



WHITE PAPER

Assessing the Impact of Shale Oil and Natural Gas Extraction on Local Governments

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Overview

Extraction of shale oil and natural gas in the United States has become one of the most significant emerging industries in recent years. Extracting the deposits of both shale oil and natural gas is proving to be both an asset and a challenge. To a significant degree the, deposits are located in thinly populated rural areas where governing entities possess limited resources, staffing and expertise.

For the purpose of this White Paper, the impact of natural resource extraction on local communities falls into three primary areas:

1. Government infrastructure
2. Workforce
3. Business support infrastructure

Within these three areas, there are numerous subcategories of concern. The following list provides a global perspective of challenges in each of the areas:

Government Infrastructure

- Smaller governmental units with limitations on staffing, revenues and expertise
- Limited integration and standardization of policies and regulatory processes
- Aging infrastructure
- Duplication of services, numerous stand-alone agencies
- Limited capital for infrastructure
- Limited high speed internet services with regard to communications
- Limited intra-jurisdictional ability to organize efficiently, conduct judicial matters in response to a growing population, and conduct effective communications between citizenry

Workforce Status

- Limited access to higher and technical education
- Loss of major sources of employment
- Aging, declining, or an ill-equipped and ill-trained small population in response to the growing demands of a boom town scenario

Business Infrastructure

- Lack of utilization of existing facilities and infrastructure
- Alignment of zoning and permitting processes
- Lack of available assistance, training and support for existing firms
- Limited access to capital
- Limited access to business assistance and limited resources for entrepreneurs
- Increased demand on local service economies

Countervailing Forces-

How External Factors Drive Change

The speed at which the harvesting of natural resources is occurring in areas of the United States and Canada places significant stress on smaller, rural local governments and their processes, namely the ability to provide a certain quality of services to their ever growing, diversifying, and expanding economies.

Local governments are frequently unprepared to handle the waves of new growth. Most are not structured to mitigate problems as they emerge. Characteristic of these issues are a lack of information and awareness, jurisdictional uncertainty, conflict between existing residents and new arrivals, shortages of staff, revenues and expertise.

Early on, community leaders are challenged because not all segments of the local economy will benefit at the same rate. The local workforce may become stratified in that the jobs and skills generally needed for the exploration, extraction and logistics may not match the existing local workforce's availability.

Further, there is generally an absence of integrated project development planning. Compounding the issue is the absence of coordinated communications between government entities, businesses and residents.

Driven by the need for increased revenues, there is an acute tendency to pursue short term goals rather than develop and implement longer term, sustainable policies, which would lead to a more diversified economy and tax base.

Examples of Key Challenges to Local Governments

While each community is unique in examining the following dynamics of local government, we attempt to provide a clearer, more encompassing definition of the possible challenges.

Forward Planning The availability of data and interpreting processes to project community growth is not an exact science. While the uses of current procedures are more accurate than previous study practices, the process is often hampered by availability of funding, staffing and expertise. Local populations may also resist further attempts to pursue a wider degree of adaptability to the existing policies, which will fundamentally aid the community in the long term.

Staff Shortages and Expertise Smaller, rural communities generally have less need for highly experienced and specialized planning and economic development staffing. The funding necessary to rapidly increase the hiring, integrating and maintaining such staffing levels can be difficult and even controversial.

Infrastructure The impact on a community's infrastructure created by problematic surges in population may prove significant service requirements. These then may alter what is possibly the best course of action to take in response to a "boom town" condition. In a community experiencing high levels of development, the ability to rapidly fund major infrastructure projects can be daunting. Waste water, sewage treatment, attrition of medium duty roads subjected to heavy truck traffic all require advanced planning, staffing, and financing. In many cases, essential projects are prohibited by a lack of funds, creating a discrepancy in response time to the community's needs.

Public Safety Increased crime rates are characteristic of communities with a rapidly expanding population of temporary and short term workers. Such pressures stretch community policing and judicial resources to their limits. Rapid growth of temporary housing and new sub-divisions also stress existing fire departments and corresponding inspectors' duties. The development of volunteer support units may offset some early pressures. Over time, without significant investment and attention to personnel and equipment, the overall quality of public safety and response times will be compromised.

Communications Central to efficient operations is a community's ability to communicate openly with the help of information distribution networks. With rapid development comes the necessity to provide timely and accurate information between government entities as well as maintaining transparency with residents regarding policy. The use and application of existing websites and social media are commonly areas in which a gap exists in implementation and customer satisfaction.

Housing A lack of housing in areas affected by rapidly expanding energy sectors is often a critical problem. Existing housing fills up quickly and new housing takes years to materialize. New housing creation may be hampered by a number of factors, including high costs, shortages of labor and materials, as well as regulatory obstacles harbored by an already overworked and strained local government.

