

Corporate Case Study: Facebook's Green Energy Goals Are Speeding the Transition of New Mexico's Electricity Sector

*Data Center Power Demand Is Driving a
Renewables Push by PNM to Top 40% in Two
Years*

Executive Summary

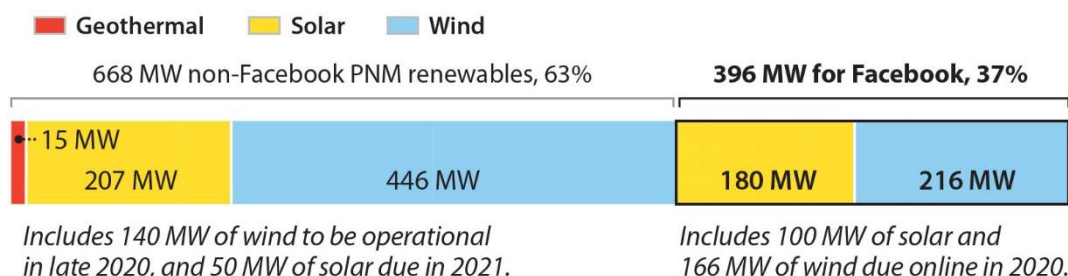
In October 2016, Facebook Inc. broke ground on a 300-acre data-storage site in Los Lunas, N.M., creating a near-overnight boom in the community of 15,000.

The project already has delivered remarkable local fiscal and payroll gains, and the 3-million-square-foot complex is still not completely built out.

The data center has been a sudden force, as well, in the reshaping of how electricity is now generated in New Mexico—pushing the state to embrace a much-higher percentage of renewable energy much sooner than previously projected.

A Big Share of PNM's Renewable Portfolio is for Facebook

The demand for renewable power for Facebook's data center in Los Lunas, New Mexico, has become a big part of PNM's overall renewable portfolio. The utility's geothermal, solar, and wind capacity will be at least 1,064 MW by the end of 2021*, with almost 400 MW of it dedicated for the data center.



*PNM has an additional 350 MW of solar capacity awaiting approval from the New Mexico Public Regulation Commission as part of its power replacement plan associated with the closing of the coal-fired San Juan Generating station.

Source: PNM Resources' 2019 10-K SEC filing (annual report); PNM Resources correspondence

The particulars of the project's many impacts are striking:

- The Los Lunas data center has supported upward of 1,000 construction jobs

day in and day out, most of which have gone to local subcontractors.

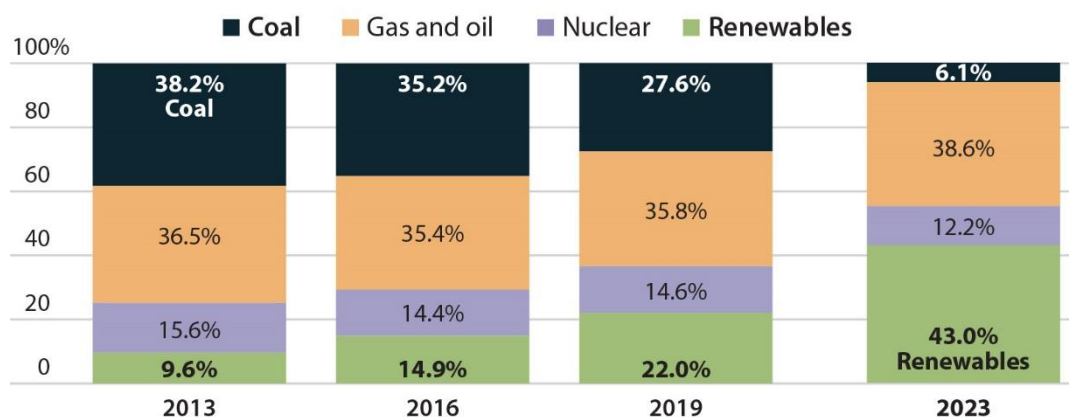
- The center will require a staff of 200 to operate beyond 2023, along with a host of supporting vendors.
- Los Lunas' gross receipt tax (GRT) revenues, the main source of municipal funding in the state, have increased by 85%, and dozens of new businesses and developments have come to town as a project byproduct.
- The data center in and of itself is driving a rapid shift toward renewable energy by Public Service Company of New Mexico (PNM), which is projected now to get 43% of its power generation from wind and solar by 2023, up from 9.7% in 2013.
- Coal, once the mainstay of PNM, will account for less than 7% of PNM's power needs within two years.
- It could serve as a model for other communities seeking fiscal and payroll stability built on economic diversification and sustainable energy.

