



# BUREAU OF BUSINESS & ECONOMIC RESEARCH

## The Potential Economic Impact of Community Solar in New Mexico

Presentation to the Distributed Energy Summit

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# Background

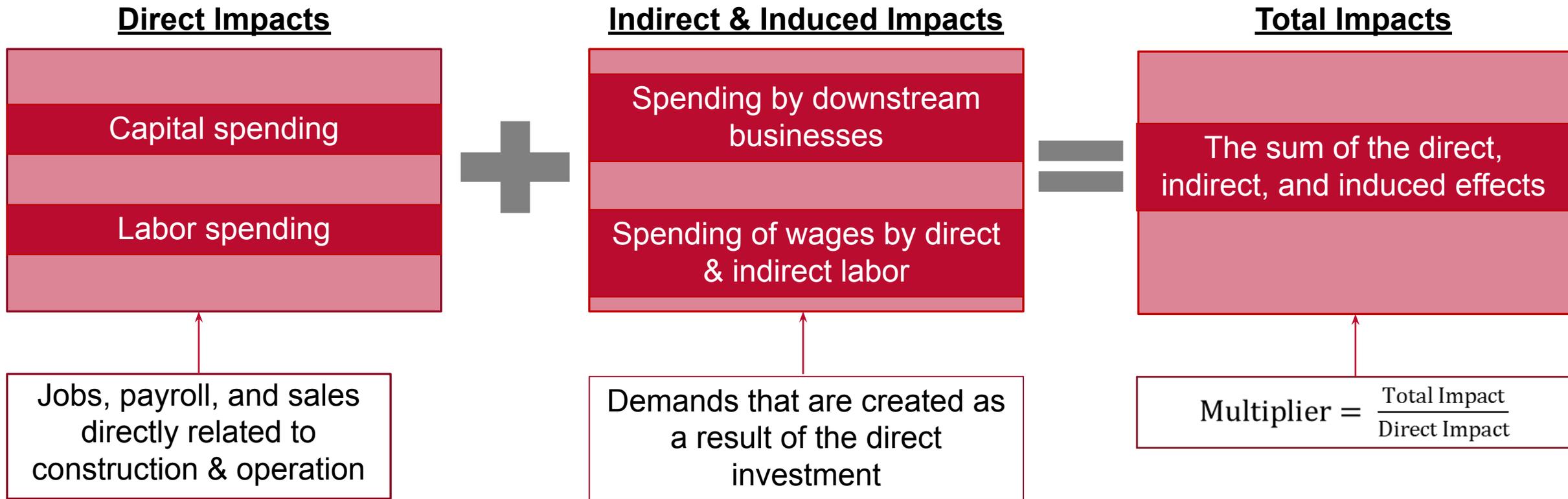
- ❑ NM Legislature considered legislation allowing community solar in 2020. That failed in part because there were no good estimates of possible economic impacts to NM.
- ❑ In the lead-up to the 2021 session, the Bureau of Business & Economic Research (BBER) was asked to assess the possible economic impacts.
- ❑ The legislation passed in 2021 and was signed by Governor Lujan-Grisham in April.
- ❑ Who is BBER?
  - ❑ We are a research organization at the University of New Mexico. Among other things, we conduct contract-funded research on topics related to the New Mexico policy and economy – that includes performing “economic impact” analysis.
  - ❑ We also develop economic forecasts and have a databank that collects, compiles, and distributes a wide variety of socioeconomic data relevant to New Mexico.
  - ❑ BBER has been around since the mid-1940’s.
- ❑ Two areas for discussion: (1) community solar report; (2) extraction economy.

# What is “community solar?”

- ❑ Community solar provides a middle ground between the installation of individual-owned solar and utility-scale solar.
- ❑ Consumers can buy-in to mid-scale solar facilities and receive credit on their electrical bills for their share of the power produced.
- ❑ This application of solar technology is ideal for individuals lacking space to install their own panels and for renters, who may not have the ability to convert their homes to renewable energy sources.
- ❑ Cooperative-style approach to solar energy generation that can help fill a gap between the demand for power generated via solar and the current ability to supply.
- ❑ Around 20 states have legislation permitting community solar operations.