Public Education Children suddenly entering the expanding community strains the ability of school boards to deliver a fast registration period, and a proper, quality education. Student to teacher ratios expanding dramatically tend to increase in instances of rapid growing populations and debase the merits of the education received by the majority of the student body. Strains on the classroom facilities, administration and teachers become common place. The massive increase of truck traffic school busing programs are also impacted in their scheduling duties and overall safety procedures.

Examples of Key Workforce Challenges

In general, smaller, rural communities have no substantial indigenous labor force to service shale oil, tar sands or natural gas exploration and development. In rural areas, it is difficult to attract and retain a satisfactory work force, whether for building and operating a power plant and/or gas-ification plant, for operating private sector services, or for maintaining the county's roads and bridges. Existing educational institutions are challenged by the ability to access specialists, fund programming and provide training in a timely manner due to regulatory issues. (Source: 2012 Economic Assessment Geneva Analytics)

Four large general areas of job growth will be triggered by oil and gas development:

- Oil and gas development activities;
- Its supply chain;
- Professional service provision; and
- Personal services to the newly employed and the transitory workforce.

Expected average earnings are highest in the professional services sector, at nearly \$70,000 per position, followed by an average of nearly \$60,000 among those directly involved in developing the resource, while the lowest average earnings are among those industries that provide personal services, with an average of \$36,000. The expected average earnings across all four of these broad sectors in 2014 is \$50,225, which is contrasted with Ohio's most recently reported median household income of \$47,358. (Source: Cleveland State, Ohio State & Marietta College).

Examples of Key Business Community Challenges

There are industries that will service both the demands of the development and meet the demands of the workforce and landowners. Since we cannot disentangle the sources of demand for their services, they are listed as a separate category. The largest source of employment in this group will be from the engagement of "landmen," a career unique to the oil, gas, and mining industries. By 2014, this sector, in Ohio, will demand the services of more than 2,100 people in the real estate industry, with average incomes of nearly \$70,000; accompanied by 1,900 in banking and securities (investing) and nearly 900 in insurance, when insurance agencies are included. (Source: Cleveland State, Ohio State & Marietta College)

The local service sector will add more than 16,000 jobs in 2014, which will be a huge addition to the economy of Ohio. These are jobs required to service the demands of new local employees as well as meeting the demands of out-of-state workers who need to be fed and housed. Retail employment is expected to support more than 5,800 positions, along with nearly 4,000 food and beverage workers. Health care practitioners will experience increased demand for their services, with 1,520 positions in offices of physicians; another 1,900 positions in hospitals, labs, and outpatient care facilities, and 1,000 in nursing homes and residential care facilities. Additionally local servicing jobs will open. (Source: Cleveland State, Ohio State & Marietta College)

Identification and accurate assessment of secondary and tertiary factors driving and resisting change allows jurisdictions the opportunity to direct personnel and fiscal resources toward solutions in a timely manner. For example, the presence of natural resources such as shale oil and natural gas are factors over which a community has little control. The oil is simply there. Federal and State regulations and policies take precedence over local statutes and development processes, yet the presence of resisting factors within local jurisdictions may cause socio-economic conflict. Generically identifying both factors driving change and those resisting change provides the topography for assessing the landscape.