While the state of New Mexico gave Facebook ample taxpayer-supported incentives to build at Los Lunas, such incentives are not uncommon, and they do not always work. **What sets the Los Lunas example apart is its clearly beneficial local economic impacts and its market-moving renewable-energy requirements.**

These early results make the model one worth considering elsewhere, particularly given expectations of continued strong growth in the tech sector as the COVID pandemic creates lasting effects that will keep commerce and cultural activities more digitally reliant than they have been historically. Data centers can be seen also as catalysts for bringing broadband Internet to rural areas that don't have it yet.

PNM Is Transforming Its Mix of Generation Capacity

In anticipation of the closure of the San Juan coal-fired power plant in 2022, PNM plans to accelerate the shift of its generation capacity to renewables, especially solar.



Source: PNM Resources' filings with the SEC and New Mexico's Public Regulation Commission

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Project Background

Facebook Inc. first approached New Mexico officials four years ago with a proposal to build a 970,000-square-foot data center in the Village of Los Lunas, a town of 15,000 residents about 23 miles south of Albuquerque.

Los Lunas leaders were open to the idea, as was the state and **Public Service Co. of New Mexico (PNM)**, an investor-owned utility and the main power provider and electricity transmission company in New Mexico.

Los Lunas was seen as a prime location for the Facebook project for a number of reasons: Ready access to the transmission system; rich solar resources; state taxpayer-backed incentives; its workforce; and because PNM wanted the business. Indeed, PNM, which is overseen by the **New Mexico Public Regulation Commission (PRC)**, was essentially a project co-sponsor, willingly agreeing to meet Facebook's requirements for electricity sourced from renewable energy.

Speed was a factor as well. Facebook, a growing company in need of more network infrastructure, was looking to close a deal quickly, and New Mexico was competing urgently with Utah, where **Rocky Mountain Power** was pushing for Facebook to locate the data center there. In a July 2016 expedited PRC order¹ that allowed New Mexico to beat Utah to the punch, the commission approved initial power purchase agreements and a special service contract between Facebook and PNM.

"Prompt regulatory review and approval of the proposed service will keep New Mexico in contention for this significant new investment in our state," noted the PRC order. (Utah was selected later for another Facebook project).

Groundbreaking commenced three months later, and the **Facebook Los Lunas Data Center** has since become the seventh of what are now 11 Facebook data centers either operational or under construction around the country (Facebook has four foreign data centers—two in Denmark and one each in the U.K. and Singapore).²

The Los Lunas center was pitched originally as a two-building project requiring a \$250 million investment and a 970,000-square-foot footprint. But Facebook—following data-center schematics and build-out strategies it had used elsewhere—announced in 2018 that the Los Lunas center would add four more buildings, each



¹ PRC. [Initial Order Case No. 16-00191-UT](#). July 13, 2016.

² Baxtel. [Facebook Data Center Map](#). Accessed May 8, 2020.

roughly the same size as each of the first two and with a total square footage of 3 million and a total project cost of more than \$1 billion.³

The electricity required to run the center is to be supplied through renewable-energy power-purchase agreements (PPAs) that are driving PNM to develop hundreds of megawatts of utility-scale wind and solar-farm capacity.

While the deal is essentially market-driven (a corporate buyer is being supplied by an investor-owned utility), it did not occur in a public-policy vacuum. Incentives included \$10 million in state economic-development aid, gross receipts givebacks of \$1.6 million annually, and municipal sponsorship of investor-owned industrial revenue bonds that Facebook will pay off over time.⁴

Data Centers: A Growth Industry

A 2018 **RTI International** report⁵ commissioned by Facebook played up the localized benefits of the company's U.S. data-center fleet.

The study estimated that for every job at its U.S. data centers (of which there were only four at the time, in Altoona, Ohio; Forest City, N.C.; Fort Worth, Texas; and Princeville, Ore.), "there were five jobs supported elsewhere in the economy by operating expenditures." The study estimated that a total of 13.1 jobs were created for every \$1 million in data-center operational spending. Every \$1 million in data-center capital expenditures created 14.5 jobs.

