



## **U.S. OIL SHALE OPPORTUNITY**

*An Untapped Domestic Oil & Gas Resource  
Waiting to Create Jobs, Generate Tax & Royalty Revenues  
and Further Domestic Energy Security*

**Presented by the National Oil Shale Association (NOSA)**

### **EXECUTIVE SUMMARY**

The kerogen-rich oil shale deposits of the United States exist in many states and represent a domestic resource containing more barrels of oil than all the reserves of Saudi Arabia. If put into production, this resource can assist in making the United States energy independent.

This kerogen-rich oil shale is, without question, a massive untapped energy source that could enhance American energy independence and energy security while creating thousands of high-paying jobs, many in the mining sector, and billions in taxes and royalties for federal, state and local governments. The significance of this great resource is not a new discovery for policy makers:

- The 2005 *Energy Policy Act* recognized the strategic significance of the nation's oil shale deposits and set out a program to develop this petroleum source to enhance the nation's security and economic strength
- In 2007 the *Task Force on Strategic Unconventional Fuels* recommended measures appropriate for the federal government to take in order to get an oil shale industry established

Unfortunately, there has been little action on these recommendations over the past 10 years.

The National Oil Shale Association (NOSA) believes that under the new Administration it is time for energy policy leaders to rediscover the potential of oil shale production as a great strategic asset. Specifically, NOSA is calling for the creation of an Oil Shale Advisory Board to revisit the 2005 Act and the 2007 recommendations of the Task Force, which had consisted of representatives of the Departments of Energy, Defense and Interior and state and local governments. This new Advisory Board would bring together industry, federal government representatives, including those from Defense, Energy, Interior and the Environment Protection Agency, Congress and state and local delegates. NOSA is willing to take a lead role in organizing and directing this Advisory Board.

As a starting point, the Oil Shale Advisory Board should be directed to:

- Revisit the 2005 *Energy Policy Act* to fully understand the law and its history
- Revisit the 2007 recommendations of the *Task Force on Strategic Unconventional Fuels*, established under Section 369 of the Act, including those that were designed to stimulate commercial development of U.S. oil shale deposits (References 1, 2). Update the recommendations for oil shale to make them consistent with the current oil supply situation within the USA.
- Investigate the impediments to oil shale development in the United States and recommend measures to mitigate these.
- Report its findings and recommendations to the Administration and Congress within 9 months.

NOSA believes the development of our oil shale resources should be part of the Administration's "all-of-the-above" National Energy Policy. By creating certain incentives to mitigate private investment risks and by establishing a clear regulatory framework, as recommended by the Task Force in 2007, the Federal government can stimulate an entirely new domestic petroleum industry using a currently undeveloped domestic resource that will last for hundreds of years. This Federal Administration and Congress can be the catalyst to make this happen in the near future.

NOSA recommends that the Oil Shale Advisory Board be established immediately to revisit the 2007 Task Force Final Report, and develop an oil shale research, development and demonstration program that aligns with the current oil supply/demand situation and the outlook for the future. This Oil Shale Advisory Board would present its recommendations to the Administration and Congress with the goal of fulfilling the mandates of the 2005 Energy Policy Act and establishing a viable oil shale industry in the USA.

## **BACKGROUND**

- The oil shale deposits in the western United States are believed to be the largest, single, untapped hydrocarbon resource in the world. The U.S. Geological Survey estimates that there are between 353 billion and 1.146 trillion barrels of shale oil that could potentially be produced from western U.S. oil shale (Reference 3.); 70% of this is on BLM-managed lands that are not currently available for leasing. This dwarfs the USGS estimate of 36.5 billion barrels of U.S. conventional proven petroleum reserves (Reference 4).
- It is well known that shale oil produced in the USA can be refined into gasoline, diesel and jet fuel. The U.S. military has looked at shale oil as a potential domestic, long-term, strategic source for a single battlefield fuel. Our military jets and ships have already successfully demonstrated the benefits of jet fuel and diesel from shale oil.

