealth transfers that I see taking place in SPAC transactions

[2] For SPAC Arb investors, **volatility of a new company's stock price would be welcomed** if they cash in their shares and retain the warrants which they hedge against the company's stock (i.e., delta-hedging).

## Wrapping up

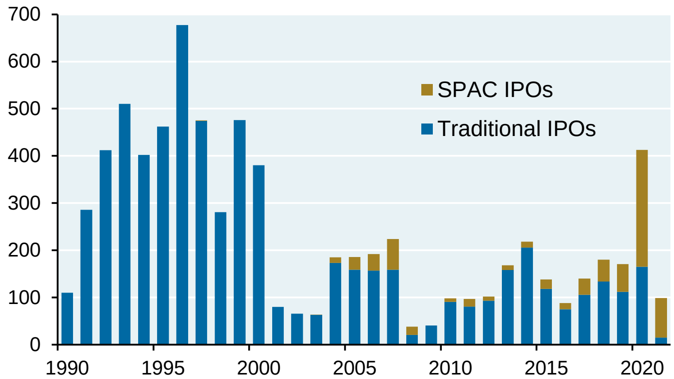
**SPACs have usually been terrific investments for sponsors, unless mergers weren't completed and SPACs were liquidated. For SPAC Arb investors with low-risk optionality and free warrants, they're very compelling. For everyone else: good *absolute* returns so far but in bull equity markets, rising tides lift all boats. The poor median buy-and-hold relative returns for seasoned SPAC deals are not a great omen.** I cannot imagine that sponsor and SPAC Arb returns will remain that high indefinitely; experience suggests that they will eventually be reduced via lower subsidies, more vesting rules for sponsors and higher risk of deal failure.

In preparing this note, I ran into a *Rashomon* issue since SPAC market participants have different perceptions of prevailing trends. Some PIPE investors insist that concessions received from sponsors remain high, while people structuring SPACs say such concessions are declining. Some deals involve "forward purchase commitments" which are essentially PIPE investments made *before* the merger announcement, in which case it's not surprising that sponsor concessions are greater. Private equity firms also launch SPACs as sponsors; in one case, a PE firm used GP funds and the deal was successful out of the gate, but when it used LP money to fund the SPAC sponsor, the deal went bankrupt. The SPAC market will be very interesting to monitor over the next 2 years.

## SPAC Exhibits

The first two charts show IPO volumes and # of deals split between traditional IPOs and SPACs. The SPAC data includes both closed and pending transactions.

**US IPOs by type**
Number



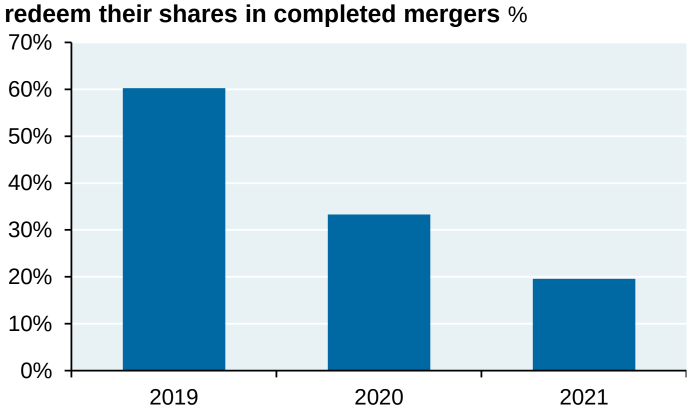

Source: Jay Ritter, University of Florida, Dealogic. January 2021.

**Traditional vs SPAC IPO deals**
$bn, deal proceeds


Source: Dealogic, JPMAM, JP Morgan Securities. January 2021.