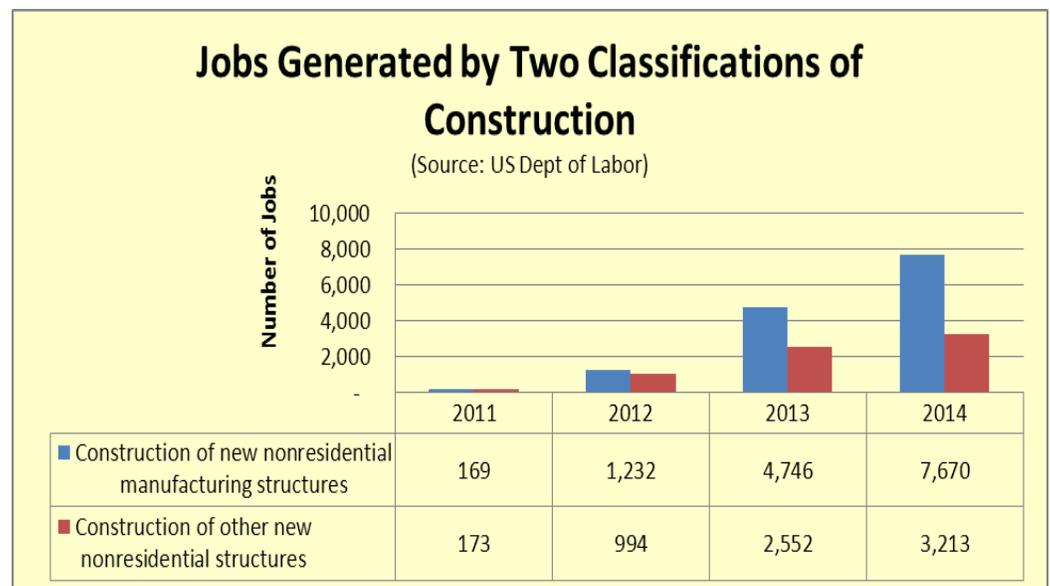
A Governmental GAP Analysis

The traditional retail GAP analysis illustrates the “gap” between products and services being purchased versus those being acquired locally. The difference is commonly known as shrinkage or “the gap,” and is measured in specific products/services, or in dollars “leaking” from the community.

Applying the same “gap” concept to a governmental structure provides a picture in which the needs for specialized levels of governmental services are being driven by external factors over which local, county and regional governing entities have little control.

Further aggravating the scenario is the realization that, in the case of the extraction of shale oil and natural gas, the demand for such services will diminish over a period of years.

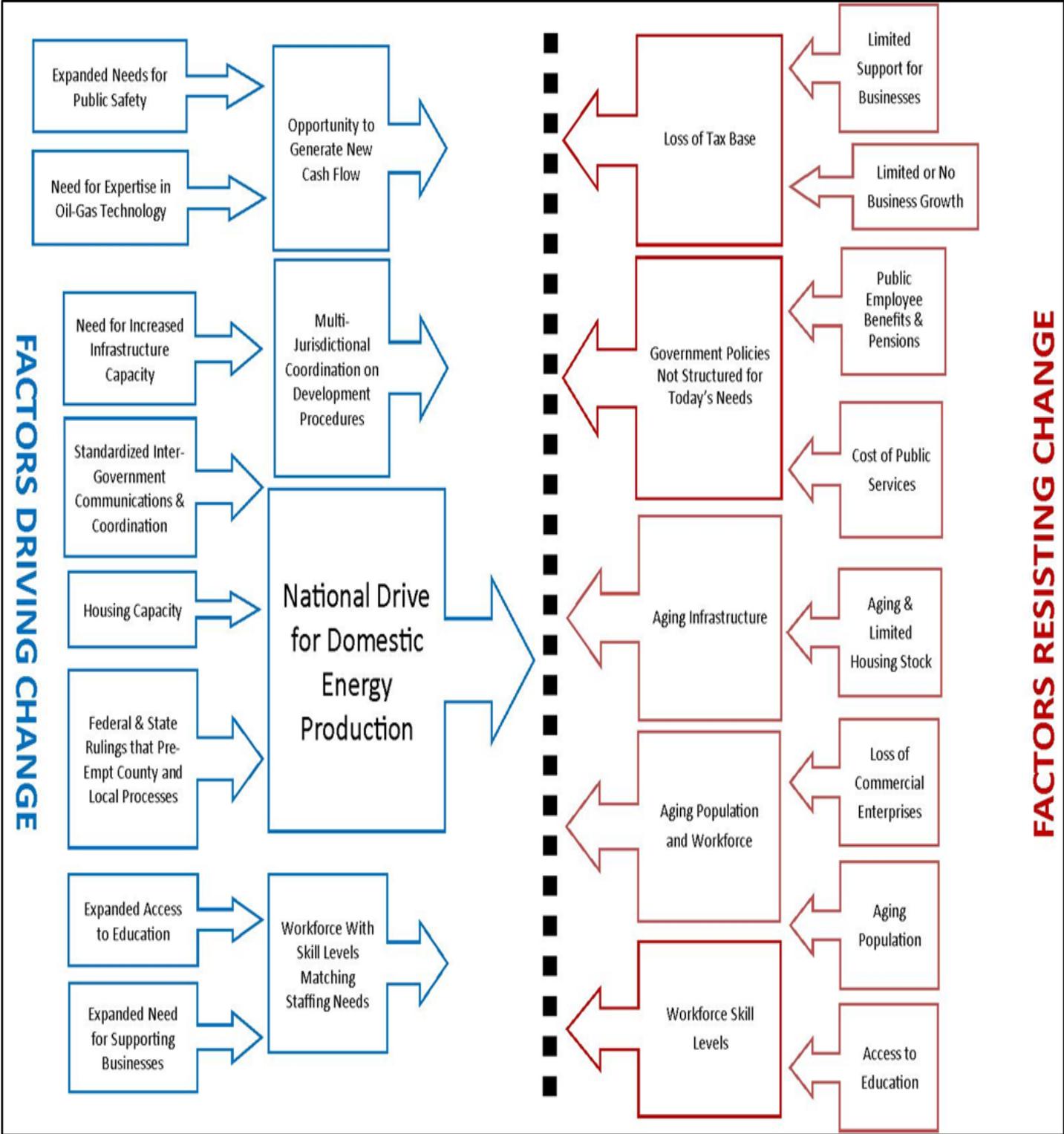
The chart below illustrates the rapid growth of just two classifications of construction due to the Ohio Utica Shale development. Both of these classifications require the full range of zoning, planning, plan check and project inspections. Staffing and the ancillary costs that accompany the construction planning inspection process clearly exceed the capacity of any single governing body.