Similar studies have reached similar conclusions, including one cited by PNM in its application for renewable generation buildout that estimated that just the first phase of construction "would generate over a million dollars in positive economic impact beyond the amount directly spent (\$250 million) by the data center and could support about 2,000 direct jobs and 1,000 indirect and induced jobs over a number of years (i.e., for every two dollars spent on construction, an additional one dollar of activity will be generated and for every eight direct jobs in construction, four indirect and induced jobs will be generated)."⁶

That filing went on to explain how the Facebook project may very well be a catalyst for others like it:

"In addition to the increased economic activity and job creation, tax revenues will be generated for the locality and state in the form of income and gross receipts taxes. Further, a 'follow the leader' effect may occur: Once one large data center project locates in an area, others tend to follow shortly thereafter, and so do their vendors."

³ Village of Los Lunas video presentation. [Data Center to Triple Its Size With Four New Buildings](#). November 2017.

⁴ Valencia County News-Bulletin. [Los Lunas projects \\$2 billion impact from Facebook data center project](#). Jan. 11, 2017.

⁵ RTI International. [The Impact of Facebook's U.S. Data Center Fleet](#). March 2018.

⁶ PRC. [Direct Testimony of Gerard T. Ortiz Case No. 18-00009-UT](#). Jan. 16, 2018.

Skeptics often dismiss the knock-on effect described in such research as ephemeral because it is associated with construction, but the company's rolling data-center expansions often support local building and supply-chain business for years on end. In the Los Lunas case, the full buildout of the center will last until at least until 2023 and will go well beyond that if further expansion occurs—which is not out of the question. In any case, capital expenditures are not limited to initial buildout. Servers that make up the operational innards of data centers are typically replaced every three years. Data centers also require an army of upkeep vendors that includes electricians, carpenters, roofers, HVAC technicians, and others.

Macroeconomically, the RTI study put Facebook's contribution to U.S. GDP at \$5.8 billion from 2010-2016, or close to \$1 billion annually. For context—and to highlight Facebook's impact—the study estimated that the entire “data processing, Internet publisher and other information services” contributed \$87 billion to GDP over the same period.

Since then, Facebook has grown. It seems only to have become a more robust company with the COVID-19 pandemic, as lockdowns have driven physical social distancing and a shift to online commerce and communications that will most likely persist even after the pandemic subsides. In its quarterly earnings report in late April, Facebook said that as the pandemic gripped the country in March, its daily user traffic increased by 11 percent, to 1.79 billion over March 2019. Its employee headcount was up 28%, to 48,268.⁷ While the company conceded “significant reduction in the demand for advertising, as well as a related decline in the pricing of our ads,” it added that advertising revenues—which is how Facebook makes money—had recovered during the first three weeks of April and were on par with April 2019. Markets reacted to the news by driving the company's stock price up 10% overnight after it had fallen in February more or less in line with broader stock market declines. From mid-March to mid-May, Facebook stock was up 40%.

Equally important, Facebook in just the past few weeks has moved aggressively to repair reputational damage it has incurred in recent years “over the spread of misinformation, loose oversight of user data and the company's competitive

Facebook Data Centers

Los Lunas, New Mexico, is one of nearly a dozen data centers that Facebook has across the United States.



⁷ Facebook. [Facebook Reports First Quarter 2020 Results](#). April 29, 2020.

practices.”⁸

The company's CEO in an early April interview called Facebook “the new Main Street” and said, “Some of the mistakes we've made and the work we've done to try to fix those mistakes is serving us right now.”⁹

Facebook now has eight operational data centers in the U.S. and three more under construction. It has not announced any additions beyond those, but industry outlooks for data centers—a long-established growth market already—in general see more demand as a result of the COVID-19 pandemic. Much of that expansion will be driven by changes in how employees and employers interact, by changes in how interpersonal relationships are conducted, and by changes in how businesses engage with customers. An April 24 report from **International Data Corp.**,¹⁰ an industry research group, describes a fast-moving and far-reaching transformation that will result in a “new normal” in virtually every aspect of life.

While the data campus at Los Lunas is a key component in Facebook's global functionality, it is also emblematic of the broader digital industry's expansion. Like other tech majors, Facebook is a market force, among the five largest companies by market capitalization today in the S&P 500 Index (the others are **Alphabet (Google), Amazon, Apple, and Microsoft**). All these companies—and thousands of mid-cap and small-cap ones in every sector of the economy—are reliant one way or another on data centers. None could operate without the Internet, and it is difficult to imagine any company—or any institution of any kind, for that matter—functioning today without a deep digital presence.