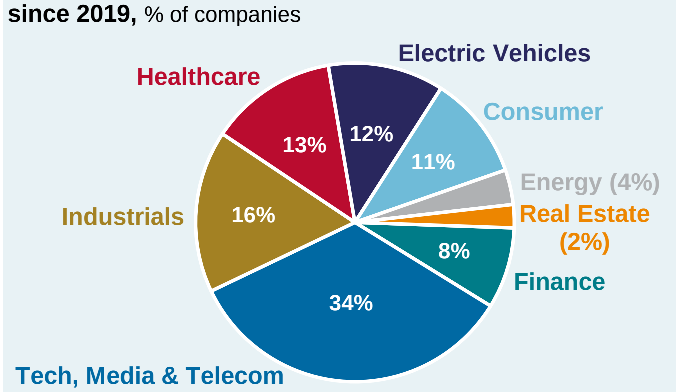
The bar chart below shows the decline in SPAC holder redemptions at the time of the merger since 2019. Note that this does not tell us anything about the behavior of *original* SPAC IPO investors who may have sold in the secondary market before the merger date.

**Average percentage of SPAC holders who voted to redeem their shares in completed mergers** %




Source: Dealogic, JPMAM. January 2021. n = 85 companies

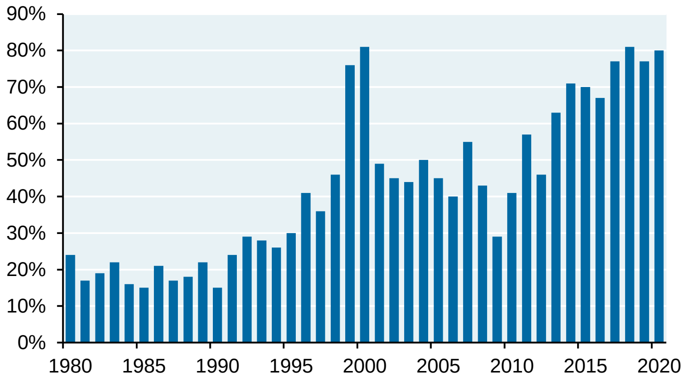
**Sector breakdown of companies brought public via SPACs since 2019,** % of companies




Source: Dealogic, Bloomberg, JPMAM. January 2021. n = 85 companies

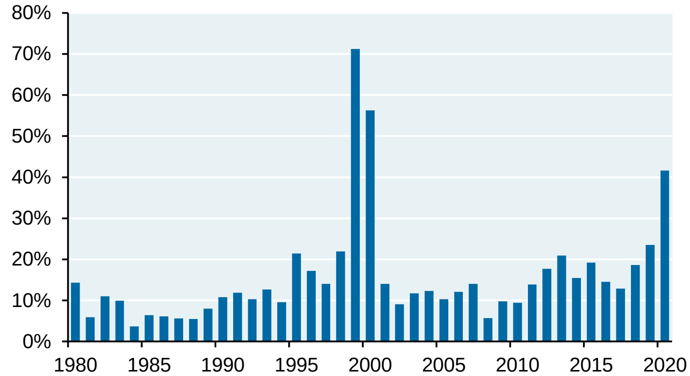
Jay Ritter at the University of Florida maintains a wide range of IPO-related research that you can find here. The next two charts on traditional IPOs are sourced from Jay's database. Jay has also estimated the % of sponsor shares forfeited in SPAC transactions (see "*Investor returns on the lifecycle of SPACs*", Jan 2021); they are very close to data we received from JP Morgan's Investment Bank. Both of these analyses influenced our estimates of sponsor outcomes in the return table shown above.

**US IPOs with negative earnings**
% of companies with negative trailing 12m earnings at IPO




Source: Jay Ritter, University of Florida. 2020. Excludes SPACs.

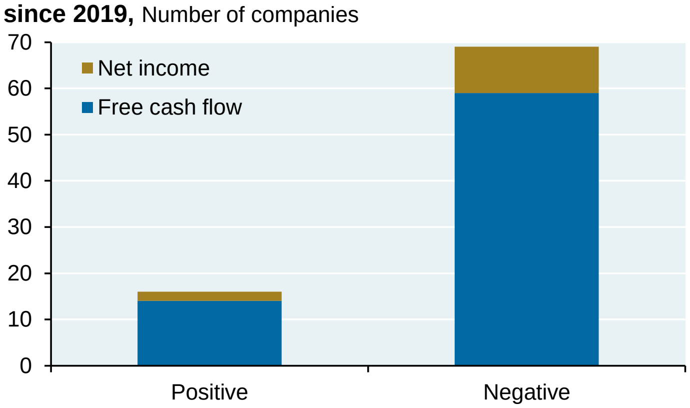
**Average first-day return of US IPOs**
% return, equal-weighted average




Source: Jay Ritter, University of Florida. 2020. Excludes SPACs.