Expanding the Impact Perspective

A different vehicle allows a more global perspective of the wide range of dynamics impacting local communities. Utilizing a “Force Field” analysis permits a more global view of the factors which are driving and resisting change. It is important to note that, in this FF analysis, the factors are generic but are commonly represented in most communities. Each community is unique in which factors are present and how they interface.

Force Field Analysis



From Challenged to Competitive

The process of moving from rapidly changing conditions to that of a more competitive position is more than simply increasing the level of financial resources that can be leveraged against the issues.

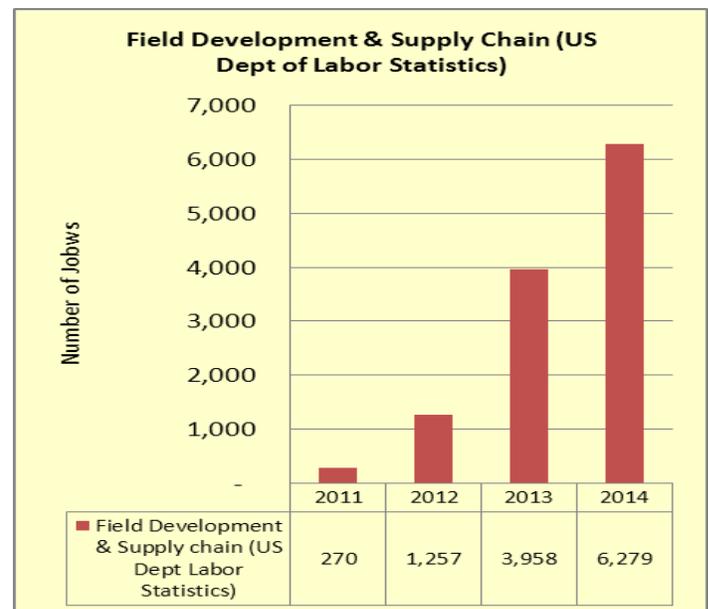
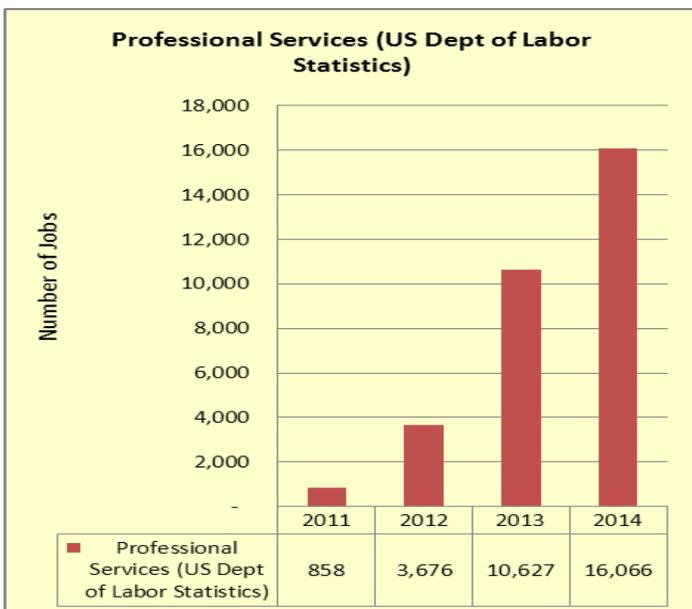
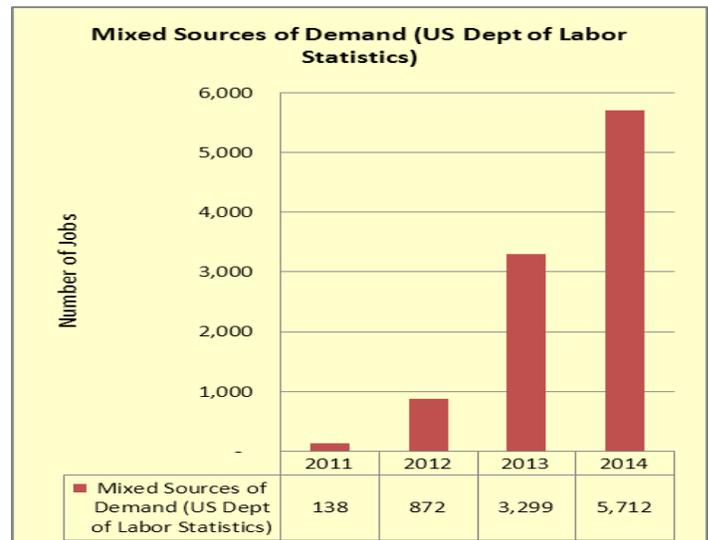
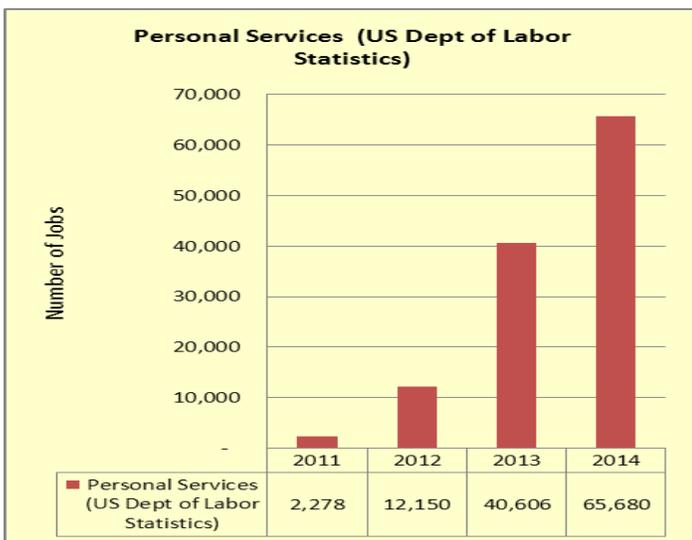
The productive life of a well is dependent on a wide range of factors including the highly specified technology used to capture the resource. Our research indicates that, in general, a well can be productive for as long as 20-40 years, however, the actual productive life expectancy is unknown.