# What is an “economic impact?”

- ❑ An economic impact answers the question: To what degree does a “direct” investment in reverberate through an economy?
- ❑ Allows us to calculate how an initial investment “multiplies.”



# A few other details (and consequences)

- ❑ Two basic phases: construction & operation.
  - ❑ Bringing about one time large impacts from the construction phase and more modest sustained impacts from the operation phase.
- ❑ Estimates generated statewide and also at county-level.
- ❑ Positive fiscal returns to the state.
  - ❑ Through tax dollars received by the state.
- ❑ Diversify state's energy portfolio.
  - ❑ New Mexico is prime real estate for solar power generation.
  - ❑ Added bonus of assisting with Energy Transition Act's goal to be 100 percent carbon-free by 2045.
- ❑ Opportunities for landowners to leverage underemployed land.
  - ❑ Especially agricultural land: landowners may lease fallow land which will effectively operate like "crop" in their production mix.

# Data

- ❑ Expenditure data were collected from studies in other states as well as data collected by BBER from recent solar installations.
  - ❑ Collected data such as construction costs (labor & non-labor); materials costs (e.g. mountings, wiring, inverters, etc.); miscellaneous costs (e.g. permitting fees, professional fees, overhead, etc.).
  - ❑ Trying to get at: what do expenditures look like for installation & operation?
- ❑ Data collected from NMTRD, DFA, and BEA.
  - ❑ Things like tax rates, land leasing costs, incomes, and the like.
- ❑ Utility data.
  - ❑ Counties/areas of utility operation.
- ❑ IMPLAN (economic modeling software) used to estimate impacts.
- ❑ Note: we modeled in terms of single 2 MW and 5 MW installations.

# Impact results – single Installation (state)

- A single 2MW installation is projected to add 1.7 direct jobs and a total of 12.1 jobs.

	Employment	Labor Income	Output
Direct	1.0	\$38,827	\$150,426
Indirect & Induced	6.1	\$233,249	\$812,523
<b>Total</b>	<b>7.1</b>	<b>\$272,076</b>	<b>\$962,949</b>
<b>Multiplier</b>	<b>7.1</b>	<b>7.0</b>	<b>6.4</b>

- A single 5 MW installation is projected to add 8.6 direct jobs and a total of 37.6 jobs.

	Employment	Labor Income	Output
Direct	1.0	\$43,062	\$156,291
Indirect & Induced	3.4	\$127,782	\$445,125
<b>Total</b>	<b>4.4</b>	<b>\$170,844</b>	<b>\$601,416</b>
<b>Multiplier</b>	<b>4.4</b>	<b>4.0</b>	<b>3.8</b>

# Jobs mix depends somewhat on installation size

Industry	Employment	Labor Income per job in Industry	Output per job in Industry
Construction of new power and communication structures	4.1	\$54,123	\$163,532
Advertising, public relations, and related services	3.9	\$27,211	\$153,955
Full-service restaurants	1.6	\$21,694	\$46,251
Limited-service restaurants	1.5	\$19,387	\$78,987
Real estate	1.5	\$16,199	\$232,331
Retail - General merchandise stores	1	\$28,917	\$73,513
Hospitals	1	\$80,088	\$158,411
Home health care services	0.9	\$26,020	\$30,494
Individual and family services	0.8	\$22,516	\$33,385
Retail - Food and beverage stores	0.8	\$31,895	\$70,819

10 most heavily impacted industries for a single 5MW installation.

Because of scaling, a single 2MW installation has a different breakdown. Specifically, many fewer construction workers are required (even per MW constructed).

# Cumulative impacts (5 MW installations)

	<b>Outlook</b>	<b>Employment</b>	<b>Labor Income</b>	<b>Output</b>
<b>50 MW</b>	3-year	1,128	\$44,077,650	\$155,165,400
	5-year	1,880	\$73,462,750	\$258,609,000
<b>100 MW</b>	3-year	2,256	\$88,155,300	\$310,330,800
	5-year	3,760	\$146,925,500	\$517,218,000

The above table represents cumulative impacts of 50 MW and 100 MW installed solar utilizing only 5 MW installation sizes over 3- and 5-year windows. Included are both construction phase and operations phase. Total impacts are displayed. Note that the impacts under the 100 MW scenario are twice the 50 MW scenario.