A 2016 study by **Lawrence Berkeley National Laboratory** on industrial digital-storage trends describes how improvements in electricity-usage efficiency by large data centers suggests a future in which these complexes will become less energy-intensive—but one in which they will remain a growth business, nonetheless. One metric of note from the study: Patterns in shipments of servers, the core component of data centers, which are known also as “server farms.” The Berkeley Lab researchers projected that server shipments would grow by 3% annually through 2020 and saw most of that happening on the back of a boom in construction of “hyperscale” data centers like the one at Los Lunas.

The takeaway from that research is that hyperscale data centers are where the action is now.¹¹

A more recent industry report, by **CBRE**, the commercial real estate company, details “enormous growth of data consumption—driven by big-data analytics, 5G, gaming, and streaming services,” all subsectors of an expanding industry that

⁸ Wall Street Journal. [Mark Zuckerberg Asserts Control of Facebook, Pushing Aside Dissenters](#). April 28, 2020.

⁹ Wall Street Journal. [Facebook's Road to Redemption Runs Straight Down Main Street](#). April 5, 2020.

¹⁰ IDC. [ICT Market Opportunities Arise Amid Headwinds as Digital Transformation Becomes New Normal](#). April 22, 2020.

¹¹ Berkeley Lab. [United States Data Center Energy Usage Report](#). June 2016.

requires more data-center storage.¹²

Cisco Systems, one of the behemoths of the American tech sector, published projections in February 2018 that had data-center traffic reaching 19.5 zettabytes (ZB) per year by 2021, a 325% increase over 2016. That projection was made well before COVID-19 drove so much more activity into the digital sphere.

This passage from the Cisco report describes the fundamentals of a shift that was already building, pre-pandemic, toward more cloud-based storage, which is what big data centers provide:

*"For consumers, streaming video, social networking, and Internet search are among the most popular cloud applications. For business users, enterprise resource planning (ERP), collaboration, analytics, and other digital enterprise applications represent leading growth areas ... Additionally, the growth of Internet of Things (IoT) applications such as smart cars, smart cities, connected health and digital utilities requires scalable computing and storage solutions to accommodate new and expanding data center demands. By 2021, Cisco expects IoT connections to reach 13.7 billion, up from 5.8 billion in 2016."*¹³

Data compiled by the **Pew Research Center** shows the percentage of U.S. adults who use the Internet growing to more than 90% by 2019, up from about 50% in 2000.¹⁴ That trend has very likely accelerated in recent weeks.

Since COVID-19, Internet activity has increased "sometimes starkly, as the virus spread and pushed us to our devices for work, play and connecting."¹⁵ Numbers compiled in late March by industry data trackers **SimilarWeb** and **Apptopia** showed early-pandemic Facebook website activity, for instance, up 27% since mid-January, **Netflix** traffic up 27%, **YouTube** up 16%, and **Zoom Video Communications** traffic up more than 200%. While "many aspects of daily life have migrated online,"¹⁶ the pandemic presents a pivotal moment for business, especially, and one that will likely have long-term effects that boil down to more commercial dependence than ever on large data centers.¹⁷

Trade, logistics, services and communications, the fundamental components of almost any enterprise, stand to grow increasingly reliant on the Internet, which in essence is a network of big data centers like the one in Los Lunas.

¹² CBRE. [North American Data Center Trends](#). February 2019.

¹³ Cisco Systems. [Cloud Service Adoption Creates New Data Center Demands](#). Feb. 5, 2018.

¹⁴ Pew Research Center. [Internet Use Over Time](#). June 12, 2019.

¹⁵ New York Times. [The Virus Changed the Way We Internet](#). April 7, 2020.

¹⁶ Pew Research Center. [From virtual parties to ordering food, how Americans are using the internet during COVID-19](#). April 30, 2020.

¹⁷ Forbes. [4 Business Trends Emerging From COVID-19](#). April 22, 2020.

Local Economic Impacts: Los Lunas and Surroundings

Los Lunas has seen a surge in municipal revenue since the arrival of Facebook. Most of that increase is owed to the buildout of the data center.

In New Mexico—which, like many states where property taxes are low—municipalities rely disproportionately on gross receipts tax (GRT) revenues, which are collected by the state as sales taxes and then distributed back to towns and counties.

The redistribution is monthly. Los Lunas breaks out its take by “the top three GRT industry categories” for the town, which are construction, retail trade, and hotel/restaurant business.