For the purposes of this White Paper, we shall utilize 20-years as the average productive life of a well.

Given this span of time and the uncertain life of any given well, it should be recognized that local governments will in all probability maintain a high level of infrastructural and staffing investments in the early stages of the exploratory and extraction cycle, to meet the growing demand of a burgeoning population.

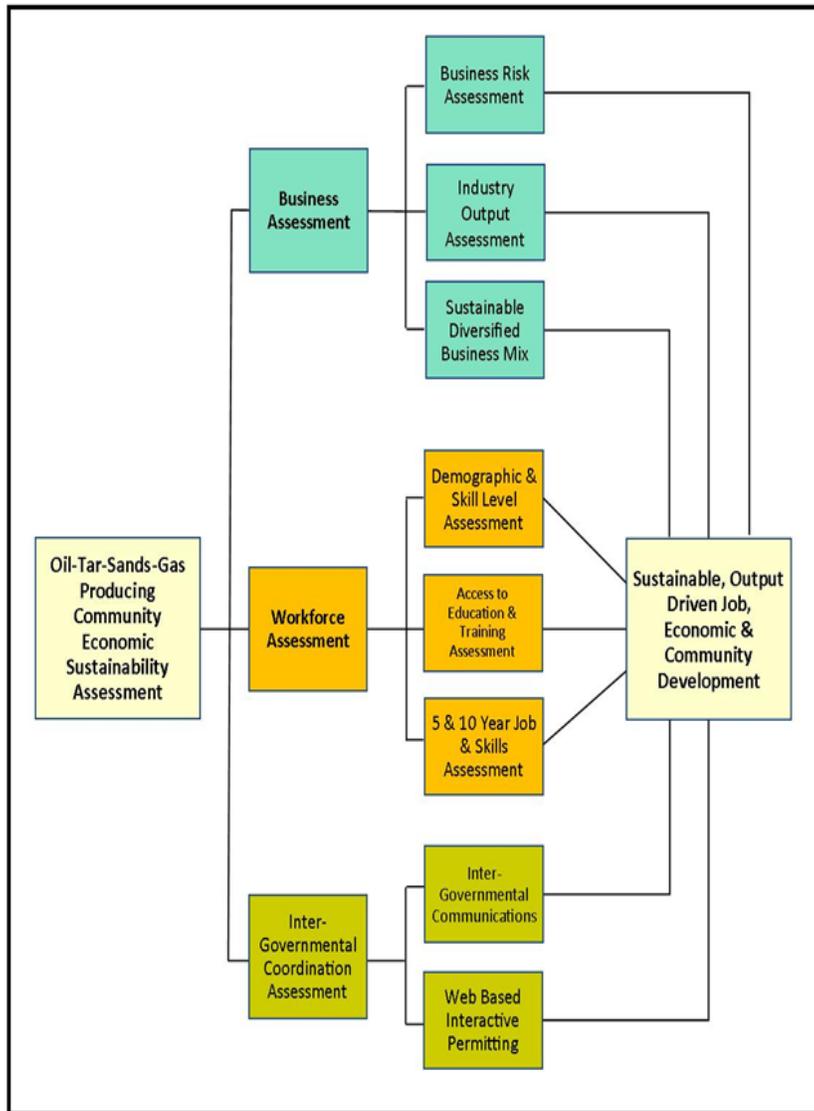
To put the volume of projected growth into perspective, the following charts illustrate the projections of employment gain and clearly show its impact on the Ohio Utica Shale Development region throughout 2014.