# Estimated Fiscal Impacts (5 MW installations)

❑ Estimates are meant to be illustrative and serve as a rough guide.

<b>Tax</b>	<b>5 MW</b>	<b>25 MW</b>	<b>50 MW</b>	<b>100 MW</b>
Gross Receipt Taxes	\$132,617	\$663,084	\$1,326,167	\$2,652,335
Residential Property Taxes	\$198	\$990	\$1,981	\$3,961
Non-Residential Property Taxes	\$3,882	\$19,411	\$38,823	\$77,645
Personal Income Taxes	\$5,439	\$27,197	\$54,393	\$108,787
Corporate Income Taxes	\$3,741	\$18,705	\$37,409	\$74,819
<b>Total Revenues</b>	<b>\$145,877</b>	<b>\$729,387</b>	<b>\$1,458,773</b>	<b>\$2,917,546</b>

# Qualifications

- ❑ Because there is little actual data, we employed linear scaling in the economic impacts.
  - ❑ However, there are likely to be economies of scale which will reduce the impacts somewhat.
  - ❑ In other words, the first 2 MW or 5 MW construction is likely to have the largest impacts, but in practice, impacts are likely fall for subsequent construction – especially if construction occurs in similar time periods.
  - ❑ The best example is the “economies” associated with moving from a 2 MW construction to a 5 MW construction.
- ❑ Similar story with the fiscal impacts.
  - ❑ Linear scaling.
  - ❑ There may be overlap between region or contractor which may mute the impact.
- ❑ As always, these are best estimates using the best available data, but until we have actual real world data for New Mexico, we will not be able to fully assess impacts.
- ❑ See our full report for discussion of estimated county-level impacts.

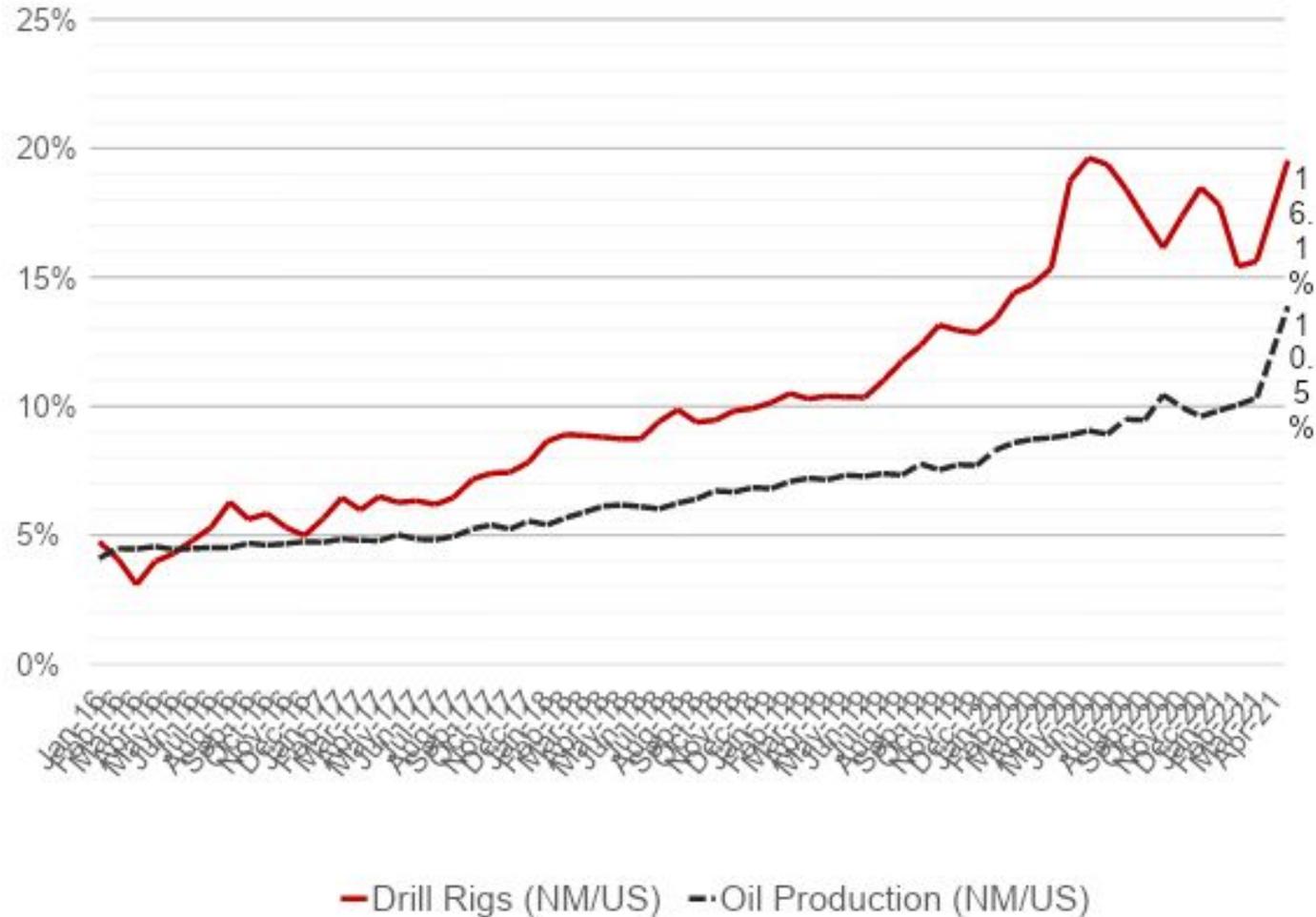
# New Mexico energy economy (overview)