- The 2005 Energy Policy Act directed the BLM to develop a commercial oil shale leasing program on federal lands in the West. There is still no program for leasing oil shale resources on federal lands.
- A Programmatic EIS conducted by the BLM (2008) established the environmental foundation to proceed with leasing and private development on federal oil shale lands. The industry's ability to comply with current NEPA and permit regulations has been confirmed.
- A number of overly-restrictive and adverse Federal actions have stymied oil shale development in the USA. Speeding up the permitting process, and avoiding abuse of the appeal process would encourage private development of this resource on both public and private lands. NEPA and the permitting process should be used only to accomplish the goals intended as enacted, not as a tool to deliberately delay or shut down natural resource development here in the USA.
- Encouraged by rising oil prices and the 2005 Energy Policy Act, private companies spent hundreds of millions of dollars on early-stage development of oil shale projects in Colorado, Utah and Wyoming. Despite the recent decline in oil prices, industry and investors are still interested in developing first-generation oil shale projects, provided they are assured of a clear federal regulatory framework, and provided that investment incentives are available to mitigate the risks associated with the fluctuating price of oil.

## **PAST FEDERAL ACTIONS**

The Task Force on Strategic Unconventional Fuels, established under Section 369 of the Act, was headed by the Department of Energy working cooperatively with the Department of Defense and the Department of Interior, as well as representatives of five states. A Technical Advisory Committee, representing diverse interests, supported DOE in this program. The Task Force published a final report entitled "America's Strategic Unconventional Fuels" in 2007. That report strongly recommends the Federal government proceed with an aggressive domestic oil shale program and the report laid out a strategy, plan and recommendations for shale oil production to reach 2.5 million barrels per day by 2035. None of the Task Force recommendations from 2007 were acted upon after the new Administration took office in 2008, despite the Congressional mandates and the requirements of the Act. The lack of action by the previous Administration was frustrating to industry and investors since they could not rely on the Federal government to consistently follow through on programs, even when required by Congressional legislation signed into law by the President of the United States.

Since the 2007 Task Force report was issued, the oil supply picture within the United States has changed, and the target of 2.5 million barrels of shale oil per day by 2035 is unreasonable. Today, the nation can take a slower, more deliberate approach to oil shale development, starting with demonstration projects to advance the knowledge and experience necessary for a larger commercial industry in the future. These demonstration plants, which will take a few years to design, permit and build, will answer many of the technical, economic, and environmental issues surrounding oil shale operations. These plants will help stakeholders understand the impacts, both good and bad, of oil shale production in the region and the measures needed to mitigate the impacts to wildlife, the environment, and quality of life. Also, the shale oil produced will be refined into fuels for testing by the public and the military.

To minimize the investment risks associated with this new industry, companies and their financial backers need to be assured that the oil shale development programs initiated by the Federal government will not be dramatically altered or discontinued every election cycle along the way. The Federal government's role in getting this industry off the ground should be to create incentives, establish a leasing program, and provide a clear and consistent regulatory framework that will enable industry and investors to make informed investment decisions. Currently-existing, overly-restrictive regulations and permitting requirements imposed by Federal agencies need to be reviewed and eliminated where deemed unnecessary to adequately protect the health and welfare of the public and the physical environment. Some of these requirements are so onerous that they simply dissuade companies from attempting to develop oil shale projects. Speeding up the cumbersome permitting process would reduce project lead time and development costs and accelerate development. This could be done with a joint Federal agency review process that is coordinated with state and local permitting entities.

## **OIL SHALE OPPORTUNITIES**

To date there has not been any sustained commercial production from the U.S. oil shale deposits. This is not for lack of effort. There have been intermittent efforts by industry over the past 100 years, and a multitude of government programs were initiated and later abandoned. Each time it looked as though commercial oil shale projects would be built, the price of oil declined temporarily, government support wavered, and private investment faltered.

These past oil shale development efforts, though abandoned, provided: technical design answers; knowledge on how to define and mitigate potential impacts on wildlife, the environment and the citizens of the region.; capital and operating cost data; and an appreciation for the numerous issues related to starting a new oil-producing industry. New demonstration plants would advance oil shale knowledge and experience and position industry for commercial development projects in the future. Demonstration plants are a crucial step in the evolution of any new resource extraction industry.

Today, new technologies applied to this resource have the potential to make the cost of shale oil production competitive with conventional petroleum. Any amount of domestic shale oil production, even from first-generation demonstration projects, would reduce the nation's reliance on foreign oil supplies and reduce the nation's balance of trade deficit. Local communities in the oil shale region generally favor commercial development of oil shale because of the tax and royalty revenues they will receive, and the economic benefits that will result from thousands of additional jobs and numerous supporting businesses.