The GRT trend in Los Lunas over the past five years is notable. In fiscal year 2016-2017, when Facebook broke ground, the town's GRT revenues totaled \$13.9 million compared to 2015-2016, when they were \$11.8 million. As the data-center buildout expanded and as its servers were brought online, Los Lunas GRT revenues increased to \$19.3 million in 2018-2019. This fiscal year (2019-2020), which ends in June, the municipality is on track to receive about \$22 million in GRT revenues, a roughly 85% increase over the year before Facebook came to town.¹⁸

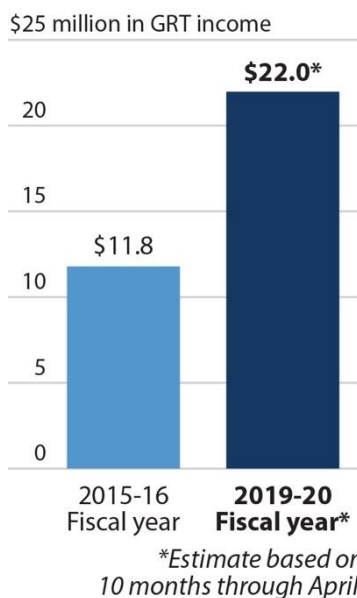
Over the same period of time, the town's general fund budget has increased from about \$16.5 million to about \$22.4 million.

The data-center buildout unquestionably has been a job creator as well, drawing 1,100 variously skilled construction-industry workers to the site in the weeks ahead of the global COVID pandemic, which brought activity across many sectors to a standstill that persists to this day. Work on the Los Lunas center did not cease, however. Rather, shifts have been staggered to enable construction to continue. In April, Los Lunas GRT revenues were on par with previous months over the past year.

“Economic diversification in action,” the speaker of the **New Mexico House of Representatives** said when the project's threefold expansion was announced in November 2017. At the same event,¹⁹ the director of the nonprofit **Albuquerque Economic Development**, said this:

For Los Lunas, a Big Boost In Revenue

The buildout of Facebook's data center has vastly expanded the town's gross receipts tax revenue.



Source: Village of Los Lunas

¹⁸ Village of Los Lunas. [GRT report for April 2020](#). April 20, 2020.

¹⁹ Village of Los Lunas. [Data Center to Triple Its Size With Four New Buildings](#). November 2017.

"Facebook alone on this 300-acre site will invest more money than the combined total of all industrial, office and retail construction in Albuquerque and Rio Rancho over the last decade."

Albuquerque and Rio Rancho are adjacent municipalities that make up the bulk of urban New Mexico and together account for about 30% of the total population of 2 million, which is the 37th-smallest²⁰ in the U.S., although New Mexico is the fifth-largest state geographically.²¹

In April 2016, six months before the center's groundbreaking, **Local 611**, the New Mexico branch of the **International Brotherhood of Electrical Workers**, posted a job call for 350 journeyman licensed electricians for the Los Lunas project.²²

As construction commenced, Facebook signed a New Mexico company to build the center's initial power supply, three solar farms with 10MW of power each.²³

And while **Fortis Inc.**, which is Facebook's general contractor on Los Lunas, discourages subcontractors from committing more than 20% of their business to one project, six companies based in nearby Albuquerque were signed within months of the data center's construction announcement to help with the buildout (**Kone Elevators & Escalators**; **Western States Fire Protection**; **Safety Counselling Inc.** (security), **Terracon Inc.** (materials/engineering); **Huitt-Zollars** (site survey); and **814 Solutions** (erosion-control monitoring)).²⁴

Public officials and Facebook representatives say 80 percent of the workforce associated with the data center is from within New Mexico.²⁵

Town officials have been unequivocal in their view that the data center's impact on the local economy has been beneficial.²⁶ Its buildout has lifted business activity across the board, employed residents of the area, created a fiscally stronger community, and driven housing-sector, infrastructure and business growth. Among the anecdotal effects are a planned-development, 1,000-home community under construction across the street from the data center; new car dealerships; new local- and national chain-restaurant franchises; a new shopping center; expansion of an industrial road-and-rail-shipment hub; various public-works projects; and the arrival of a bottling company, a brewery, a fitness center, and so on.

²⁰ U.S. Census Bureau. [Population, Population Change, and Estimated Components of Population Change: April 1, 2010 to July 1, 2019](#).

²¹ U.S. Census Bureau. [State Area Measurements and Internal Point Coordinates](#).