- ❑ Although solar and wind are ramping up, the New Mexico energy economy is dominated by oil & gas (though declining, coal is also used for energy generation).
- ❑ Three key pieces:
  - ❑ Jobs, salaries & incomes to individuals working in petroleum-related industries
  - ❑ Benefits to local economies
  - ❑ State budget
- ❑ Much of the activity in Permian Basin (currently, lesser degree in San Juan Basin).
- ❑ To reiterate, there is obviously much more to the NM energy economy...
  - ❑ Energy generation
  - ❑ Renewables
  - ❑ Other non-renewables

# New Mexico energy economy (a few specifics)

- ❑ Fossil fuel extraction in NM over the last several years has accelerated. Breakdown of production by region:
  - ❑ Gas: About 60% in Permian Basin (Lea & Eddy) and about 40% in San Juan Basin (San Juan & Rio Arriba).
  - ❑ Oil: About 95% in Permian Basin.
- ❑ Mining employment reached 26,000 jobs in 2019, but has fallen to about 17,000 jobs.
  - ❑ Accounts for only about 2.5% of all jobs in NM.
  - ❑ High industry wage; averaged about \$83,500/year in 2019.
  - ❑ Note: this does not include so-called proprietors, which may also be in this industry.
- ❑ “Mining” industry on its own does not account for interrelated industries.
- ❑ The value of production (GSP) is over-represented compared to other metrics.
  - ❑ Since 2016, the value of extraction averaged 12%-18% of the value of all production in state.
  - ❑ US average is only about 2.4%.
  - ❑ NM accounts for about 0.5% of all US total GDP; However, value of NM extraction is over 3.0% of the value of US production.