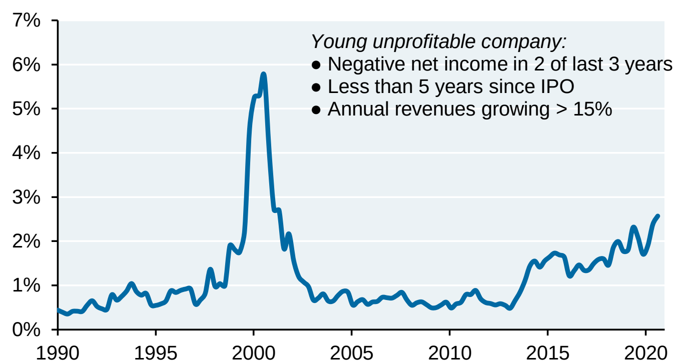
In 2019, we built a "YUC" model which shows the degree of overall equity market capitalization and corporate spending that is made up of **young, unprofitable companies with high revenue growth**. I don't believe that anything will ever match the lunacy of 1999[3]. Even so, the recent rise in our YUC measure is an unavoidable consequence of a decade of interest rates below the rate of inflation.

**Poor profitability of companies brought public via SPACs since 2019,** Number of companies




Source: Dealogic, Factset, JPMAM. February 1, 2021. n = 85 companies

**Market cap of young unprofitable companies**
% of total market cap




Source: Factset, J.P. Morgan Asset Management. Q3 2020.

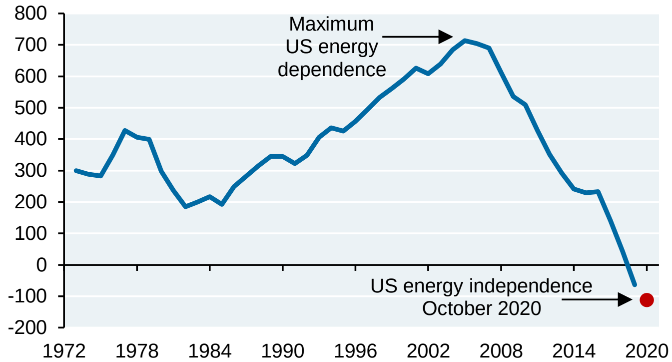
[3] In 1999, the two CEOs of TheGlobe.Com were invited as keynotes speakers at J.P. Morgan's annual Managing Director meeting, the first one I was invited to. I checked my Bloomberg terminal to see what the company did, and it said "**TheGlobe.Com has no publicly announced business model at this time**". I asked around and no one else had any idea what they did either. Their stock disintegrated over the next few months.

Roll back the clock 2 years prior to 1997. My spouse Rachel was already a Managing Director, and the night before annual meetings, MDs would host dinners for their colleagues. Rachel hosted at our home, but **since I was a VP at the time, I was not allowed to attend** and she arranged for me to have dinner with her mother at a restaurant instead. My primary incentive for getting promoted was to prevent this from ever happening again.

**Biden's early energy agenda (ban on new oil & gas leases on Federal lands, Keystone XL pipeline termination and conversion of Federal fleet to electric vehicles) more likely to increase imports than reduce emissions**