²² Albuquerque Business First. [Large NM union to hire hundreds for Facebook data center](#). Jan. 29, 2017.

²³ S&P Global Market Intelligence. [Facebook chooses NM firm to provide solar resources for data center](#). Feb. 2, 2017.

²⁴ Albuquerque Business First. [Six NM companies land contracts for Facebook Los Lunas data center work](#). Jan. 9, 2017.

²⁵ Village of Los Lunas. [Data Center to Triple Its Size with Four New Buildings](#). November 2017.

²⁶ Interviews with Los Lunas Mayor Charles Griego, Village Administrator Greg Martin, Economic Development Director Ralph Mims. April and May 2020.

Seen today, this excerpt from a **Los Lunas Village** municipal financial report from 2017 is prescient:

*"The Los Lunas economy over the last 5-6 years has been relatively flat, in terms of local GRT revenue. In January 2017, the Village began to experience significant economic growth, in terms of local GRT revenue, due primarily to the construction of a new Facebook Data Center in Los Lunas, and associated spinoff economic growth from the residential, commercial, retail and industrial sectors, which the Village expects will remain strong over the next several years."*²⁷

Other communities gain as well by way of fiscal benefits to local governments and through household and business benefits wherever the supporting renewable energy projects are built. Areas that benefit, in this case, include Bernalillo County (Albuquerque), Quay County (House), and Sandoval County (Rio Rancho).

An excerpt from a filing in the PRC docket on the case delves into the specifics of those effects:

*"Casa Mesa Wind Energy Center will result in approximately \$72 million in investment, provide an expected \$3.5 million in payment in lieu of property tax and \$4.8 million in landowner payments during the 25-year term of the PPA, and create approximately 198 construction and 2 permanent jobs in Quay and De Baca Counties. According to NextEra, the Route 66 solar facility will create up to 250 construction jobs and two or three permanent jobs in Cibola County, will result in approximately \$75 million in investment in New Mexico, and will provide approximately \$6.2 million in payments in lieu of property taxes to Cibola County and the Grants/Cibola County School District during its 25 year term. Avangrid has informed PNM that, while it has not estimated the specific economic impact of the La Joya project, it expects the economic impact to be comparable to the economic impact of its 298 MW El Cabo wind project, also in Torrance County, which will have a total project investment of \$500 million; create approximately 400 construction jobs and 17 permanent jobs; and is expected to provide approximately \$1 million per year in payment in lieu of taxes to Torrance County and over \$1 million per year in landowner payments."*²⁸

In other words, the deals collectively will generate and widely disburse hundreds of millions of dollars in household paychecks, land-lease payments and tax revenue that will support local public services.

The Impact on Utility-Scale Renewable Energy Development

"For us, it's about honoring your land and your natural resources by powering our data center with 100 percent renewable energy," the executive in charge of Facebook infrastructure public policy said when the expansion of the Los Lunas data

²⁷ Village of Los Lunas. [Financial Statements](#). June 2017.

²⁸ PRC. [Final Order Case No. 18-00009-UT](#). March 21, 2018.

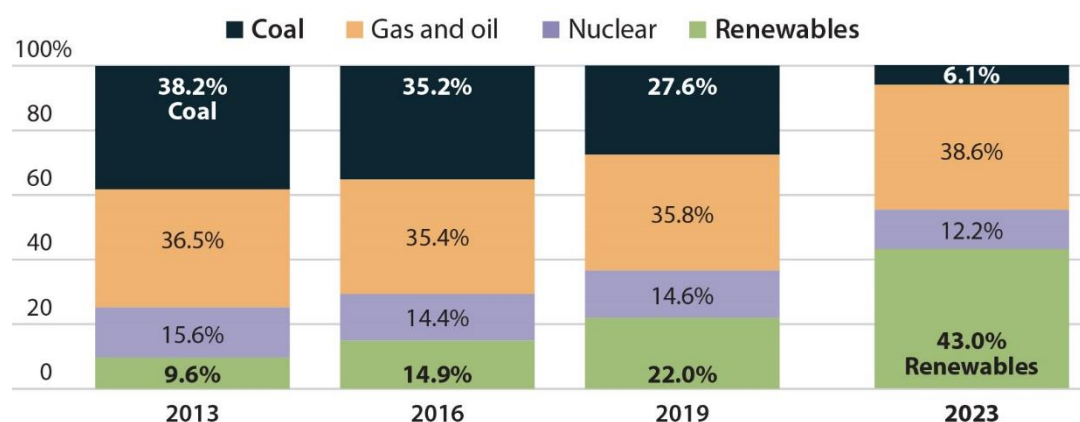
center—from 970,000 to 3 million square feet—was announced in late 2017. This is not the full story, of course, and in fact is probably more spin than substance.