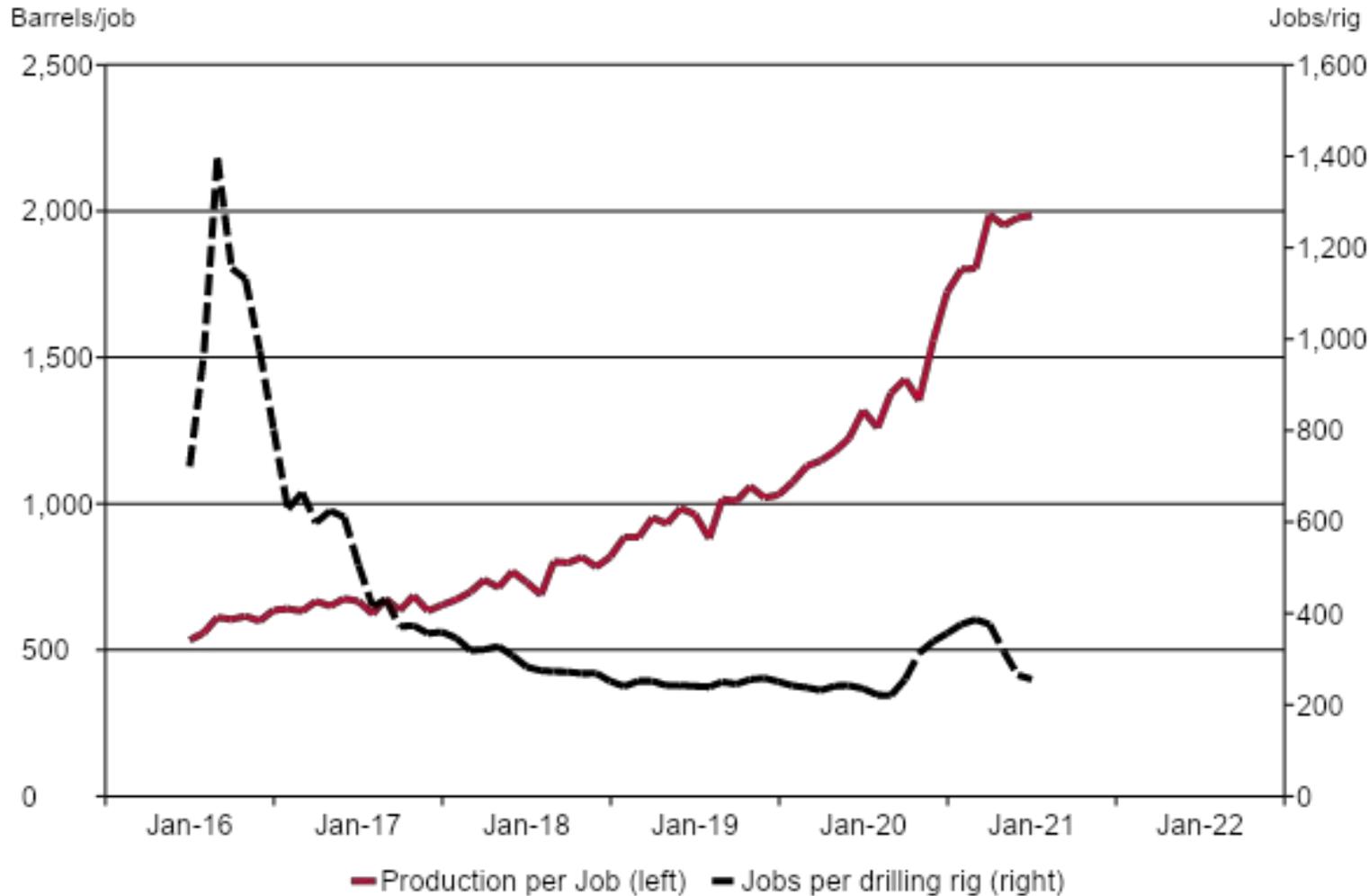
# Increased NM field oil production presence



- Currently about 75 drilling rigs operating in NM.
- Around 15%-20% of all US drilling rigs are in New Mexico
- More than 10% of all US field oil production occurs in NM – up from about 4% in 2016
- To put in perspective: in 2020 field oil production in US totaled 11.3 million barrels per day (bpd), which is up from 8.9 million bpd in 2016 (up 28%). In NM, production increased from 400,000 bpd in 2016 to 1.0 million bpd in 2020 (up 159%).
- Incidentally: NM accounts for around 5% of US gas production by volume