Employment Projections for Ohio Utica Shale Development 2011-2014



Taking the Longer View

There are essentially four scenarios in which local and county governments must grasp to preserve a structured and foresighted approach, which then allows for a sustainable, diversified economy to grow: 1) Short term demands for service and cost containment; 2) Medium term management of growth; and 3) Long term economic sustainability.



Let's start with what is certain:

1. Physical and organizational infrastructure will, in its infancy, be stretched beyond reasonable expectations.
2. It is not out of the range of average to say current levels of infra-governmental communications fail to meet the medium term capacity requirements.
3. Community-wide government/citizen cross platform channels for gathering and distributing information are not implemented and executed to the standards of the present leadership.
4. The massive influx of non-residents will be disruptive, creating stress on both current and new residents, their conduct, and the quality of governmental services which they will receive.
5. Development and construction of large scale community service projects will take years and large amounts of capital, which then may fail to meet the declining demand for years to come.
6. Segments of the community will do exceedingly well, others will not. Yet, if the policy is not conducive to meet the boom-bust cycle which accompanies large scale natural resource gathering, all segments of the community will suffer.
7. Economic development policy implementation must be carefully considered in the context of short, middle and long term periods of growth.
8. Regardless of the short or medium term prosperity and challenges, the wells will ultimately go dry and the demand will cease.

Thriving on Chaos

Community and economic development are primary vehicles to address the rapid population growth of communities. The chart to the right provides a clear and useful model for assessing business, workforce and governmental coordination needs.

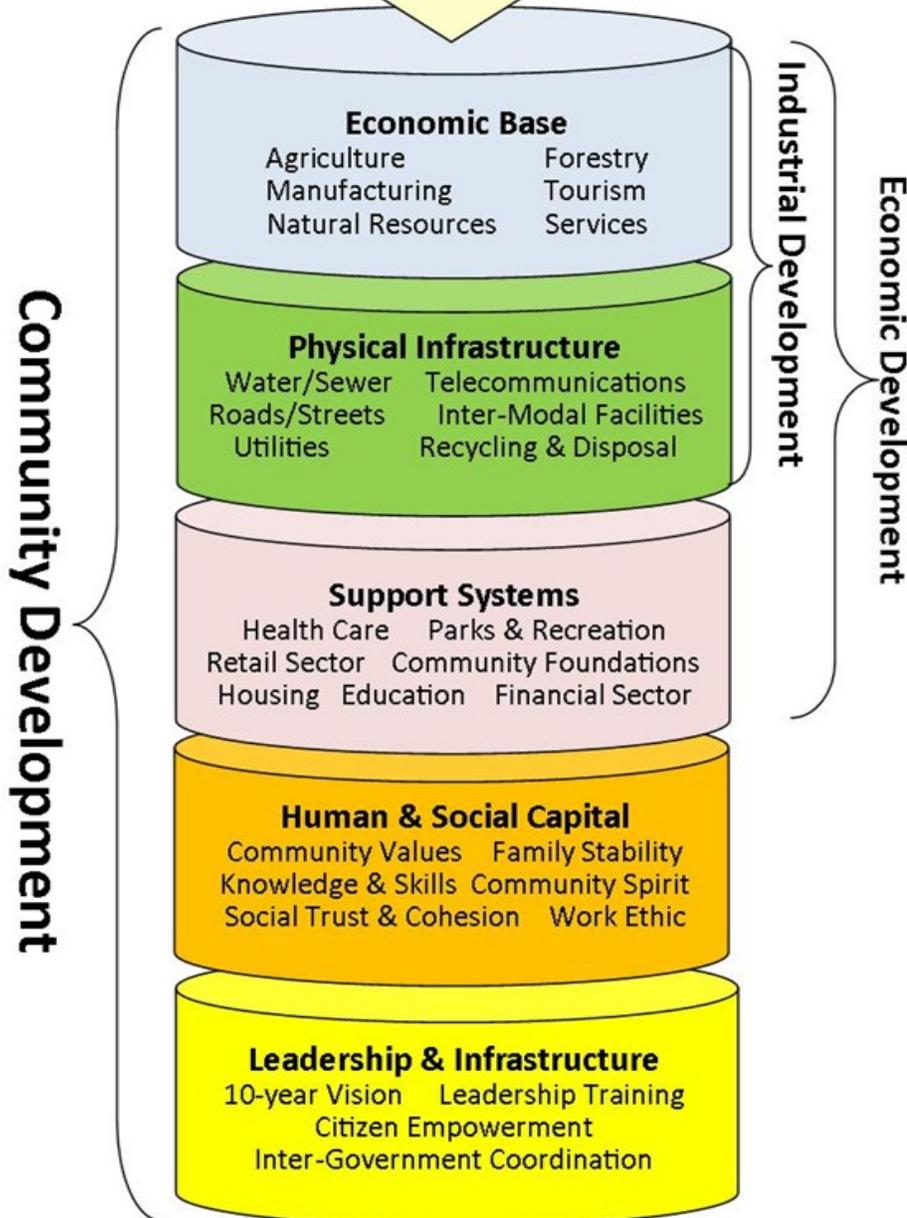
It is our view that before new policies and capital projects are proposed and adopted, an initial full assessment is, with all due respect for responsible governmental conduct and action, essential.