Most of the best oil shale is located on Federal land. The Federal government has a huge strategic shale oil petroleum resource that industry could put into production to provide public transportation fuels and provide our military with a long-term, secure supply of fuels for its planes and vehicles. The American public benefits from a domestic oil shale industry are numerous and will last for generations. Industry would move forward with oil shale development, given the right opportunities and incentives.

## **OIL SHALE CHALLENGES**

Oil shale projects are long-lead time, capital-intensive undertakings. The fluctuating of oil price makes it difficult for investors to evaluate the economics of a project, and thus the risks. So, while oil shale development is in the long-term interest of the nation, it will take a commitment from both industry and the government to get next-generation demonstration plants built and operational.

Besides the oil price, the challenges facing pioneer oil shale projects are much like those facing any extractive industry in the eastern or western United States. They include: educating the public about the facts surrounding the industry; meeting stringent, conflicting and overlapping regulatory requirements; dealing with socioeconomic issues in remote communities; solving technical and logistical issues; securing adequate resources such as water and utilities; and gaining access to the oil shale on public lands. Industry and investors need to know that the Federal government is a steadfast partner in the development of this domestic oil shale resource, and not an opponent.

Access to the best oil shale lands is high on the list of challenges unique to oil shale. By a quirk of fate and Federal land and mineral ownership policy, much of the richest and best oil shale resource, some 70% of the total, is controlled by the BLM. Privately-owned oil shale lands exist but often not where the geology is best suited for some of the new and innovative technologies. The BLM has chosen not to lease oil shale, despite the directives of the 2005 Energy Policy Act, and has enacted regulations that complicate and delay oil shale development, even on the privately-owned oil shale lands.

## **CONCLUSIONS AND RECOMMENDATIONS**

The Federal government should recognize the long-term strategic importance of oil shale and develop a program to promote the development of this huge domestic petroleum resource. The nation needs to develop all domestic energy sources to make America as energy independent as possible. We need to get oil shale demonstration plants into production to show that it is feasible and economic to do so in the USA, while assessing potential impacts to the environment, wildlife and residents of the region. Successful demonstration projects would prove to the public, investors, and the world that the US has a new petroleum reserve to enhance the nation's security and economic strength.

Oil shale companies and entrepreneurs have the technical and management expertise to move forward. Developers have viable technologies ready for technical demonstration projects and they know and can meet the stringent environmental standards needed to gain the public's acceptance. By working together with companies, the Federal government can serve as a catalyst to stimulate an entirely new domestic petroleum industry. By delaying action, the nation risks losing the technical expertise and experience of our senior oil shale pioneers that have been working to develop this resource for over 40 years.

This slow, systematic approach to oil shale development envisioned by NOSA is far superior to the panic development that would occur during a future national emergency.

NOSA recommends that an industry/government Oil Shale Advisory Board be established to provide the Administration and Congress with a list of updated oil shale recommendations within nine months. These new recommendations will most likely call for a slower, more systematic approach to oil shale development, starting with industry-sponsored demonstration projects employing different technologies. NOSA and its members are willing to lead or participate in this Advisory Board.

## REFERENCES

1. The “oil shale” being discussed in this document is sometimes confused with oil from shales now being produced in places like Texas and North Dakota that require directional drilling and hydraulic fracturing (fracking). The oil shale discussed herein is premature petroleum in a solid form known as kerogen that requires heating to produce oil and gas. The production does not require fracking. Utah, Colorado and Wyoming have a bulk of the resource, but oil shale does exist in the eastern USA and in many countries abroad. Shale oil is currently being produced in Estonia, Brazil, and China, and has been for decades.
2. “America’s Strategic Unconventional Fuels”, September, 2007, Final Report of the Task Force on Strategic Unconventional Fuels, prepared in response to Section 369 of the Energy Policy Act of 2005 (P.L. 109-58).
3. U.S. Geologic Survey, In-Place Oil Shale Resources Examined by Grade in the Major Basins of the Green River Formation, Colorado, Utah, and Wyoming, Fact Sheet 2012-3145, January 2012.
4. U.S. Department of Energy, “Transportation Energy Data Book, Table 1.1, Proved Reserves of crude Oil and Natural Gas, 1980-2014, June 2015.

## CONTACT INFORMATION

The National Oil Shale Association (NOSA) is a not-for-profit organization founded for the purpose of educating the public about oil shale and its tremendous potential as a domestic source of petroleum. NOSA is sponsored by companies, organizations, and individuals actively encouraging oil shale development in the USA.

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