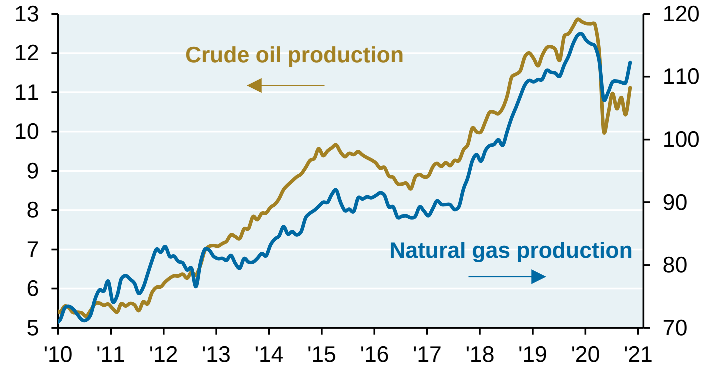
There will undoubtedly be more to come from the Biden administration on energy policy. Even so, just as we took a preliminary look at SPAC returns, we take a look here at the real-world impact of Biden's early energy policies. Will they reduce US emissions? In the short and medium term, I doubt it: policies announced so far reduce oil and gas *supply* faster than they reduce oil and gas *demand*. The most likely outcome: a modest rise in US oil imports, at least for now.

**US net energy deficit, in energy terms**
Net imports of oil, natural gas and coal in million tonnes of oil equiv.




Source: EIA, JPMAM. October 2020.

**US crude oil and natural gas production**
Million barrels per day Billion cubic feet per day



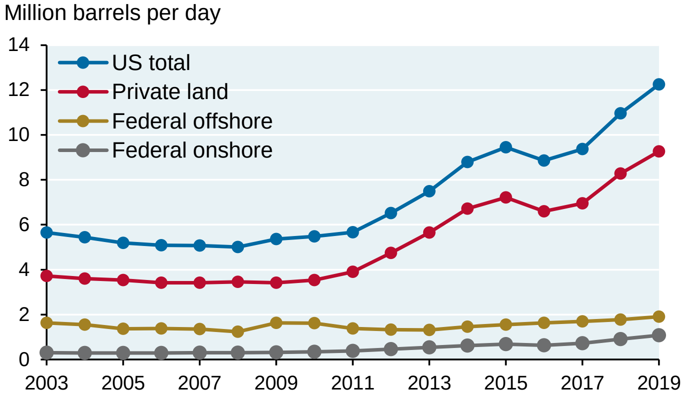

Source: EIA. November 2020.

## <u>Ban on new leases for oil & gas production on Federal lands</u>

The Biden administration announced a ban on new permits for oil & gas production on Federal lands, in part due to concerns about hydraulic fracking. Note that existing leases will not be affected; this will only slow the pace of new development. As older wells become non-productive, they would not be replaced. This will impact onshore production sooner than offshore production, since offshore wells generally have longer useful lives.

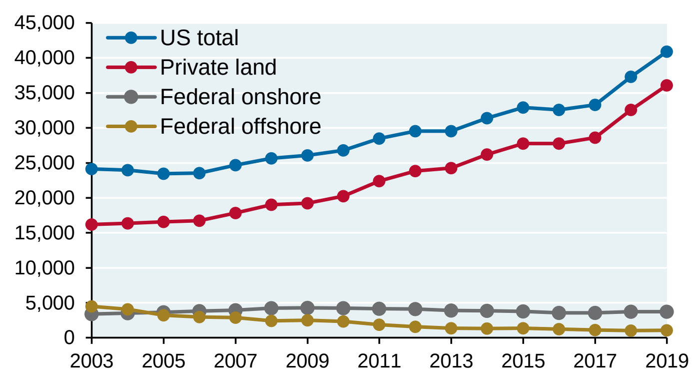
Onshore production on Federal lands only accounts for 9% of US oil and gas production. As a result, the nationwide hit to oil and gas production from the lease moratorium over the next few years is likely to be small, although in some states it will be larger as a % of economic activity (Colorado, Utah, New Mexico). Eventually, should the moratorium remain, the larger contribution from offshore oil production on Federal lands would decline as well. If both onshore and offshore production on Federal lands were eventually decommissioned as wells age and are not replaced, **US oil production would fall by 24% and gas production by 12%.**

**US crude oil production**
Million barrels per day




Source: EIA, Office of Natural Resources Revenue. 2019.

**US natural gas production**
Billion cubic feet




Source: EIA, Office of Natural Resources Revenue. 2019.