Benchmarking assessments should be conducted on not less than on a 24-month schedule and a full re-assessment should be conducted every 5 years.

During the initial period of externally driven rapid growth, the established business community should be monitored.

TOTAL DEVELOPMENT PARADIGM

Major Forces & Trends



**SUSTAINABLE, ECONOMICALLY
DIVERSIFIED COMMUNITY**

Back to Basics

The pressures that come with a “boomtown” economy create an environment where a community’s core businesses are often neglected, ill-informed, and ill-equipped to deal with new business opportunities.

Consider the mission, at all stages of extraction, to be more than what may meet the eye.

Consider it to be: *Utilizing today’s cash flow to build a long-term, sustainable, economically diversified tax base that will continue to function after the wells are drilled and dry.*

While each community is unique, there are objectives that are common to virtually all. They would include:

- Capturing as much wealth as possible from the extraction of natural resources, and putting it to the use of varied opportunities presented by the rapid influx of new companies, customers and dollars.
- Developing and initiating a long term total development model that utilizes new revenues to provide support, training and assistance to the community’s core businesses.
- Identification of companies that are doing well, those that may be ready to expand and those who are “at risk” and need assistance.
- Initiating an “economic gardening” program designed to identify and assist entrepreneurs to start new business ventures which would be of the highest value to the community in the long term, based on the quality of education received and skills already possessed by the local workforce.

The model, at the left, developed by Mark Peterson, illustrates a process of working with forces and trends that are currently influencing communities with shale gas reserves.

With the tools readily available, local government and economic development organizations have a wide range of tools with which to support and grow existing and new businesses.

Geneva Analytics offers a service that enables a small agency to quickly and cost effectively develop a detailed and orderly database of information on the existing business matrix, known as Drill Down™

Drill Down's™ use of predictive modeling, forecasting, and mathematical optimization means that local economic development agendas will have a competitive edge when decisions are based on rational presentation of information, producing diminutive margins of error.

Drill Down scans three major sources of information:

FEDERAL/STATE GOVERNMENTS

All companies subject to Federal oversight and/or reporting are monitored on a, not less than, bi-weekly basis for notices of acquisitions, sales, layoffs, etc.

PRINT & TRADE JOURNALS

- Over 100 trade journals, site selection publications are scanned on a weekly basis.
- UPI, AP, and Reuters Business News are scanned daily.
- Construction reports include:
 - Construction Wire
 - Dodge Bid Pro
 - Construction News
 - Reed Construction Data
- Local Business Journals for cities over 100,000

