

Transitioning Central Appalachia: Understanding Framework Conditions Supporting the  
Adaptation to New Energy Economies

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## Abstract

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Since 2006 electricity generation from coal-fired power plants has been on the decline, while in the same time-frame electricity generation from natural gas and renewables has been steadily increasing. In fact, in 2016 natural gas surpassed coal as the leading fuel for electricity generation at the utility scale, per the Energy Information Administration (EIA). This shift in the energy sector has had significant implications for Central Appalachian counties which have been dependent on the coal industry as a staple of their local economies. This shift represents the bust in a typical boom-and-bust cycle that accompanies natural resource extraction industries, albeit more likely to be lasting. Given these trends in US energy markets, there is a need to understand foundational elements that may support coal-impacted counties to transition their local economies to ones that are more resilient to such volatility and sustainable in the long-run. The researcher tested the following supposition: from 2006 to 2016 the following may have been positively associated with change in economic performance over time: higher levels of economic diversification, higher levels of educational attainment, higher levels of social capital (measured by community engagement), and the use of public policy approaches that support post-coal economic development. Using ordinal logistic regression, the researcher examined the effects of these county-level variables on the net change in annual Appalachian Regional Commission-reported economic status levels

during the coal industry's most recent downturn from 2006 to 2016. Additionally, the researcher collected survey responses from county commissioners in coal-impacted counties of Central and North Central Appalachia to examine policy processes used to address economic redevelopment given recent energy market trends. This study found that both economic diversification and the concentration of non-profit organizations (a measure of social capital) were statistically and positively associated with change in economic status in these counties from 2006 to 2016, and surprisingly, that the percentage of a county's population with bachelor's degrees was statistically and negatively associated with change in economic status during the same time-frame. Also, the effects of these variables on the dependent variable were strongest in counties that 1) included coal in their economy, 2) were not part of a metropolitan or micropolitan statistical area, and 3) had a population density lower than the median of the sample. Findings from this study inform the role that building strong institutions plays in increasing economic resilience in regions showing some level of dependence on volatile commodity-based fossil fuel industries.