The more important point: **US *consumption* of oil & gas and the speed of the US renewable energy transition are not affected by a decline in US oil and gas *production***. In other words, any US oil & gas demand that is not met by US production on *Federal* lands, and which is not met by increased production on US *private* lands, **will simply be imported unless oil & gas demand is curtailed as well**, and by the same amount.

It's a lot easier to enact policies that reduce supply than demand, so that's where Biden is starting. But without policies to reduce oil & gas demand, I don't see how the Federal lease policy results in material reductions in US emissions. The termination of the Keystone XL pipeline is another example of this principle at work.

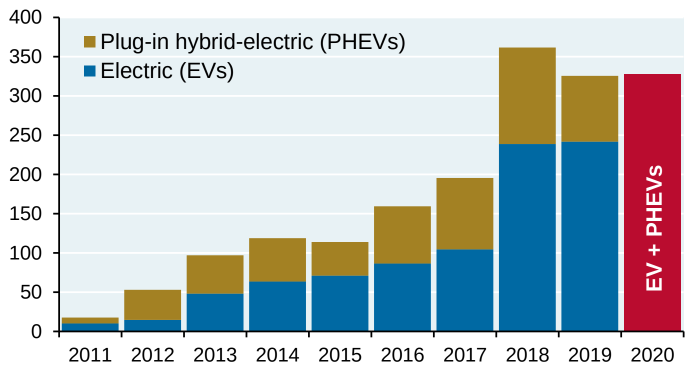
**The Keystone XL pipeline termination**

This project was designed to deliver 500,000 barrels of oil per day to the US from Canada. Using standard refining conversions, Keystone XL would produce 3.5 billion gallons of gasoline per year[4]. If the US were adopting electric vehicles at a sufficiently rapid pace, the loss of the pipeline would be irrelevant and the emissions gains would be immediate. Let's look at the numbers, since that is not the case.

Assuming 22.3 mpg and 13,500 miles driven per year for the average passenger car, 3.5 billion gallons of gasoline would power 5.7 million internal combustion engine (ICE) cars each year. However, in 2020, only 328,000 EVs and PHEVs were sold. **As a result, based on the *current* pace of electric vehicle sales, it would take 17 years to offset the loss of the Keystone XL oil/gasoline supply**. In the meantime, to power the ICE cars that remain, the US will simply import oil and/or refined gasoline from someplace else.

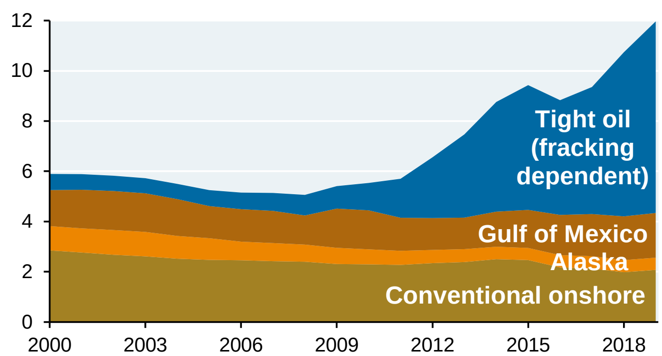
**Gasoline is only part of the energy supply lost from the Keystone XL cancellation**. Other annual energy supply losses include 2.3 billion gallons of distillate fuels and 800 million gallons of jet fuel. Unless users of these fuels electrify as well, distillate fuels and jet fuels would need to be produced on US private lands or imported from someplace other than Canada. **Imagine the irony** if Biden's Keystone XL policy mostly ends up benefitting Mideast oil exporters and hurting Canada, America's arguably closest ally that has reliably sold its oil, gas, hydroelectric and uranium supplies to the US for decades.

**US electric vehicle sales**
Thousands of vehicles




Source: US Dept. of Energy, EV Volumes. 2020. 2020 total is preliminary.

**US oil production by type**
Million barrels per day




Source: EIA. 2019.