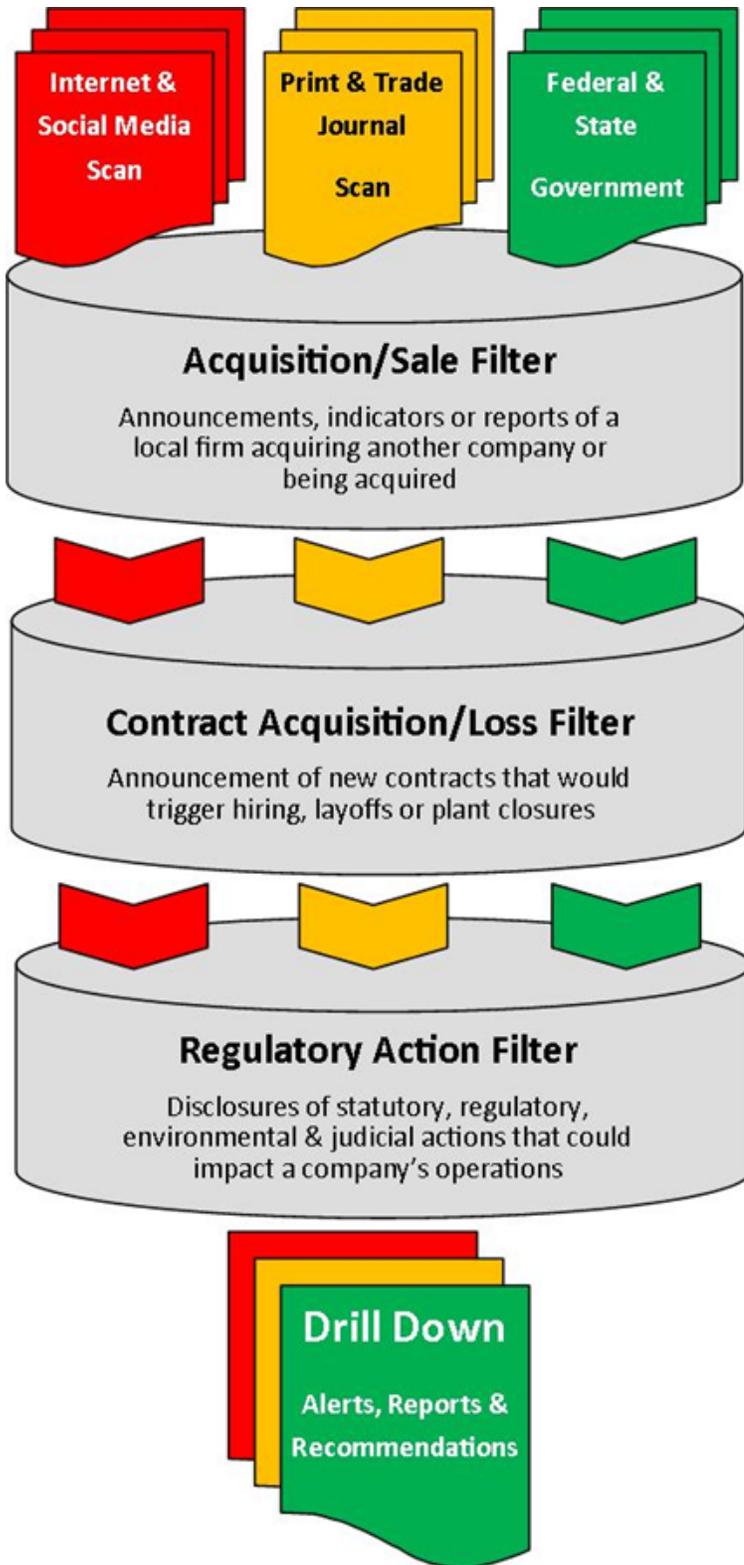
INTERNET & SOCIAL MEDIA

- Key social media sites are monitored for indicators of company movements, layoffs, expansions.
- Major social media sites scanned include: Facebook, Twitter, LinkedIn, the Google+, Ning, LiveJournal, and Meetup
- Geneva Analytics scans 150 BizBrief sites and 275 LinkedIn groups
- Commercial Real Estate Listings on LoopNet, Co-Star, Xcelligent

WHAT WILL DRILL DOWN® DO?

Drill Down® delivers the business information and intelligence necessary to address business retention and expansion (BRE) programs and economic gardening. Drill Down® makes it possible for local agencies and EDO's to:

- Identify existing companies located in a community or target area.
- Identify and sort firms by a wide range of data search fields.
- Identify firms that may be at risk or vulnerable to closing or moving to another community.
- Identify firms that may be ready to expand
- Provide industry segment reports by NAISC or Primary SIC codes that show industry trends, challenges, areas of opportunities and key questions for on-site interviews.
- Provide 1 and 2 person local agencies with the training and support necessary to initiate and execute an aggressive BRE program within the context of existing resources.



Conclusions

Local governments must have a clear picture of the impact shale oil and natural gas operations will have on the community's physical and social infrastructure. Given the scope of impact such extraction operations will have on a community, the limitation of resources and expertise, local communities should identify areas of common impact, such as zoning, permitting, public safety, etc. Where possible, operational and administrative processes should be standardized and streamlined through the use of web-based applications. The use of joint assistance agreements should be developed to maximize obtainable, effective staffing resources. Such agreements could include purchasing, project inspection agreements, etc. Intra-governmental communications and information sharing should be web-based and include both government-to-government and citizen-to-government channels. Support and assistance for existing businesses should be centralized and recognized as a "core" priority. Workforce development and access to continuing education are critical to long-term economic stability and growth. Job skills and labor needs assessments should maintain priority.

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