Sources: EIA, Baker Hughes. Calculations: BBER

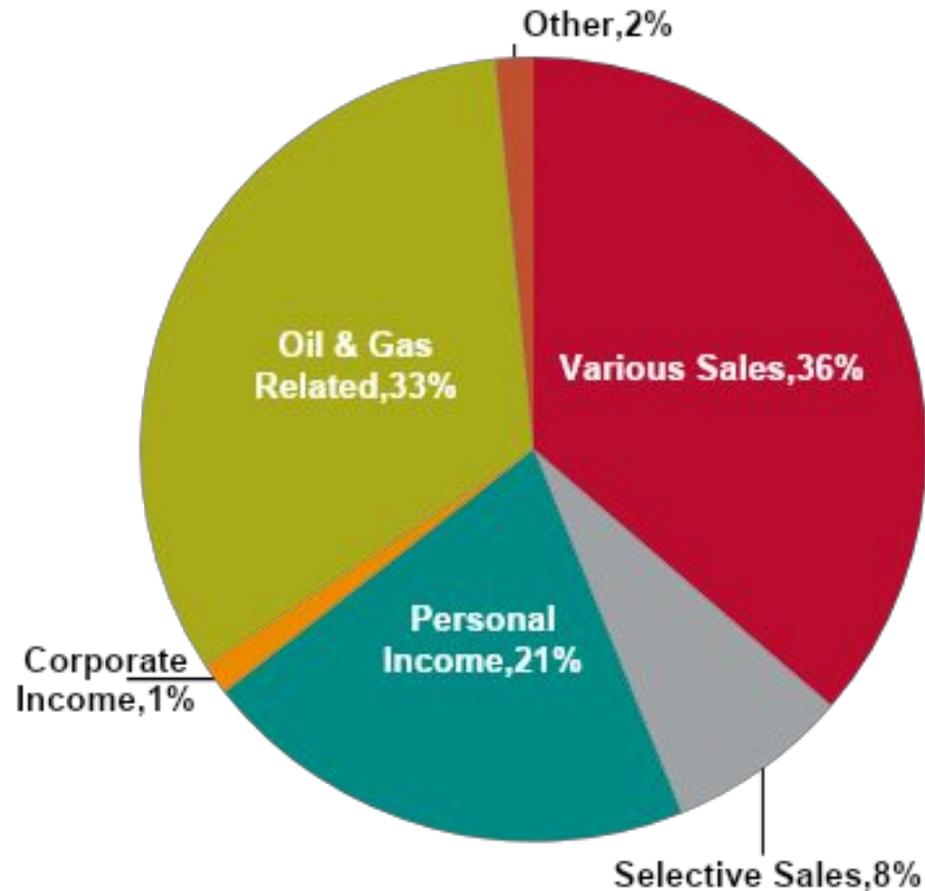
# Move toward more “efficient” production



- NM “mining” jobs averaged about 20 thousand in 2016, peaked at 26 thousand in 2019 and is now about 17 thousand (as of June 2021).
- Still reasonable labor demands for drilling, but production is deviating.
- For local areas:
  - Fewer workers to spend in local economy
  - Negative impacts to associated industries
  - Recovery of (some) oil & gas tax revenue

Sources: EIA, Baker Hughes. Calculations: BBER

# Rough picture of state revenues



- In FY21, NM budget around \$7.5 billion.
- Much of the annual variation depends on oil & gas. In FY17, oil & gas accounted for about 28% of state budget; in FY19 oil & gas accounted for about 35%.

Sources: NM LFC. Calculations: BBER

# The future & some questions

- ❑ Mining employment does not seem to be rebounding quickly.
  - ❑ Population/job losses negatively impact directly and indirectly impacted industries – especially in oil-producing regions.
- ❑ “Efficient” production should keep employment levels suppressed over the next several years.
- ❑ Record high production & firmed oil prices will keep state budgets buoyant – as long as production & price remains elevated.
  - ❑ But, how long will that last? What do the production decline curves look like? Can we continue to out-drill the declines?
- ❑ Budget highly dependent on oil & gas and when state budgets are “good,” there is less incentive to diversify revenues.
- ❑ Our forecasts generally focus on a 5 year window; but, over the longer-term, how will changing consumer preferences (renewables, environment, etc.) disrupt things? What about macroeconomic effects? What about changing policies?

# Thank you!

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