[4] **Will the US need the crude oil supply from Keystone XL?** While the US has reached energy independence on an overall basis, part of this positive energy balance includes a surplus in refined petroleum products. The US still imports around 2.5 mm barrels of crude oil per day. Furthermore, as shown above, more than 50% of domestic crude oil supply comes from "tight oil" basins requiring hydraulic fracking. **So, there are two reasons why the US might eventually need the Keystone supply**: (a) energy investors have begun to require positive cash flow from US shale companies, which will slow the rate of domestic shale oil production; and (b) any environmental rule changes could slow domestic production as well.

**Electrification of the Federal vehicle fleet**

Electrification of vehicles used by government agencies reduces oil demand, and also offsets reductions in oil supply described above. But this policy, straightforward as it sounds, is less than meets the eye. The federal government owns 645,000 vehicles, and immediately electrifying them would reduce US gasoline demand by **390 million** gallons per year. However, eliminating Keystone XL and reducing onshore oil production on Federal lands by 30% would reduce gasoline supply by **5.5 billion** gallons per year. In other words, the Federal vehicle electrification policy reducing demand is dwarfed by the two policies reducing supply. Furthermore, the presumed gasoline reductions wouldn't really happen that fast, since existing government vehicles will not be destroyed; they will be sold in used car markets and continue to consume gasoline.

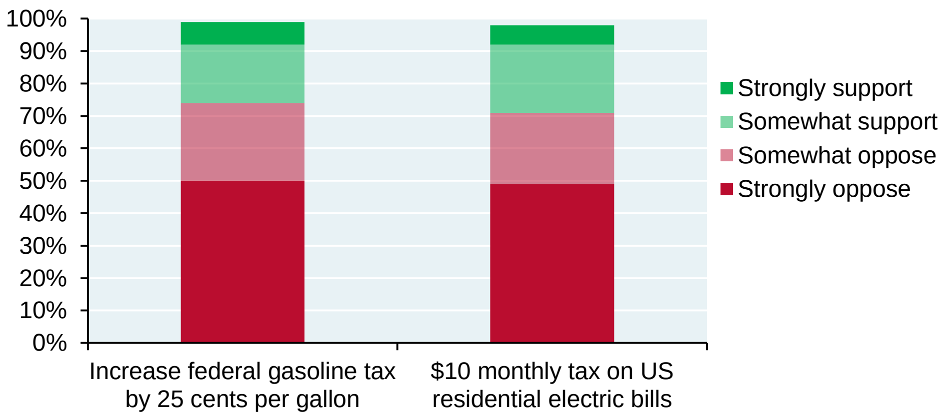
**Demand policies would need to come next**

What policies could reduce oil & gas demand on a scale similar to Biden's proposed reductions in supply, such that US energy independence would not be materially changed? I'm not sure that even these steps would do it, but at least there would be more symmetry between supply and demand policies.

- Accelerate renewable energy transition by boosting wind and solar **subsidies** (by increasing investment and production tax credits)
- To accommodate additional wind and solar power on the grid, avoid curtailed (wasted) renewable energy and maintain power reliability, the US needs either hundreds of billions or trillions in **electricity grid investment**, depending on the source you look at
- The Federal government may need to exercise its **eminent domain rights** to prevent local politics and NIMBY activists from killing critical transmission projects (i.e., Clean Line Plains & Eastern wind power transmission project nixed by Arkansas) and critical renewable energy projects (the most **ridiculous** example: when the progressive enclave of New Hampshire killed the 1 GW Northern Pass hydroelectric project from Quebec, which will simply result in more combustion of natural gas by the New England ISO)
- Reinstate **auto mileage standards** revoked by Trump in March 2020 (note: the top 3 selling vehicles in the US last year were the Ford F series, the Chevy Silverado and Dodge Ram pickups). Under Trump standards, automakers had to show 1.5% fuel economy increases from 2022 to 2025 compared to 4.7% per year under Obama. Biden is reportedly negotiating stricter standards than Trump but not as strict as Obama's
- **A carbon tax**. However, as shown below, most Americans don't seem very excited about the idea.

**Low support for gas and electricity taxes**

%, respondents




Source: Washington Post-Kaiser Family Foundation. August 5, 2019. n = 2,293.

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