Facebook is a for-profit company whose shareholders—among the biggest of which include household-name institutional investors like **Vanguard Group Inc.**, **BlackRock Inc.**, and **T. Rowe Price**—expect a return on investment. The company's mission is to make money. That said, its marketing and branding is built around the green-energy mantra that has become part and parcel of many companies' reputational pitch today—especially across the technology sector. Intentions and actions don't always intersect, but companies that combine market heft with progressive renewable-energy policies—companies like Facebook—can affect electricity-generation markets, and Los Lunas is a prime example. The data center is a game changer in how regional electricity markets are supplied. One condition of the company coming to New Mexico was that it would have ample access to renewable power, and regulators have greenlit PPAs for PNM to allow that to happen.

While it cannot be said that the Los Lunas data center is 100% electrified by renewables, its presence has made—and continues to make—PNM less dependent on conventional fossil-fuel-fired electricity than it has been historically. It isn't possible to trace the origin of electrons on a power-distribution system, but the proportion by source *can* be known. The chart here shows how that proportion has changed in the past few years at PNM, and how it will likely continue to change.

PNM Is Transforming Its Mix of Generation Capacity

In anticipation of the closure of the San Juan coal-fired power plant in 2022, PNM plans to accelerate the shift of its generation capacity to renewables, especially solar.



Source: PNM Resources' filings with the SEC and New Mexico's Public Regulation Commission

The Facebook data center has been a major force in the trend shown in the chart, and PRC has approved several PPAs between the company and PNM. This excerpt from an approval order by the commission gets at the gist of the industry impact:

"PNM asks that the Commission approve purchased power agreements ("PPAs") with: Casa Mesa Wind, LLC for 50 MW of rated capacity and associated wind energy and one MW of battery storage over a twenty-five year

*term (the "Casa Mesa PPA"), (2) Avangrid Renewables, LLC for 166 MW of rated capacity and associated wind energy over a twenty-year term (the "La Joya PPA"), and (3) Route 66 Solar Energy Center, LLC for 50 MW of rated capacity and associated solar energy over a twenty-five year term ("Route 66 PPA")."*²⁹

Those three PPAs alone total 267MW of capacity, but still account for only about 60% of what Facebook requires from PNM.

The projection to 2023 showing PNM getting more than 40% of its generation from renewables is based in part on proposals for how the utility will replace the power that will be lost from the closure of the San Juan Generating Station in Farmington. That plant is part of an aging and increasingly uncompetitive fleet of coal-powered generators across the U.S. that continue to lose market share to cheaper gas- and renewable-powered generation.³⁰

While San Juan, scheduled to close in 2022, is being promoted as a model project for an expensive carbon-capture retrofit, that project stands little if any chance of success.^{31 32 33} And although New Mexico regulators have sometimes appeared bent on resisting the Energy Transition Act by, for instance, recently delaying action on approval of PNM's San Juan replacement plan, utility-scale renewable expansion across PNM's service territory will go forward in one fashion or another.

Market forces support it, and—bolstered by the Los Lunas example—political momentum favors it. Industrial-scale muscle is at play as well, as power companies and consultants recognize and act on advantages of geography and place.³⁴ Two publicly traded energy giants, **NextEra Energy Inc.** and **Avangrid Inc.**, own wind and solar farms supplying Los Lunas.

The chart below shows how important the data center has been—and remains—to the buildout of renewable energy in New Mexico.

²⁹ PRC. [Final Order Case No. 18-00009-UT](#). March 21, 2018.

³⁰ IEEFA. [U.S. Coal Outlook 2020: Market Trends Pushing Industry Ever Closer to a Reckoning](#). March 2020.

³¹ IEEFA. [Enchant's Proposed CCS Project at the San Juan Generating Station: False Promises and Major Risks](#). February 2020.

