Resilient Energy Economies

Municipal Debt in Oil- and Natural Gas-Reliant Communities During the Shale Boom

Implications for Fiscal Risk and Resilience During the Energy Transition

Brandon Charles — June 2026

Background

Oil and natural gas production in the United States boomed over the past two decades, largely due to innovations in drilling technologies and extraction techniques (i.e., horizontal drilling and fracking). Commonly known as the shale boom, this growth in energy resource production led to significant new economic activity in several resource-rich regions of the country.

Economic and population growth can increase demands on local transportation, water, public safety, education, and other public services. These services rely in part on infrastructure assets such as roads, water treatment plants, and school buildings. Local government investments may facilitate boom-time economic growth and maintain quality of life for existing residents by expanding public service-related infrastructure. However, these investments also introduce potential long-term burdens on local populations. Future declines in local or regional oil and natural gas production could occur in the coming decades for several reasons, including local resource depletion, a relatively high local cost of extraction, or a large-scale transition to other energy resources.

If resource production permanently declines, governments may be left paying for underutilized assets as a result. Infrastructure assets financed by municipal debt may carry debt service expenses for years or decades, along with operating and maintenance expenses that persist for the life of the asset. This raises the question of what happens to communities and their long-term residents if the shale boom reverses in the coming decades, leading to dwindling resource production, tax revenue, and a declining population.

About this Research

I analyzed the accumulation of municipal debt by local governments in 58 counties exposed to the shale boom during the years 2008 through 2011. Exposure to the boom in this analysis is determined by 1) a geographic location within a shale resource area and 2) county growth in

oil and gas extraction earnings of at least 10 percent. The largest number of counties that met these criteria are in Texas (23), North Dakota (7), and Pennsylvania (8). Several other states, such as New Mexico, Oklahoma, and Louisiana, had one to four counties that met these criteria.

I use growth in debt per capita based on the 2003 county population as an indication of how burdensome additional debt could be should resource production decline and boom-related population increases reverse. This is important because if some residents migrate elsewhere during a prolonged bust, remaining residents would face the full burden of debt issued in response to the boom. The analysis measures debt accumulation due to the shale boom using the growth in outstanding debt during periods just prior to the boom (2004-2007) and just after the early years of the boom (2012-2015). I compare debt accumulation in shale boom communities to debt accumulated by a large group of non-boom communities across the United States to identify the impact of the boom.

I also interviewed 11 local officials in shale resource communities in New Mexico, North Dakota, Pennsylvania, and Texas to understand local context and needs with respect to infrastructure investments decisions. These conversations helped identify how debt issuance interacts with other policy decisions and how policy can address potential infrastructure and debt expense burdens. Overall, the interviews highlighted that community infrastructure needs and related debt financing choices varied. Differences in the amount of pre-boom infrastructure, the extent of boom-driven population growth, and the amount of state oil and gas tax revenue allocated to a local government were all associated with variation in the need to issue new debt.

Key Findings

The quantitative and qualitative elements of this project provide important insights into shale boom-related local infrastructure investments, financing, and implications for the future:

- **Communities exposed to the shale boom accumulated significant municipal debt as a result.** Specifically, communities exposed to the boom on average accumulated approximately $782 in municipal debt per capita, based on 2003 population. This is an approximately 26 percent increase over the 2004 mean outstanding debt for shale boom communities of $3,011, and equates to $1.9 billion in total additional debt across the 58 shale boom communities in this analysis.

  This increase in outstanding debt could become a challenge for local governments if, for example, local oil and/or natural gas production declines during the 2030s due to a transition to other energy resources. The additional outstanding debt incurred under boom conditions could burden remaining residents if future population and public revenue decline, potentially inhibiting local economic resilience.

- **Over half of the debt issued by shale boom communities during boom years was for primary and secondary education uses.** Of the total debt issued by shale boom communities during the boom years analyzed (i.e., 2012-15), more than half was for primary and secondary education uses (e.g., to

construct new, larger school buildings). In addition, shale boom communities issued a slightly greater share of debt for water and sewer purposes (e.g., to build new water treatment plants and pipes) than the comparison communities. As a result, it is important to consider local government entities beyond cities and counties, such as school districts and water districts, in any transition policy interventions.

- **Local context is important to understand the need for and uses of municipal debt.** Interview data indicates that the scale and type of needed infrastructure investments vary geographically, as do the drivers of infrastructure need. Population growth due to workers and their families relocating to shale boom counties drove demand for recreation, school, transportation, and water system infrastructure. An important variable in addressing these needs is the amount of oil and gas revenues local governments directly collect or receive from states, and how the revenue is distributed among different jurisdictions within a community. Some interviewees reported that distribution did not align closely with needs. According to interview participants, state revenue transfers are important determinants of the need for debt financing and also provide resources for repaying debt that is issued.

Policy Implications

A permanent decline in local production of oil and natural gas resources could occur for multiple reasons, including a transition to other energy resources. Such a decline would likely result in reduced economic activity, populations, and tax revenues in affected communities. It is important to plan policy responses in advance of such a transition, because the long-term and relatively fixed nature of infrastructure expense may render public assets underutilized and burdensome to remaining residents. Transition policies that address long-term fiscal burdens are important so that such burdens do not undermine communities' ability to adapt. Specific implications for policy development from this study are as follows:

- Economic diversification that reduces reliance on oil and natural gas production and broadens the state and local tax base reduces the long-term risk associated with infrastructure expenses, all else equal. However, this is only the case if new economic development more than pays for the additional infrastructure it requires.

- In the near term, states can increase the level of ongoing oil and natural gas tax revenue transfers to local governments (e.g., from severance taxes) to 1) reduce the need for further debt issuance, 2) pay down debt issued in response to the shale boom, and 3) reduce the infrastructure maintenance burden on local governments. However, states may have insufficient revenue to address the issue and, like local governments, face the future possibility of declining fossil fuel-related tax revenues.

- Federal and state governments can provide additional resources from non-fossil fuel revenues for the purposes

identified above. This will be particularly important during years after fossil fuel-related revenues begin declining.

- Distribution of assistance to communities will need to account for local context, particularly variation in the type of infrastructure assets, debt, and impacted local jurisdictions across communities. For example, the range of affected local governments may vary across counties, with cities and school districts being most affected in some cases and counties being equally affected in others. Thus, the targets of assistance may vary. In addition, maintenance costs per dollar of debt and the potential for repurposing or selling assets may vary by asset type.

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For further details, read the Syracuse University Center for Policy Research Working Paper: Debt Accumulation in Fossil Fuel-Reliant Localities During the Shale Boom and Implications for the Energy Transition.

About the Resilient Energy Economies Initiative

The REE Initiative was established in 2024 to develop strategies that support the economies of fossil fuel–dependent communities across the United States as the energy system transforms. In addition to supporting action-oriented research to find what works, REE has built a community of scholars, policymakers, and economic development practitioners from the local, state, tribal, and federal levels to share knowledge and build relationships across the nation's energy communities.

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