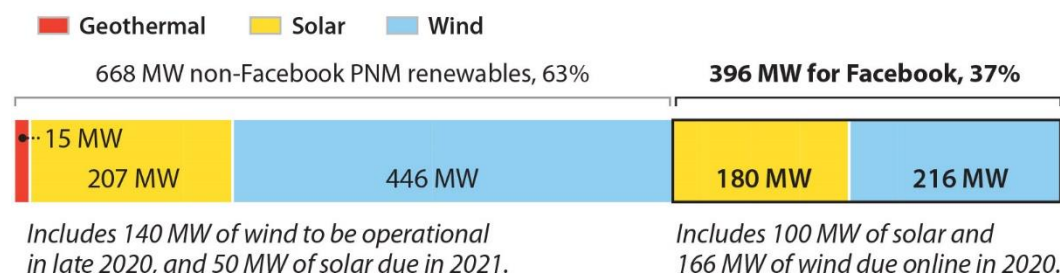
³² IEEFA. [High-Risk Carbon-Capture Deal Is Not in New Mexico City's Best Interest](#). August 2019.

³³ IEEFA. [Novice Company's Carbon Capture Pitch Offers False Hope, Fiscal Risk to Farmington, N.M.](#) July 2019.

³⁴ Evolving Energy. [LCORE: An Economic Development Proposal for New Mexico](#). September 2019.

A Big Share of PNM's Renewable Portfolio is for Facebook

The demand for renewable power for Facebook's data center in Los Lunas, New Mexico, has become a big part of PNM's overall renewable portfolio. The utility's geothermal, solar, and wind capacity will be at least 1,064 MW by the end of 2021*, with almost 400 MW of it dedicated for the data center.



*PNM has an additional 350 MW of solar capacity awaiting approval from the New Mexico Public Regulation Commission as part of its power replacement plan associated with the closing of the coal-fired San Juan Generating station.

Source: PNM Resources' 2019 10-K SEC filing (annual report); PNM Resources correspondence

The Village of Los Lunas, through a combination of luck, open-mindedness, and geographic happenstance, is in many ways the envy of any number of communities seeking fiscal and payroll stability built on economic diversification and sustainable energy models.

One point of note on the PPAs in New Mexico: They include protections that prevent PNM from shifting costs for supplying Facebook onto other ratepayers, language that was recently put to the test and that the PRC ruled PNM must honor.³⁵

A Potential Model for Other Communities

Many small cities and towns across the Southwest are natural site choices for future data center projects.

One logical candidate is **Farmington, N.M.**, of special note because it is the community that will be most directly affected by the retirement of San Juan Generating Station. That plant's closure will have serious public fiscal impacts and it will affect a sizable, skilled workforce. The Farmington area—like Los Lunas—is well-connected to transmission lines and is in one of the most solar-rich regions in the country.

Data-center development can be seen regionally also as a powerful argument for investing in full broadband Internet infrastructure for places that don't yet have it—places that include **LeChee, Ariz.**, near where **Navajo Generating Station (NGS)** closed last year with harsh local economic effects; **Kayenta, Ariz.**, where the shutdown of the NGS coal source mine, owned by **Peabody Energy Corp.**, had

³⁵ S&P Global Market Intelligence. [NM regulators stand by order that PNM bill Facebook for transmission line](#). May 17, 2019.

similar consequences, and the **Tuba City, Ariz.**, area, where tribal governments would very likely embrace such investment.

A key consideration in data-center development is that it requires large tracts of land. Data centers are located in rural, small-town or semi-suburban areas for a reason: The Los Lunas, Kayentas, Farmingtons and LeChees of the world have acreage in abundance (including brownfields), and most have underdeveloped renewable resources in spades, too.

Of course, the Los Lunas model need not be restricted to the sunniest states of the country. In **Wyoming** and **Montana**, where **Powder River Basin** coalfield communities are being hammered by the collapse of the coal industry, solar and wind, especially, remain rich and underdeveloped resources. The same can be said of the **Midwest**, the **Southeast** and parts of coalfield **Appalachia**.

Tech giants that will require more and more data-center capacity tied to renewables can find skilled workforces, inexpensive land, and extensive transmission infrastructure in all these locales.

The Los Lunas project serves also as a scaled-up model of economic diversification in a state that—like many states—has long been overly reliant on the fossil-fuel sector, a situation that in recent months has laid bare the peril in depending too much on high-risk boom-and-bust businesses like gas and oil.^{36 37}

³⁶ IEEFA. [In extremis: Crisis continues for Appalachian shale producers](#). March 25, 2020.

³⁷ IEEFA. [Oil majors paid \\$216 billion more to shareholders than they earned directly from business over the past decade: 'Deficit spending' widens as companies continue to borrow heavily and sell off assets](#). April 6, 2020.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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